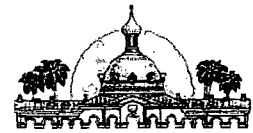


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Partial Construction Certification Report – Capacity Expansion, Section 8

Volume 1 of 2

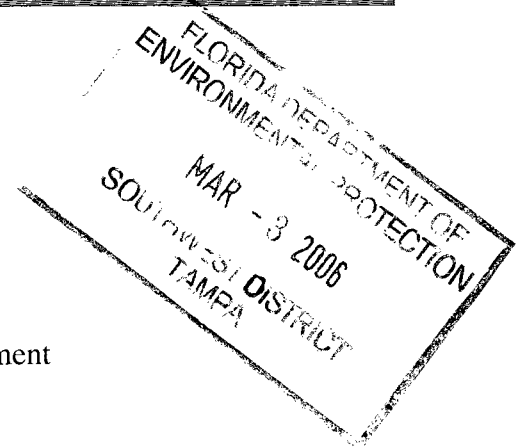


Southeast County Landfill Hillsborough County, Florida

SCS ENGINEERS

Prepared for:

Hillsborough County
Solid Waste Management Department
P.O. Box 1110
Tampa, Florida 33601
(813) 276-5680



Prepared by:

SCS Engineers
3012 U.S. Highway 301 N., Suite 700
Tampa, Florida 33619
(813) 621-0080
Fax (813) 623-6757

File No. 09200020.35
September 30, 2005



Florida Department of Environmental Protection
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, FL 32399-2400

DEP Form # 62-701.900(2)
Form Title Certification of Construction Completion
Effective Date May 12, 1994

DEP Application No. _____
(Filled by DEP)

Certification of Construction Completion of a Solid Waste Management Facility

DEP Construction Permit No: 35435-009-SC County: Hillsborough

Name of Project: Capacity Expansion Section 8

Name of Owner: Hillsborough County

Name of Engineer: SCS Engineers

Type of Project: _____
Approximately 6.8-acre Class I disposal expansion

Cost: Estimate \$ 4,392,345 Actual \$ 4,100,000

Site Design: Quantity: _____ ton/day Site Acreage: 6.8 Acres

Deviations from Plans and Application Approved by DEP: This completion form is to certify the design components constructed through September 30, 2005 under the direction and supervision of SCS Engineers.

Please refer to the attached Partial Construction Certification Report for minor deviation from plans and Application.

Address and Telephone No. of Site: 15960 County Road 672, Lithia, FL 33547

Name(s) of Site Supervisor: Larry E. Ruiz

Date Site inspection is requested: As soon as possible, please contact Larry Ruiz, (813) 671-7707

This is to certify that, with the exception of any deviation noted above, the construction of the project has been completed in substantial accordance with the plans authorized by Construction

Permit No. 35435-009-SC :Dated: September 1, 2004

Date: 10/5/05

Signature of Professional Engineer: _____

Page 1 of 1

Northwest District
160 Governmental Center
Pensacola, FL 32501-5794
850-595-8360

Northeast District
7825 Baymeadows Way, Ste. B200
Jacksonville, FL 32256-7590
904-448-4300

Central District
3319 Maguire Blvd., Ste. 232
Orlando, FL 32803-3767
407-894-7555

Southwest District
3804 Coconut Palm Dr.
Tampa, FL 33619
813-744-6100

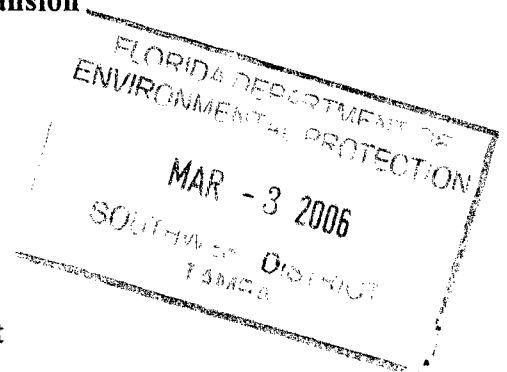
South District
2295 Victoria Ave., Ste. 364
Fort Myers, FL 33901-3881
941-332-6975

Southeast District
400 North Congress Ave.
West Palm Beach, FL 33401
561-681-6600

**Partial Certification of
Construction Completion Report
Southeast County Landfill Capacity Expansion
Section 8 Construction**

Prepared for:

Hillsborough County
Solid Waste Management Department
P.O. Box 1110
Tampa, Florida 33601



Prepared by:

SCS Engineers
3012 U.S. Highway 301 North
Suite 700
Tampa, Florida 33619
(813) 621-0080
Fax (813) 623-6757

September 30, 2005
File No. 09200020.35

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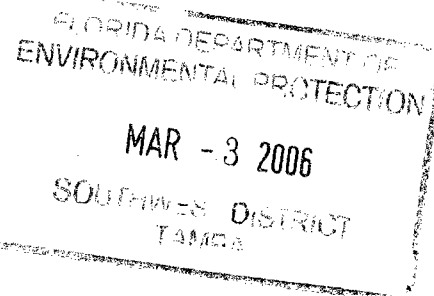
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SECTION 1

INTRODUCTION

On behalf of the Hillsborough County Solid Waste Management Department (County), SCS Engineers (SCS) has prepared this Partial Certification of Construction Completion Report for the construction of Section 8 of the Capacity Expansion at the Southeast County Class I Landfill (SCLF), located in Hillsborough, County, Florida. Section 8 with a 6.8-acre footprint is the second cell of the capacity expansion permitted for construction. SCS was responsible for Construction Quality Assurance (CQA) services from the beginning of construction on January 31, 2005 through September 30, 2005. CQA services for construction completed after September 30, 2005 were provided by Jones Edmunds and Associates (JEA).

1.1 CONSTRUCTION PERMIT

The Florida Department of Environmental Protection (FDEP) in Tampa, Florida issued Construction Permit No. 35435-004-SC dated September 01, 2004 authorizing the County to construct the Southeast County Landfill Capacity Expansion – Section 8 at the SCLF. The liner construction included the installation and compaction of a 6-inch thick subbase, with a maximum hydraulic conductivity of 1×10^{-5} cm/sec, the installation of a primary and secondary 60-mil geomembrane system with a geocomposite above each liner, and a leachate collection system. A copy of the construction permit is contained in Attachment 1-1 in this section.

1.2 PROJECT PERSONNEL

Work conducted at the site was performed by the following:

Owner

Hillsborough County Solid Waste Management Department (County)

Engineering Consultant

SCS Engineers - Engineering, CQA

Geomembrane CQA

SCS Engineers – CQA

Professional Service Industries, Inc. – CQA

TRI/Environmental, Inc. (TRI) – Quality Assurance Testing of Geosynthetic Materials

Contractor

ERC, Inc. - General Contractor

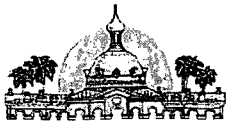
Subcontractors

Geo-Synthetics, Inc. (GSI) – Geosynthetics Installer

Pickett & Associates, Inc. (PAI) – Surveyor

Construction Quality Control (CQC)
Faulkner Engineering Services, Inc. – CQC Testing
Burcaw Geotechnical Group, Inc. – CQC Testing

The following Organizational Chart lists the key project personnel, including those persons on-site during the project for daily construction activities.



Hillsborough County, Florida
Section 8 Construction Team

Hillsborough County
Solid Waste Management Department

(County) Patty V. Berry
Contact: 813-276-2908

Hillsborough County
Solid Waste Management Department

(County) Project Manager
Larry E. Ruiz, Assoc. AIA
Contact: 813-671-7707

SCS Engineers
Engineer of Record/Project Director

Raymond J. Dever, P.E., DEE
Contact:813-621-0080
rdever@scsengineers.com

SCS Engineers

(Engineer) Project Manager
Joseph O'Neill, P.E.
Contact: 813-621-0080
joneill@scsengineers.com

SCS Engineers
Office Support/Project Engineer

Dominique H. Bramlett, P.E.
Contact:813-621-0080
dbramlett@scsengineers.com

SCS Engineers

Field Representative
Name: Dennis Adams
Contact: 813-210-1297

SCS Engineers

Geosynthetics Oversight
Name: Kurt Peterson
Name: Dennis Dupont
Contact: 813-220-3898

Geotechnical Support
Construction Quality Assurance (CQA)

PSI - Soil
Name: Marty Millburg, P.E.
Contact: 813-886-1075

TRI/Environmental, Inc.

Geosynthetics Conformance Sampling
Name: Sam Allen
Contact: 800-880-8378

Contractor

ERC
Project Manager
Name: Jerry Pinder
Contact: 407-468-1046

Field Manager
Name: Vaden Pollard
Contact: 321-231-0208

Construction Quality Control (CQC)

Faulkner - Soil
Burcaw - Soil
Pickett & Associates - Surveyor

Manufacturer's Quality Control (MQC)

GSE - Supplier
TENAX - Supplier

Direct Shear Tests

Ardaman & Associates

Geomembrane/Geocomposite

GSI - Installer

SCS Project Team Organization
Section 8 - Capacity Expansion

1.3 CONSTRUCTION MODIFICATIONS TO PERMIT

The following modifications or clarifications were implemented during construction. It is the professional opinion of SCS that the changes do not significantly impact the original permitted concept or design. The modifications or clarifications are listed below:

1. The excavation depth was limited to approximately EL 115.5 NGVD. No clay was observed below this elevation. All waste phosphatic clay was removed prior to placement of backfill. Refer to Section 3 for Excavation Survey.
2. The alignment of the ditch along the westside of Section 7 was straightened and the centerline was made consistent on all plan view drawings. This slight modification does not alter the direction of the stormwater and does not effect the overall design or permit conditions. Refer to Section 1.10 for the Construction Drawings.
3. The temporary access road shown on Sheet 3 of 9 of the Construction Drawings was relocated and placed outside of the excavation limits. The road was relocated to allow continued use of the existing road by WMI while the revised road was being constructed by ERC. This modification did not alter or modify the original landfill expansion and was done only to facilitate construction and long-term site operational activities. Refer to Section 1.10 for the Construction Drawings.
4. The northern diversion swale was redirected to convey runoff from the borrow area away from the excavation area of Section 8. The northern diversion swale was also enlarged to increase the storage capacity of the swale as well as increase detention time in the swale to allow extended time for sediments to fall out of suspension. A pump will remove stormwater and discharge into the ditch discharging into Basin "C". This modification did not alter or modify the original landfill expansion and was done only to facilitate construction and long-term site operational activities. Refer to Section 1.10 for the Construction Drawings.
5. Small sticks in the general backfill - Small sticks and roots may be present when excavating from a natural borrow pit. The specification indicated that the general backfill be "free" of sticks and roots. The specifications were modified to exclude roots or sticks greater than ½-inch in diameter and/or should not be longer than 3 feet. The slight variance in allowing small sticks and roots does not alter or modify the original landfill expansion design. Refer to Sections 1.6 and 4 for backfill information.
6. The edge of liner on the West Side of Section 8 was modified so that the edge of liner would terminate in the west anchor trench on top of the berm. Refer to Section 1.10 for the modified detail 2 sheet 9 of the Construction Drawings.

7. Direct Shear Test Results – Ardaman and Associates

- a. Sand / Geocomposite – The normal load of the testing machine is limited to 110 psi (15,849 psf) for safety reasons. The Project Specifications called for a maximum normal load of 125 psi (18,000 psf). The maximum cell loading estimated to be was 10,730 psf ((EL 280 – EL 135) * 74 psf). The 110 psi testing exceeds the maximum anticipated cell loading. Therefore, test results meet the design requirements. Refer to Section 6 for Direct Shear Test Results.
 - b. Geomembrane / Geocomposite - The normal load of the testing machine is limited to 110 psi (15,849 psf) for safety reasons. The Project Specifications called for a maximum normal load of 125 psi (18,000 psf). The maximum cell loading estimated to be 10,730 psf (EL 280 – EL 135) * 74 psf. The 110 psi testing exceeds the maximum anticipated cell loading. Therefore, test results meet the design requirements. Refer to Section 6 for Direct Shear Test Results.
8. HDPE pipe classification was modified from 345434C to 345464C. The modification was made due to changes in ASTM D 3350, which governs plastic pipe classification. The modified pipe classification allows for higher stress crack resistance in pipe resins. Refer to Section 7 for pipe testing.
9. Protective / Drainage Sand Gradation Curve was modified slightly. However, when samples were compacted to a minimum of 95% of Standard Proctor, the permeability results still exceeded the minimum design hydraulic conductivity of 1×10^{-3} cm/s but the samples did not conform to the gradation as specified in Section 02220-2.05(a). Note: test run at modified proctor (higher density than the specified standard proctor) perms meet specifications. See the modified gradation curve below:

Sieve No.	Specification (percent passing)	PSI Test Results	Burcaw Test Results
10	100	100	100
30	95	94 – 98	96 – 97
50	65	55 – 69	52 – 72
70	20	24 – 34	18 – 38
200	0 - 5	2.9 – 3.2	1 – 3

MODIFIED:

Sieve No.	Specification (percent passing)	Range of Values Test Results
10	100	100
30	95	94 - 97
50	65	52 - 72
70	20	24 - 38
200	0 - 5	1 - 3.2

See Section 7 for CQA / CQC test results for protective sand.

1.4 PRECONSTRUCTION

A preconstruction topographic survey by Pickett and Associates is included in Section 2.

1.5 EXCAVATION OF SECTION 8 CELL

An excavation topographic survey by Pickett and Associates is included in Section 3.

1.6 BACKFILL OF SECTION 8 CELL

Prior to installation of the clay subbase, the Section 8 cell subgrade was prepared by excavating, backfilling, and compacting to the grade as shown on the Construction Drawings. The surface of the prepared subgrade was free of sticks and roots larger than ½ - inch diameter and 3 feet in length, organic mater, and stones larger than 1-inch in any dimension. Suitable subgrade soil material included poorly graded sand (SP), silty sand (SM), or clayey sand (SC) as classified by the Unified Soil Classification System. Suitable soil materials were not excessively wet or dry and were within three percent of the optimum moisture content range to achieve 95 percent of maximum dry density as determined by the Standard Proctor test. The specifications required a minimum of two in-place density tests per acre per lift.

Refer to Section 4 for CQC (i.e., Faulkner and Burcaw) Density Reports including the test location map and a topographic survey from Pickett and Associates.

1.7 INSTALLATION OF LOW PERMEABILITY SOIL SUBBASE

Prior to installation of the 60-mil HDPE liner system, the Section 8 clay subbase was constructed. Material for the clay subbase was obtained from a borrow source offsite. The subbase was installed in six-inch lifts and compacted to the grades as shown on the Construction Drawings. The surface of the installed subbase was free of sticks, roots organic mater, and stones larger than 1-inch in any dimension. Suitable subbase soil material included poorly graded clayey sand (SP-SC), clayey sand (SC), fat clay (CH), or lean clay (CL) as classified by the Unified Soil Classification System. Suitable soil materials were not excessively wet or dry and were within three percent of the optimum moisture content range of 95 percent of maximum dry density as determined by the Standard Proctor test. The maximum hydraulic conductivity for the constructed subbase of 1×10^{-5} cm/sec was achieved as

demonstrated in Section 5. The specifications required a minimum of two in-place density tests per acre per lift.

In accordance with the project specifications, the Contractor prior to the installation of the subbase constructed a test section 50 feet wide by 200 feet long to verify that the proposed subbase and construction techniques would consistently achieve the specified parameters as presented in Table 02221-1 of the project specifications. In accordance with the specifications, the CQC consultant performed the necessary tests on the test strip and subbase borrow source. Refer to Section 5 for the following test results: Hydraulic Conductivity Test (EPA Test Method 9100) and Permeability tests (ASTM D 5084).

SCS Engineers' CQA performed the Permeability tests (ASTM D 5084). Refer to Section 5 for the test results by PSI.

In accordance with the specifications, Pickett and Associates completed a subbase survey. The subbase survey is contained in Section 5.

1.8 GEOSYNTHETIC INSTALLATION

SCS Engineers' CQA Representative was on-site full-time to observe construction activities during the geomembrane / geocomposite liner system installation, in accordance with Florida Department of Environmental Protection (FDEP) rules. Section 6 discusses the geomembrane / geocomposite CQA activities in further detail and contains TRI Destructive Sample test results pertaining to the geosynthetic installation of the Southeast County, Landfill Capacity Expansion - Section 8 (Section 8). The proposed panel layouts and geosynthetic installation logs through September 30, 2005 are also included in Section 6. The CQA daily field log for the liner installation through September 30, 2005 is included in Section 6.

As part of the specifications, the manufacturer, GSE and Tenax were required to perform initial conformance tests on the geomembrane and geocomposite prior to delivery. The results were recorded in certificates for each roll of geomembrane and geocomposite, and are contained in Section 6.

1.9 INSTALLATION OF DRAINAGE SAND, PIPES, ROCK, BALL PLUG VALVE

1.9.1 Drainage Sand

The permeability of the installed drainage sand varied from 1.4×10^{-3} to 5.8×10^{-3} centimeters per second (cm/s). The minimum permeability per specification is 1.0×10^{-3} cm/s. The permeability and sieve analyses of the drainage sand are contained in Section 7.

1.9.2 Pipes

The Quality Control Certifications for the HDPE pipe used in the collection / detection system is contained in Section 7.

1.9.3 Ball Plug Valve

Refer to Section 7 for ball plug valve information.

1.10 CONSTRUCTION DRAWINGS

SCS performed revisions to the Construction Drawings through September 30, 2005. The Construction Drawings can be found in Attachment 1-2 in this section.

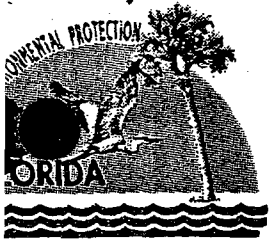
1.11 DOCUMENTATION

Section 8 contains the construction photographs which are representative of construction activities as work progressed during completion of Section 8 at the Southeast County, Landfill Capacity Expansion through September 30, 2005.

Section 8 contains SCS Field Reports through September 30, 2005.

ATTACHMENT 1-1

PERMIT NUMBER 35435-009-SC



Department of Environmental Protection

Jeb Bush
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Colleen M. Castille
Secretary

PERMITTEE

Hillsborough County
Solid Waste Management Dept.
Mr. Daryl Smith, Director
Post Office Box 1110
Tampa, Florida 33601

PERMIT/CERTIFICATION

WACS ID No: SWD/29/41193
Permit No: 35435-009-SC
Date of Issue: 09/01/2004
Expiration Date: 07/15/2009
County: Hillsborough
Lat/Long: 27°46'25"N
82°11'15"W
Sec/Town/Rge: 13, 14, 15, 18, 19,
22, 23, 24, 31, 32S/21E
Project: Southeast County
Class I Landfill
Section 8 construction

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule(s) 62-4, 62-302, 62-330, 62-520, 62-522, and 62-701. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans and other documents, attached hereto or on file with the Department and made a part hereof and specifically described as follows:

To construct a expansion to a Class I Solid Waste Landfill (approximately 6.8 acres), referred to as Section 8 of the Southeast County Landfill, subject to the specific and general conditions attached, for solid waste disposal, located 8.8 miles east of U.S. Highway 301 North on County Road 672, Hillsborough County, Florida. The general and specific conditions attached are for the construction only of:

1. Class I landfill

General Information - Section 8

Disposal acres	6.8 acres
Lowest Bottom elevation of cell	+131.5 NGVD (southwest corner of Section 8) [ref. #2.b., Sheet 4 of 9]
Top elevation at buildout (including cover)	Approx. +285 feet NGVD (Section 8 only) [ref. SC#2.a(3), page 7 of 8]
Liner system (bottom to top)	Subbase soil ($k \leq 1 \times 10^{-3}$ cm/sec), 60 mil textured HDPE, triplanar geocomposite drainage net, 60-mil textured HDPE, triplanar geocomposite, 12-inch protective sand layer, 12-inch tire chip layer [ref. #2.a(1)-Specs: 02776-1.01.B., 02930-1.01.A.; SC#2.b., Detail 1, Sheet 8 of 9]
LCS/drainage layer & LDS	Drainage/protective sand $\geq 1 \times 10^{-3}$ cm/sec; tire chips; woven geotextile wrapped around LCS gravel & pipes; three perforated 8-inch diameter SDR 17.5 HDPE collection laterals, connecting to Section 7 LCS pipes at south end of Section 8; LDS is triplanar composite geonet [ref. SC#2.a(1)-Specs. 02940-1.01.A., 02930-1.01.A.; SC#2.b., Sheet 5 of 9]
Leakage action rate (LDS)	164 gallons/acre/day [ref. SC#2.c(1), sheet 5 of 5]

Replaces Permit No.: N/A, new

This permit contains compliance items summarized in Attachment 1 that shall be complied with and submitted to the Department by the dates noted. If the compliance dates are not met and submittals are not received by the Department on the dates noted, enforcement action may be initiated to assure compliance with the conditions of this permit.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "permit conditions" and are binding and enforceable pursuant to Sections 403.141, 403.161, 403.727, or 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
3. As provided in subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of rights, nor any infringement of federal, State, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in this permit.
4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, are required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times, access to the premises where the permitted activity is located or conducted to:
 - (a) Have access to and copy any records that must be kept under conditions of the permit;
 - (b) Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
 - (c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

PERMITTEE: Hillsborough County SW Mgmt Dept
Mr. Daryl Smith, Director

PERMIT NO.: 35435-009-SC

GENERAL CONDITIONS:

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

- (a) A description of and cause of noncompliance; and
- (b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Rule 62-4.120 and 62-730.300, Florida Administrative Code, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes:

- (a) Determination of Best Available Control Technology (BACT)
- (b) Determination of Prevention of Significant Deterioration (PSD)
- (c) Certification of compliance with State Water Quality Standards (Section 401, PL 92-500)
- (d) Compliance with New Source Performance Standards

GENERAL CONDITIONS:

14. The permittee shall comply with the following:
- (a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - (b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
 - (c) Records of monitoring information shall include:
 - 1. the date, exact place, and time of sampling or measurements;
 - 2. the person responsible for performing the sampling or measurements;
 - 3. the dates analyses were performed;
 - 4. the person responsible for performing the analyses;
 - 5. the analytical techniques or methods used;
 - 6. the results of such analyses.
15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITIONS:

1. **Facility Designation.** This site shall be classified as a solid waste Class I landfill, and shall be constructed in accordance with all applicable requirements of Chapters 62-4, 62-302, 62-330, 62-520, 62-522 and 62-701, Florida Administrative Code.

2. **Permit Application Documentation.** This permit is valid for construction only of Section 8 of the Hillsborough County Southeast Class I Landfill in accordance with the reports, plans and information submitted by SCS Engineers, Inc. (unless otherwise noted), as follows:

a. Construction Permit Application, Southeast County landfill Capacity Expansion - Section 8, Hillsborough County,... (one 3-ring bound document) dated February 4, 2004 (received February 9, 2004) and supporting information including revised information dated April 23, 2004 (received April 23, 2004) and June 18, 2004 (received July 29, 2004) (pages inserted into original). This information includes, but is not limited to:

- 1) Attachment H-1, Technical Specifications [Spec],
- 2) Exhibit A of Attachment H-1, Construction Quality Assurance Plan [CQAP], and
- 3) Attachment H-2, Design Calculations for Bottom Liner Components;

b. Plan Sheets titled, Southeast County Landfill Section 8 Capacity Expansion,... (9 sheets) received February 9, 2004 including revised sheets received April 23, 2004 (sheets 3, 7, 8 and 9 of 9);

c. The following information from the March 2000 Construction Permit Application Section 1 Class I Capacity Expansion, Southeast County Landfill,... (Volume 1 of 3 unless otherwise noted) including revised information inserted into original received May 17, 2000, and July 13, 2000 as follows. [Note: Section 1 was subsequently renumbered Section 7.] Portions of these documents not specifically referenced in this Specific Condition are not valid for this permit:

- 1) Attachment G-3, Leachate Generation Analysis,
- 2) Attachment G-4, Design Calculations for Bottom Liner Components,
- 3) Section H, Hydrogeological Investigation Requirements,
- 4) Section I, Geotechnical Investigation Requirements;
- 5) Hydrogeological/Geotechnical Investigation, prepared by Barnes, Ferland and Associates, Inc., dated September 1997, (received as Volume 2 of 3 of the March 2000 construction application);

and in accordance with all applicable requirements of Department rules.

3. **Permit Modifications.**

a. Any construction or operation not previously approved as part of this permit shall require a separate Department permit unless the Department determines a permit modification to be more appropriate. Any significant changes to the construction or operation at the facility shall require a permit modification. Permits shall be modified in accordance with the requirements of Rule 62-4.080, F.A.C. A modification which is reasonably expected to lead to substantially different environmental impacts which require a detailed review by the Department is considered a substantial modification.

SPECIFIC CONDITIONS:

(Specific Condition #3, cont'd)

b. This permit authorizes **construction** of Section 8 disposal area only. This permit **does not authorize** the operation of Section 8. Operation of Section 8 shall require a new permit or substantial modification of Operation Permit 35435-007-SO. The operation permit application shall include, but not be limited to:

- 1) pipe strength (crushing, buckling, ring deflection) calculations for the pipe used for Section 8 LCS (i.e., 8-inch diameter SDR 17 HDPE pipe);
- 2) revised slope stability and settlement calculations based on the as-built and proposed operation configurations of Section 8. The settlement calculations shall demonstrate that the LCS piping will continue to function adequately after the expected maximum settlement in Section 8;
- 3) a closing and long-term care plan, including description of the final cover and gas collection system;
- 4) revised financial assurance cost estimates;
- 5) plan sheets showing the method and sequence of filling, including proposed schedule for construction, operation and closing;
- 6) revised LDS flow capacity calculations that include leakage action rates used in the March 2000 construction submittal [ref. SC#2.c(2)];

c. Leachate recirculation or irrigation is not authorized in Section 8 [ref. SC#2.a, Section H.4.].

4. **Permit Renewal.** No later than one hundred eighty (180) days before the expiration of the Department Permit, the permittee shall apply for a renewal of a permit on forms and in a manner prescribed by the Department, in order to assure conformance with all applicable Department rules.

5. **Prohibitions.** The prohibitions of Rule 62-701.300, F.A.C., shall not be violated by the activities at this site.

a. In the event that limestone is encountered during excavation or construction activities, the excavation/construction activities shall cease and the Department shall be notified **within 72 hours of discovery**. Written notification shall be submitted **within 7 days of discovery**. The written notification shall include the location, elevation, and extent of limestone noted on a plan sheet, a description of the materials encountered, and a plan of action which ensures that groundwater will not be adversely affected by the continued construction and operation of the facility. Excavation or construction activities shall not resume in the affected area until the Department-approved plan of action has been completed.

SPECIFIC CONDITIONS:

(Specific Condition #5, cont'd)

b. In the event that surface depressions which may be indicative of sinkhole activity, or subsurface instability, are discovered onsite, or within 500 feet of the site, the Department shall be notified **within 24 hours of discovery**. Written notification shall be submitted **within 7 days of discovery**. The written notification shall include a description of the depression, the location and size of the depression shown on an appropriate plan sheet, and a corrective action plan which describes the actions necessary to prevent the unimpeded discharge of waste or leachate into ground or surface water.

c. The permittee shall ensure that no construction activity (e.g., dewatering activities) results in violation of Department rules or standards. The permittee shall ensure that flooding in the downstream area does not occur and sedimentation and turbidity are in compliance with Department standards. [Spec. 02140-3.02.B.]

6. Pre-Construction Submittals.

a. **At least thirty (30) days prior to initiation of any construction activity, unless otherwise specified, the permittee shall submit the following information to the Department:**

1) A complete set of Plans, Specifications and CQA Plan to be used for construction which includes all changes (i.e., all additions, deletions, revisions to the plans previously approved by the Department). Significant changes in the plans, as determined by the Department, shall require a permit modification. All changes in the plans shall be noted on the plans and accompanied by a narrative indicating the change, the cause of the deviation, and a re-certification of the alternate design by the design engineer. These alternate designs shall be approved by the Department prior to construction. **If no changes have been made to the construction plans, Specifications or CQA Plan, the permittee shall notify the Department in writing that no changes have been made, and re-submittal of these documents will not be required prior to construction.**

2) New or revised plan sheets which include: a NW-SE cross-section and a NE-SW cross-section (along the leachate collection trench) across the entire footprint of Section 8. The location of the cross-sections should also be shown on Sheet 5 of 9.

b. **No later than seven (7) days prior to initiation of any construction activity, unless otherwise specified, the permittee shall submit the following information to the Department:**

1) An organizational chart including the role and name of the specific company/organization for each of the parties in the Project team; and

2) The dewatering plan required by Specification Section 02140-1.03.A.

7. Pre-Construction Meeting Notification. Department Solid Waste Permitting staff shall be notified **at least one (1) week prior to the pre-construction meeting to allow Department staff attendance at the meeting.** Prior to initiating construction activities, the permittee shall make arrangements for the Engineer of Record to meet on site and discuss all plan changes with Department Solid Waste Permitting Staff of the Southwest District Office. A copy of the minutes from the pre-construction conference shall be submitted to the Department **within two (2) weeks of the conference.**

SPECIFIC CONDITIONS:

8. Construction Schedule and Progress Report.

- a. No later than fifteen (15) days after the pre-construction conference, the owner or operator shall submit a construction schedule which includes estimated dates for each portion of the construction to the Department. The Engineer of Record or another qualified professional engineer shall make periodic inspections during construction to ensure that design integrity is maintained.
- b. An updated construction schedule and progress report shall be submitted to the Department **monthly, by the 15th each month.** The monthly progress report should be submitted in an appropriately labeled three-ring binder of sufficient size to store the monthly progress reports for the entire project. The monthly progress reports shall include, but not be limited to:
 - 1) A narrative explaining the status (and any delays) of major stages of the construction (i.e., liner, GCL, tanks, piping, liner penetrations, etc.),
 - 2) A summary of submittals and change order requests,
 - 3) Weekly progress meeting minutes [Spec. 01311-1.02; CQAP 4.2], and
 - 4) Color copies of photographs which are representative of the typical construction activities for the reporting period, and photographs which show overall views and details of major stages of construction (e.g., liner penetrations, lift station construction, tanks construction, etc.).

9. Construction Tolerances.

- a. Pipe invert elevations for the leachate collection system piping shall be noted every 50 linear feet along the pipe and at each change in direction and elevation [Spec. 01050-1.04.C.5.] to demonstrate that the leachate collection system has been constructed to the slopes and grades shown on the drawings. This information shall be included with the Record Documents.
- b. As-built topographic surveys shall demonstrate that each liner component, subgrade, subbase, top of sand drainage layer, leachate collection system, piping, etc., was constructed within the tolerance (± 0.2 feet vertical and ± 0.5 feet horizontal) required by the Drawings and Specifications. [Spec. 01050-3.03.A.]

10. Construction Quality Assurance.

- a. Liner systems shall have a construction quality assurance plan to provide personnel with adequate information to achieve continuous compliance with the construction requirements. The Construction Quality Assurance Plan shall be in accordance with Rules 62-701.400(7) and (8), F.A.C., the CQA Plan [ref. SC#2.a(2)], and the conditions of this permit. The professional engineer or his designee shall be on-site at all times during construction (including liner system and leachate collection system) to monitor construction activities.
- b. A complete set of construction drawings and shop drawings, which include daily additions, deletions and revisions, shall be maintained on-site at all times for reference. [Spec. 01300-1.07.B.] Drawings which show the locations of geomembrane panel seams and repairs shall be kept on-site at all times for reference.

SPECIFIC CONDITIONS:

(Specific Condition #10, cont'd)

c. Leachate shall not be deposited, injected, dumped, spilled, leaked, or discharged in any manner to the land, surface water or groundwater outside the liner system at any time during the construction activities.

d. Unsatisfactory, defective or non-conforming work shall be reported to the Engineer and shall be corrected, or the reasons for not correcting the work shall be recorded and maintained onsite for reference and inspections. Documentation of the corrections or reasons for not correcting the work shall be submitted with the Record Documents required by Specific Condition #16.

e. Construction activities such as geomembrane seaming, QA/QC testing of the geosynthetics or soil materials, surveying, etc. shall not be carried out in non-daylight hours without prior Department approval. [see Spec. 02776-1.04.K, 3.04.J] If these activities will be conducted during nighttime hours, the Department shall be notified **at least 72 hours in advance** to allow for Department observation. This notification shall include a description of the methods which will be used to provide adequate illumination to ensure that the quality of the construction is not compromised.

f. The soil subbase material shall be tested for % fines (ASTM D-1140) in accordance with Rule 62-701.400(8)(d), F.A.C. [see Spec. 02221-3.02.F.1.] The compacted soil subbase shall be tested at the frequencies listed in Table 02221-1 except that four thickness measurements shall be taken per acre per lift, and all testing frequencies on the soil subbase shall be doubled for the first five acres of construction. [Rule 62-701.400(8)(e), F.A.C.]

g. All excavations shall be maintained free from standing water. Except for the stormwater management system construction, no construction, including pipe laying, shall be allowed in water. Groundwater shall be maintained at least 2 feet below excavations. [Spec. 02140-3.01.B.] In the event that it appears that the excavation is being impacted by groundwater, the contractor shall take the corrective actions necessary to demonstrate that the groundwater is sufficiently below the bottom of the excavation.

h. Sandbags or other temporary anchoring devices shall be removed prior to subsequent placement of materials over the geosynthetics.

i. Where sod is used over lined areas, pegging of sod shall not damage the liner.

11. Geosynthetic Materials.

a. Smooth geomembranes [Spec. 02776-1.01.B.] or geosynthetic clay liners [see CQAP 6.4] are not authorized for use in the Section 8 construction project.

b. Seaming.

1) Seaming processes other than fusion or extrusion welding shall be approved by the Engineer and submitted to the Department prior to implementation.

2) Seaming apparatus or personnel which have failed trial welds shall not be used for seaming until passing welds are achieved.

SPECIFIC CONDITIONS:

(Specific Condition #11.b. cont'd)

3) Geomembrane seaming activities shall only be conducted during daylight hours and within the weather requirements of the Specifications, unless otherwise specifically approved by the Department. Seaming shall only take place with the "master seamer" present. [Spec. 02776-1.04.K, 3.04.J] No geomembrane seaming shall be performed unless the CQA Consultant is on-site.

4) The procedure used to temporarily bond adjacent geomembrane panels together shall not damage the geomembrane.

c. Conformance testing for the geosynthetic materials shall be in accordance with the CQAP Sections 6.1.2.2 (geomembrane), 6.2.2 (geotextiles), 6.3.3 (geocomposites) and the Specifications. The geosynthetics shall meet the requirements listed in Specification Tables 02776-2 (geomembrane), 02930-1 (geonet), 02930-2 (geotextile), and 02930-3 (geocomposite), or this permit, whichever is more stringent. Conformance testing of the geomembrane shall include stress crack resistance and oxidative induction time. In all cases, the test results shall meet or exceed the property values in the Specifications.

d. The construction methods used shall minimize wrinkles. Excessive wrinkles shall be removed, and the areas repaired. Areas where wrinkles are removed shall be repaired and re-tested in accordance with the Specifications and CQA Plan. [Spec 02776-3.04.K.]

e. The liner system shall not be damaged by excessive traffic.

f. Destructive testing.

1) Destructive tests of the geomembrane seams shall be taken at random locations, at a minimum frequency of one test location per 500 feet of seam. [Spec. 02776-3.05.B.1.] This frequency shall not be based on an average throughout the entire facility.

2) Destructive tests conducted on the geomembrane field seams shall demonstrate that the actual shear strength is at least 90 percent of the yield strength of the geomembrane, and failure is outside of the seam area. All of the samples shall meet the requirements for each test method (peel and shear) listed in Geomembrane Specifications, Table 02776-2. The strength results shall not be averaged and both sides of fusion welds shall be tested. [CQAP 6.1.9.4]

3) Work shall not proceed with any materials which will cover locations which have been destructively tested or repaired until laboratory test results which demonstrate passing values are provided to the onsite CQA manager/inspector.

g. Prior to placement of materials on the subbase, an as-built topographic survey shall be provided to the Engineer to verify conformance with the Drawings and Specifications. Each subbase shall be accepted by the Liner Installer and Engineer in writing before placement of the next layer. [Spec. 02776-1.04.J; CQAP 6.1.3]

h. During the construction of, and until the geomembrane is placed on the subbase, the subbase shall be inspected daily for signs of desiccation, excessive moisture, or other damage. [Spec. 02221-3.03.J.] In the event that the condition of the subbase deteriorates, corrective actions shall be implemented immediately. Washouts or erosion of the geomembrane subbase shall be repaired immediately.

SPECIFIC CONDITIONS:

(Specific Condition #11, cont'd)

i. No geomembrane shall be placed in an area that has become softened by precipitation or desiccated and cracked due to lack of moisture.

[Spec. 02221-3.03.J.] No standing water or excessive moisture shall be allowed on the area to be lined before the geomembrane installation.

j. The geocomposite drainage material (CDN) and geotextile shall be handled (stored, placed, etc.) in a manner which prevents the infiltration of dirt and protects the CDN and geotextile from abrasion, punctures and excessive moisture.

k. The transmissivity of the geocomposite drainage material shall be a minimum of $3.7 \times 10^{-3} \text{ m}^2/\text{sec}$ based upon a gradient of 2% and a normal load of 10,000 psf. [Spec. 02930-Table 3]

l. The minimum interface friction angle for the geocomposite/geomembrane shall be 21 degrees. The minimum interface friction angle for the cover soil/geocomposite shall be 21 degrees. [Spec. 02930-Table 3]

12. Leachate collection and removal system.

a. HDPE pipe or fittings shall not be dropped during loading, unloading or placement.

b. Under no circumstances shall pipe be laid in water, and no pipe shall be laid when trench or weather conditions are unsuitable for such work.

c. Visible wires in the processed waste tires shall be limited in size in order to prevent adverse impacts to the bottom liner system. [Spec. 02220-2.06.A.]

13. Soil Materials.

a. The subgrade shall be compacted to a minimum of 95% Standard Proctor density. [Spec. Table 02220-3] The subgrade surface shall be free of rocks, debris, and sharp objects larger than 1-inch in any dimension, organic materials and other deleterious materials. [Spec. 02200-2.02.A.] Rocks (greater than $\frac{1}{4}$ inch in any dimension), sticks (greater than $\frac{1}{4}$ inch in diameter), roots, debris or any other deleterious materials shall not be used within 6 inches of the surface upon which the subbase will be installed. [Spec. 02221-3.01.B.]

b. The protective cover soil/sand shall have a minimum permeability of $1 \times 10^{-3} \text{ cm/sec}$ and shall be compacted to a minimum 95% of standard proctor for the laboratory tests. [Spec. 02220-2.05.A.]

c. Soil materials (including river rock) which contact geosynthetics (above or below) shall not contain any sharp or angular objects exceeding $\frac{1}{4}$ inch in diameter.

d. The compacted subbase shall have a maximum hydraulic conductivity of $1 \times 10^{-5} \text{ cm/sec}$. The subbase shall be free from roots, rubbish or debris, rocks (greater than $\frac{1}{4}$ inch in any dimension), sticks (greater than $\frac{1}{4}$ inch in diameter), calcareous deposits or any other deleterious material. [Spec. 02221-2.01.B.]

SPECIFIC CONDITIONS:

14. **Laboratory and Field Testing Requirements.** Field and laboratory testing during the construction activities shall be conducted by a qualified testing laboratory, independent of the manufacturer or installer, representing the owner. A qualified field technician representing the owner shall provide full time, on-site inspection during construction. The field technician shall work under the supervision of a professional engineer registered in the State of Florida with experience in landfill liner construction.

15. **Certification of Construction Completeness.** Within sixty (60) days after construction has been completed and prior to the acceptance of waste, the following activities shall be completed:

a. The owner or operator shall submit a Certification of Construction Completion, Form 62-701.900(2), signed and sealed by the professional engineer in charge of construction and quality assurance to the Department for approval, and shall arrange for Department representatives to inspect the construction in the company of the permittee, the engineer, and the facility operator.

b. The owner or operator shall submit Record Drawings showing all changes (i.e. additions, deletions, revisions to the plans previously approved by the Department including site grades and elevations).

c. The owner or operator shall submit a narrative indicating all changes in plans, the cause of the deviations, and certification of the Record Drawings/Documents by the Engineer to the Department.

d. The Groundwater Monitoring System requirements listed in Specific Condition #18 shall be complete.

e. The professional engineer in charge of construction quality assurance shall submit to the Department a final report to verify conformance with the plans and specifications in accordance with Rules 62-701.400(7) and (8), F.A.C.

16. **Record Drawings/Documents.**

a. The Record Documents shall include as-built surveys which demonstrate that the lowest elevation of the cell floor has been constructed **no lower than +131.5 feet NGVD** (southwest portion), or as otherwise approved by the Department.

b. The Record Drawings/Documents shall include, but not be limited to, the following information:

- 1) All anchor trenches,
- 2) As-built elevations for the leachate collection pipes (including elevations in the trenches and inverts) and ditch elevations;
- 3) Daily construction reports ;
- 4) As-built drawings showing the geomembrane panel installation layout, locations of fabricated and field seams, type of seams, destructive sampling locations, locations of all repairs, panel designations;
- 5) All geomembrane destructive test results;

SPECIFIC CONDITIONS:

(Specific Condition #16.b., cont'd)

6) Documentation that demonstrates that all leachate collection system piping has been video inspected and/or pressure cleaned.

[Spec. 15080-1.02.G.] This documentation shall also detail all deficiencies discovered and corrective actions taken;

7) results of interface friction angle testing [Spec. 02930-Table 3];

8) final report from leak detection company regarding integrity of primary liner [Spec. 02776-1.01.E].

17. Facility Operation Requirements.

a. Operation of this facility is not authorized by this permit.

b. In no event shall waste be accepted at the facility until the following requirements have been completed and submitted by the Permittee, and approved by the Department:

1) Certification of Construction Completion requirements of Specific Conditions #15 and #16,

2) a separate operation permit or substantial modification to permit 35435-007-SO,

3) financial assurance requirements of Specific Condition #24, and

4) construction of the sedimentation basins.

18. Piezometer Abandonment. Existing piezometers P-3S and P-3D shall be abandoned prior to the initiation of construction activities at Section 8. The locations of these piezometers are shown on Figure M-1 prepared by SCS Engineers, received February 9, 2004 (attached). These locations shall be plugged and abandoned in accordance with Rule 62-532.440, F.A.C., and the rules of the Southwest Florida Water Management District. The written documentation of piezometer abandonment shall be included in the Certification of Construction Completion described in Specific Conditions #15 and #16.

19. Water Quality, Leachate and Gas Monitoring. The documents listed in Specific Condition #2 do not include procedures for water quality, gas or leachate monitoring. However, since this permit authorizes construction only, water quality, leachate and gas monitoring are not required for Section 8 as part of this permit. This information shall be included in the modification or operation permit application required by Specific Condition #3.b., above.

20. Report Submittals. Unless otherwise specified, all reports for compliance with this permit shall be sent to: Solid Waste Section, Department of Environmental Protection, Southwest District Office, 3804 Coconut Palm Drive, Tampa, Florida 33619-8318.

21. Stormwater Management. The site shall have a surface water management system operated and maintained to prevent surface water flow on to waste filled areas, and a stormwater runoff control system operated and maintained to collect and control stormwater to meet the requirements of Florida Administrative Code Rule 62-330, any other applicable Department rules, and the requirements of the respective water management district.

SPECIFIC CONDITIONS:

22. **Closing and Long-Term Care Requirements.** The documents listed in Specific Condition #2 do not include procedures for closing and long-term monitoring and maintenance. This information shall be submitted as part of the permit or modification required by Specific Condition #3.b.
23. **Financial Assurance.** The owner or operator shall provide adequate financial assurance for the Class I Landfill in accordance with Rule 62-701.630, F.A.C. This information shall be submitted as part of the permit or modification required by Specific Condition #3.b.
24. **Control of Nuisance Conditions.** The operating authority shall be responsible for the control of odors and fugitive particulates (dust) arising from this construction. Such control shall minimize the creation of nuisance conditions on adjoining property. Complaints received from the general public, and confirmed by Department personnel upon site inspection, shall constitute a nuisance condition, and the permittee must take immediate corrective action to abate the nuisance. The owner or operator shall control disease vectors so as to protect the public health and welfare.
25. **Facility Maintenance and Repair.**
- a. The site shall be properly maintained including maintenance of equipment, stormwater systems, cover systems, liner and leachate collection and removal systems, groundwater monitoring system, and the prevention of erosion and ponded water in disposal areas.
 - b. In the event of damage to any portion of the landfill site facilities, failure of any portion of the landfill systems, fire, explosion, or the development of sinkhole(s) at the site, the permittee shall **immediately (within 24 hours)** notify the Department explaining such occurrence and remedial measures to be taken and time needed for repairs. Written, detailed notification shall be submitted to the Department **within seven (7) days** following the occurrence.
 - c. In the event that any portion of the groundwater monitoring system is damaged, a plan for corrective action shall be submitted in accordance with Specific Condition #25.b. Corrective actions which include relocation or installation of new groundwater monitoring wells shall be in accordance with Specific Condition #26, or as otherwise approved by the Department.
 - d. In the event that the stormwater system is damaged or is not operating effectively, corrective actions shall be implemented **within thirty (30) days** of the written notification specified in Specific Condition #25.b., unless otherwise approved by the Department.
26. **Ground Water Monitor Well Construction.** The following information shall be submitted for all new or replacement wells:
- a. Prior to construction of all new or replacement wells the permittee shall request and receive Department approval of a minor permit modification.
 - b. **Within 90 days of installation (or within 90 days of discovery)** construction details (record drawings) for all new or replacement monitor wells, piezometers and supply wells shall be provided to the Department's Southwest District Office on Department Form No. 62-522.900(3), Monitor Well Completion Form (attached).
 - c. **Within one week of well completion and development**, each new monitor well shall be sampled for the parameters listed in Rules 62-701.510(8)(a) and 62-701.510(8)(d), F.A.C.

SPECIFIC CONDITIONS:

(Specific Condition #26, cont'd)

d. Within 90 days of well installation (or within 90 days of discovery) surveyed drawing(s) shall be submitted in accordance with Rule 62-701.510(3)(d)(1), F.A.C., showing the location of all monitor wells, piezometers and supply wells (active and abandoned), horizontally located in degrees, minutes and seconds of latitude and longitude, and showing the elevation of the top of the well casing to the nearest 0.01 foot, National Geodetic Vertical Datum. The surveyed drawing shall include the well or piezometer identification numbers, and the locations and elevations of all permanent benchmarks and/or corner monument markers at the site. The survey shall be conducted by a Florida Registered Surveyor.

27. **Professional Certification.** Where required by Chapter 471 (P.E.) or Chapter 492 (P.G.), Florida Statutes, applicable portions of permit applications and supporting documents which are submitted to the Department for public record shall be signed and sealed by the professional(s) who prepared or approved them.

28. **General Conditions.** The permittee shall be aware of and operate under the "General Conditions". General Conditions are binding upon the permittee and enforceable pursuant to Chapter 403, Florida Statutes.

29. **Permit Acceptance.** By acceptance of this Permit, the Permittee certifies that he/she has read and understands the obligations imposed by the Specific and General Conditions contained herein, including date of permit expiration and renewal deadlines. It is a violation of this permit for failure to comply with all conditions and deadlines.

30. **Regulations.** Chapter 62-701, F.A.C., effective May 27, 2001, is incorporated into this permit by reference. In the event that the regulations governing this permitted operation are revised, the Department shall notify the permittee, and the permittee shall request modification of those specific conditions which are affected by the revision of regulations to incorporate those revisions.

Executed in Tampa, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION


Deborah A. Getzoff
District Director
Southwest District

ATTACHMENT 1

Specific Condition	Submittal Due Date	Required Item
4	180 days prior to permit renewal	Submit permit renewal application
5.a.	Within 72 hours of discovery	Notification of limestone occurrence
	Within 7 days of verbal notification	Written notification
5.b., 27.b.	Within 24 hours of discovery	Notification of: sinkholes, hazardous waste receipt, failure of landfill systems or equipment
	Within 7 days of verbal notification	Written notification
6.a.	30 days prior to initiation of construction	Submit: complete plans, specs., CQAP, calculations, revised or new drawings,
6.b.	7 days prior to construction	Submit org. chart, dewatering plan
7	1 week prior	Notification of pre-construction meeting
	Within 2 weeks of meeting	Submit minutes of meeting
8.a.	15 days after preconstruction meeting	Submit construction schedule
8.b.	Monthly, by the 15 th each month	Submit construction progress reports
15., 16,	Within 60 days of completion of construction and prior to operation	Submit: Certification of Construction Completion, narrative describing deviations from plans, record drawings/documents, as-built surveys, interface friction testing results, leak detection report, LCS videotape/cleaning report, piezometer abandonment documentation
18	Prior to initiation of construction	Abandon P-3S and P-3D.
20.b.	Within 90 days of well installation	Submit monitor well completion report
20.c.	Within 1 week of well completion and development	Sample well
20.d.	Within 90 days of well installation	Submit survey showing location of well
27.d.	Within 30 days of written notification	Implement corrective actions for stormwater management system

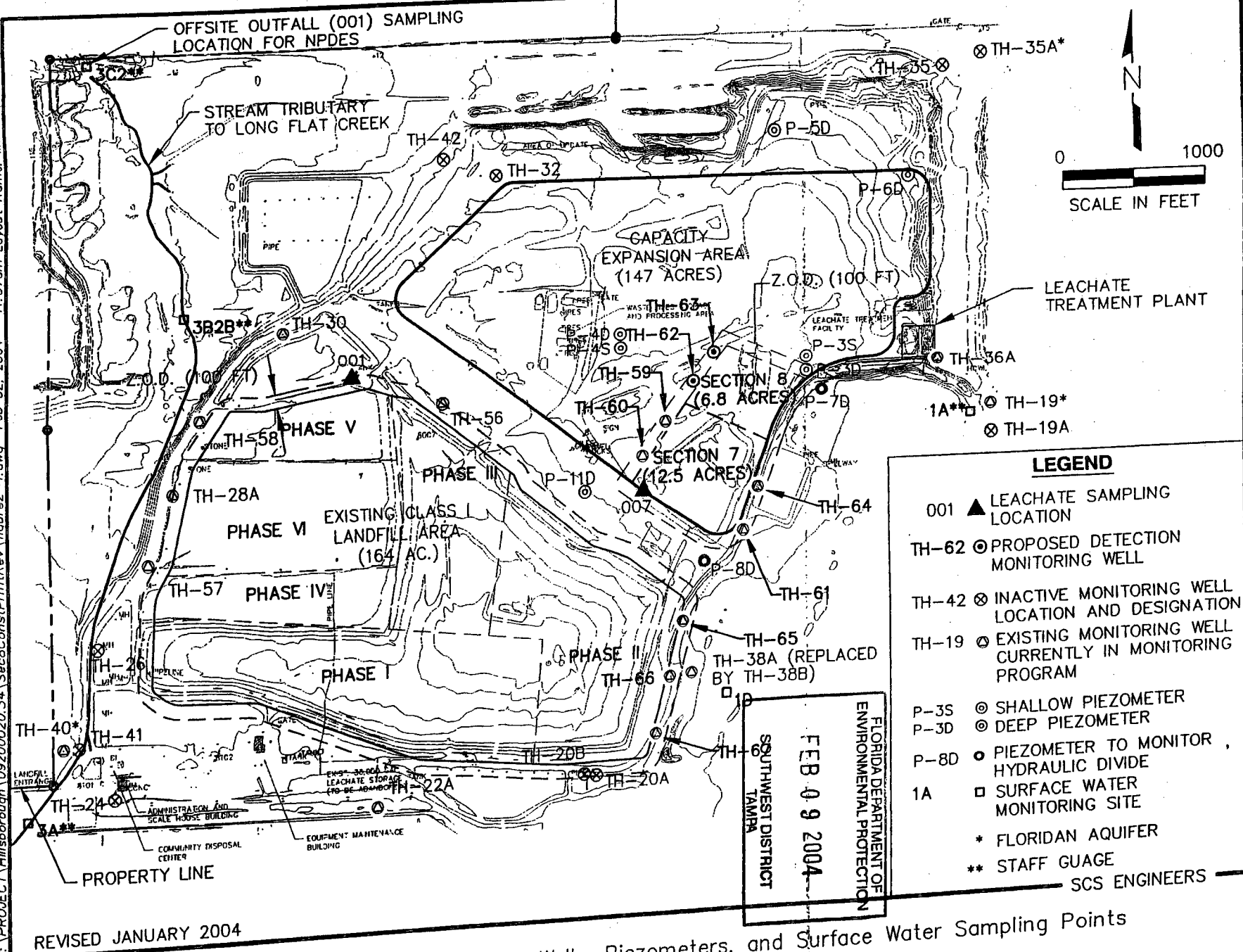


Figure M-1. Location of Monitoring Wells, Piezometers, and Surface Water Sampling Points Southeast County Facility, Hillsborough County, Florida

Florida Department of Environmental Protection
Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

DEP Form # 62-522.900(3)
Form Title <u>MONITOR WELL COMPLETION REPORT</u>
Effective Date _____
DEP Application No. _____ (Filled in by DEP)

MONITOR WELL COMPLETION REPORT

LOCATION NAME: _____

PERMIT NUMBER: _____ GMS NUMBER: _____

WELL NUMBER: _____ WELL NAME: _____

LOCATION: Background _____ Immediate _____ Compliance _____

UTM COORDINATE/LONGITUDE: _____

WELL DEPTH MONITORED: _____

INSTALLATION METHOD: _____

INSTALLED BY: _____

WELL DEPTH: _____ DEPTH OF SCREEN: _____ (bls)

SCREEN LENGTH: _____ SCREEN SLOT SIZE: _____ SCREEN TYPE: _____

WELL DIAMETER: _____ CASING TYPE: _____

DEPTH OF CASING: _____ FILTER PACK MATERIAL: _____

DEPTH OF CASING ELEVATION (MSL): _____

GROUND SURFACE ELEVATION (MSL): _____

COMPLETION DATE: _____

WELL DEVELOPMENT: _____

WATER LEVEL DEVELOPMENT WATER LEVEL ELEVATION (MSL): _____

TIME AND TIME MEASURED: _____

REMARKS: (soils information, stratigraphy, etc.): _____

REPORT PREPARED BY: _____
(name, company, phone number)

NOTE: PLEASE ATTACH BORING LOG.

(bls)= Below Land Surface

DEP Form # <u>62-522.900(2)</u>
Form Title <u>Ground Water Monitoring Report</u>
Effective Date _____
DEP Application No. _____

Florida Department of Environmental Protection
Twin Towers Office Bldg. 2600 Blair Stone Road Tallahassee, Florida 32399-2400

GROUND WATER MONITORING REPORT

Rule 62-522.600(11)

ART I GENERAL INFORMATION

Facility Name _____

Address _____

City _____ Zip _____

Telephone Number () _____

The GMS Identification Number _____

DEP Permit Number _____

Authorized Representative Name _____

Address _____

City _____ Zip _____

Telephone Number () _____

Type of Discharge _____

Method of Discharge _____

Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature: _____

Signature of Owner or Authorized Representative

ART II QUALITY ASSURANCE REQUIREMENTS

Sample Organization _____ Comp QAP # _____

Analytical Lab _____ Comp QAP # /HRS Certification # _____

*Comp QAP # /HRS Certification # _____

Lab Name _____

Address _____

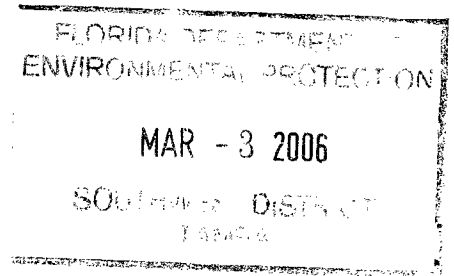
Telephone Number () _____

ART III ANALYTICAL RESULTS

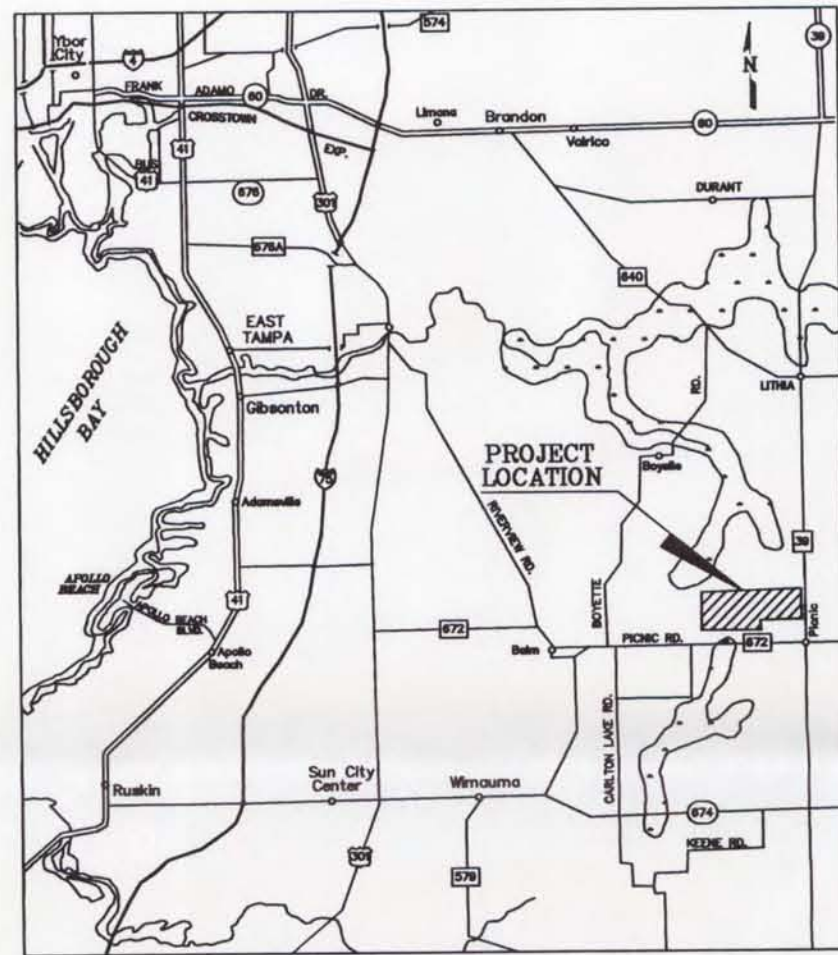
SECTION 2

PRECONSTRUCTION

In accordance with the specifications, Pickett and Associates completed a preconstruction survey. The preconstruction survey is contained in Attachment 2-1 in this section.



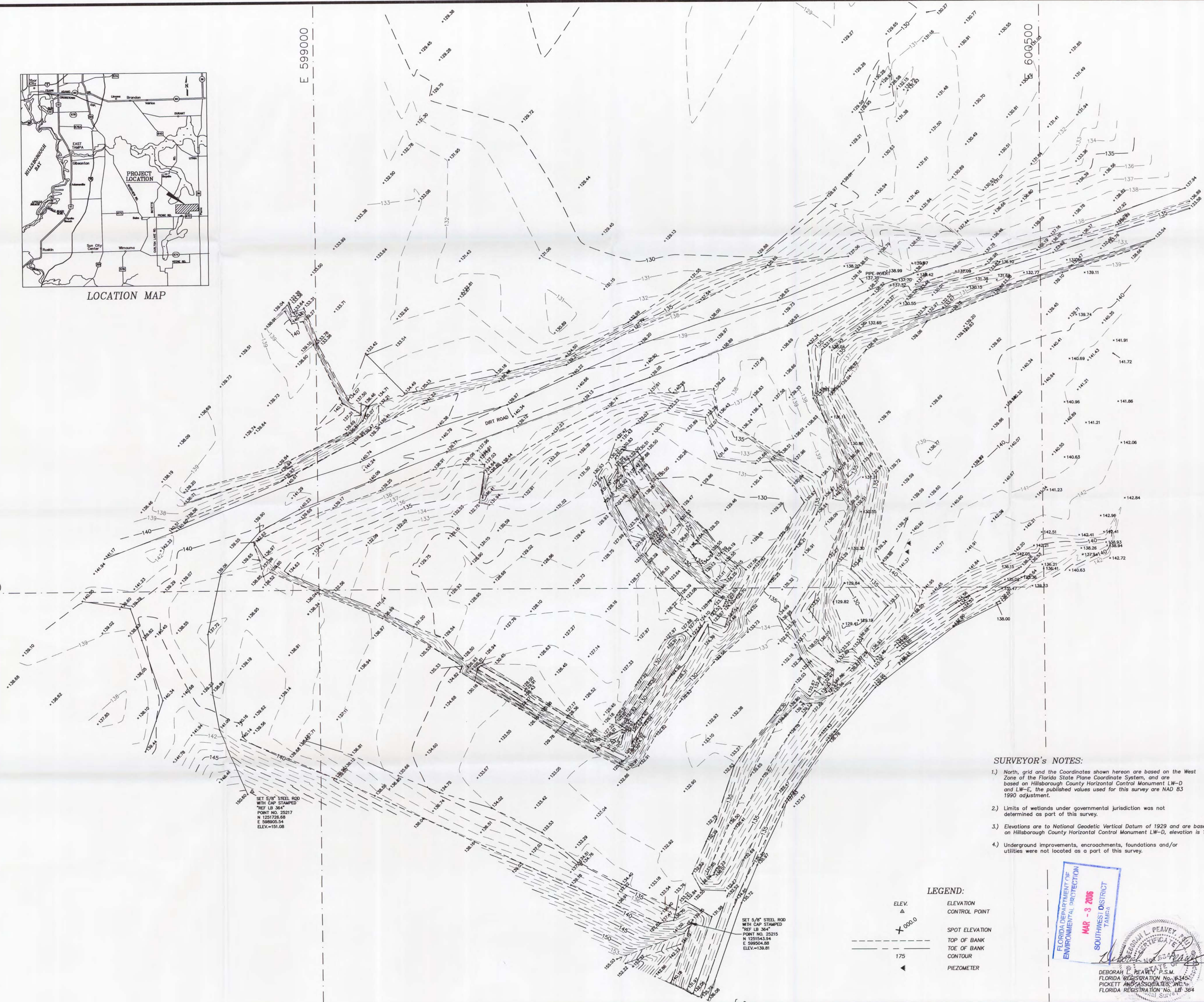
ATTACHMENT 2-1
PRECONSTRUCTION SURVEY



LOCATION MAP

N 1252000

E 599000

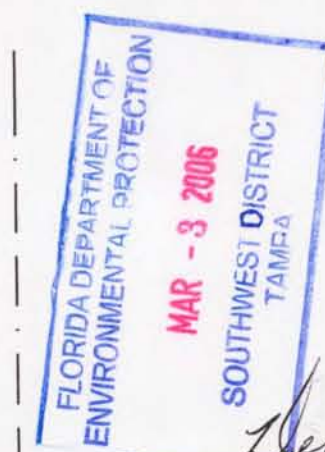


SURVEYOR'S NOTES:

- 1.) North, grid and the Coordinates shown hereon are based on the West Zone of the Florida State Plane Coordinate System, and are based on Hillsborough County Horizontal Control Monument LW-D and LW-E, the published values used for this survey are NAD 83 1990 adjustment.
- 2.) Limits of wetlands under governmental jurisdiction was not determined as part of this survey.
- 3.) Elevations are to National Geodetic Vertical Datum of 1929 and are based on Hillsborough County Horizontal Control Monument LW-D, elevation is 118.68'
- 4.) Underground improvements, encroachments, foundations and/or utilities were not located as a part of this survey.

LEGEND:

- ELEV. 000.0
- ELEVATION CONTROL POINT
- SPOT ELEVATION
- TOP OF BANK
- TOE OF BANK
- CONTOUR
- PIEZOMETER



DEBORAH L. PEAVEY, P.S.M.
FLORIDA REGISTRATION NO. 6345
PICKETT & ASSOCIATES, INC.
FLORIDA REGISTRATION NO. LB 364

1/29/2005
DATE OF FIELD SURVEY

SE LANDFILL-SECTION 8 EXPANSION
TOPOGRAPHIC SURVEY
LOCATED IN SECTION 24, TOWNSHIP
31 SOUTH, RANGE 21 EAST
PREPARED FOR: ERC

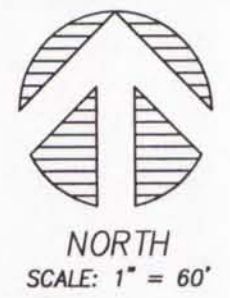
PROJECT No.	13551	No.	1
DRAWING No.	LD 2843	OF	1

PICKETT & ASSOCIATES, Inc.
Surveyors • Photogrammetrists • Engineers
475 South First Avenue
Bartow, Florida 33830
Phone: (863) 533-9095
Fax: (863) 534-1464



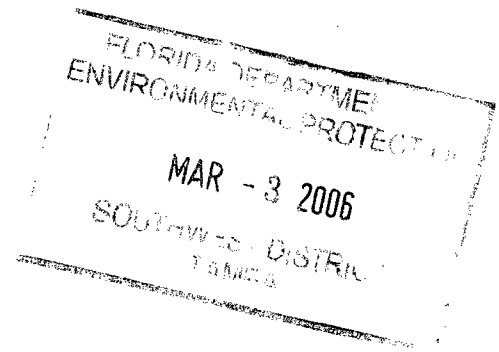
NOT VALID WITHOUT THE
SIGNATURE AND THE
ORIGINAL RAISED SEAL
OF A FLORIDA LICENSED
SURVEYOR AND MAPPER

REVISION	DATE	APPROVED	NO.
FIRST ISSUE	1/31/05	D.L.P.	1
REVISED TO SHOW ADDITIONAL TOPO	2/7/05	D.L.P.	2
REVISED TO SHOW ADDITIONAL TOPO	2/15/05	D.L.P.	3



SECTION 3
EXCAVATION

In accordance with the specifications, Pickett and Associates completed an excavation survey. The excavation survey through September 30, 2005 is included in Attachment 3-1 in this section.

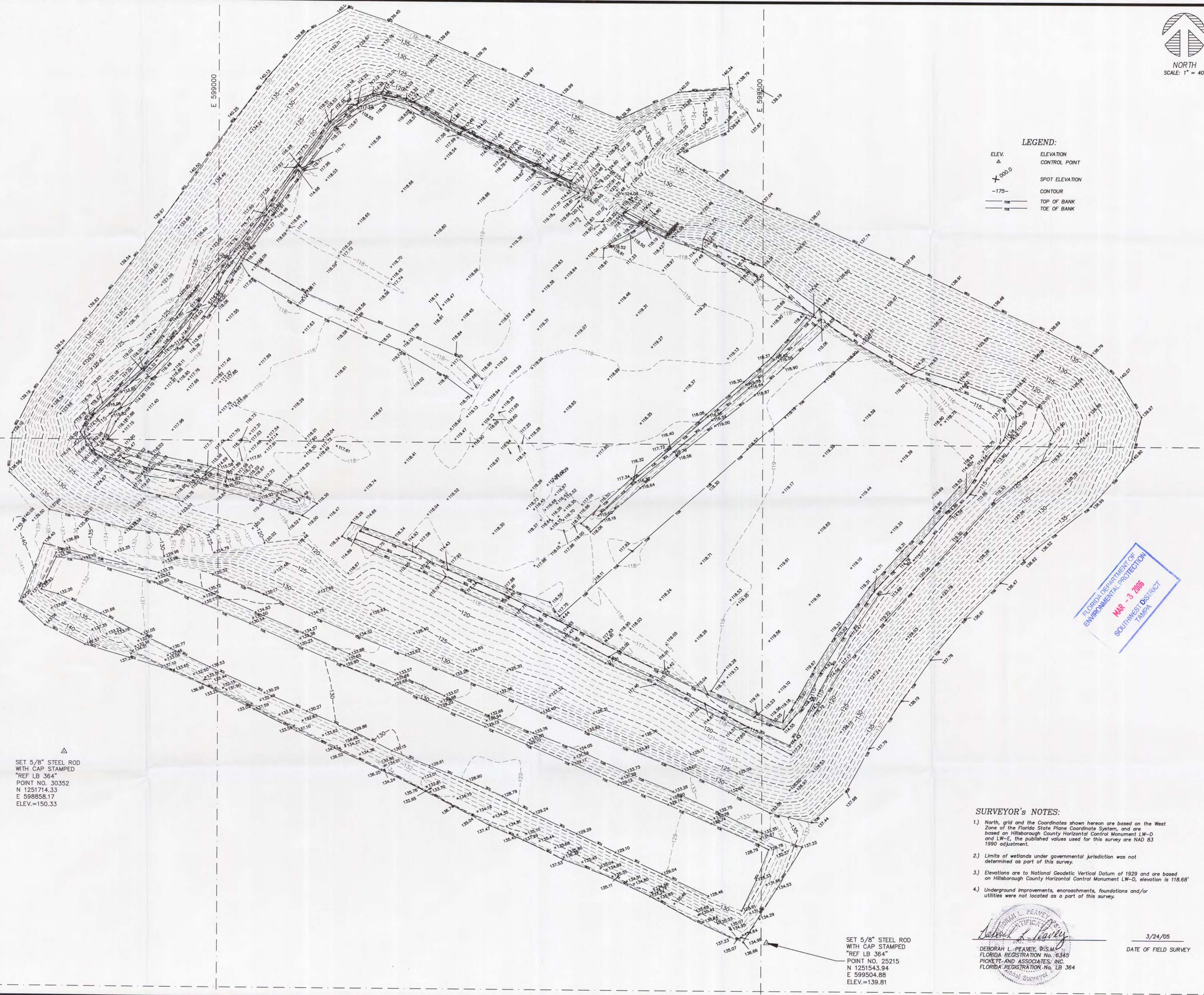


ATTACHMENT 3-1
EXCAVATION SURVEY



LEGEND:
ELEV. Δ ELEVATION CONTROL POINT
+000.0 SPOT ELEVATION
-175- CONTOUR
TOP OF BANK
TOE OF BANK

N 1252000



SET 5/8" STEEL ROD
WITH CAP STAMPED
"REF LB 364"
POINT NO. 30352
N 1251714.33
E 598858.17
ELEV.=150.33

SURVEYOR'S NOTES:
1.) North, grid and the Coordinates shown hereon are based on the West Zone of the Florida State Plane Coordinate System, and are based on Hillsborough County Horizontal Control Monument LW-D and LW-E, the published values used for this survey are NAD 83 1990 adjustment.
2.) Limits of wetlands under governmental jurisdiction was not determined as part of this survey.
3.) Elevations are to National Geodetic Vertical Datum of 1929 and are based on Hillsborough County Horizontal Control Monument LW-D, elevation is 118.68' 1990 adjustment.
4.) Underground improvements, encroachments, foundations and/or utilities were not located as a part of this survey.

DEBORAH L. PEAVEY, P.S.M.
FLORIDA REGISTRATION No. 6345
PICKETT AND ASSOCIATES, INC.
FLORIDA REGISTRATION No. LB 364
Professional Surveyor

3/24/05
DATE OF FIELD SURVEY

N 1251500

SE LANDFILL-SECTION 8 EXPANSION

TOPOGRAPHIC SURVEY

LOCATED IN SECTION 24, TOWNSHIP
31 SOUTH, RANGE 21 EAST
PREPARED FOR: ERC

PROJECT No.	No.
13551	1
DRAWING No.	OF
LD 2897	1

REVISION	DATE	APPROVED	NO.	NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER
FIRST ISSUE	3/25/05	D.L.P.	1	
REVISED TO SHOW ADDITIONAL TOPO	3/25/05	D.L.P.	2	
REVISED TO SHOW ADDITIONAL TOPO	4/19/05	D.L.P.	3	

PICKETT & ASSOCIATES, Inc.
Surveyors • Photogrammetrists
Barrow, Florida 33830
475 South First Avenue
Phone: (863) 533-9085
Fax: (863) 534-1464

CHECKED BY: DLP
DRAWN BY: DLP
FIELD BOOK(S): 482
PAGE(S): 98
HORIZ. SCALE: 1" = 40'
VERT. SCALE: N/A

SECTION 4

BACKFILL AND COMPACTION OF SECTION 8 CELL FOUNDATION

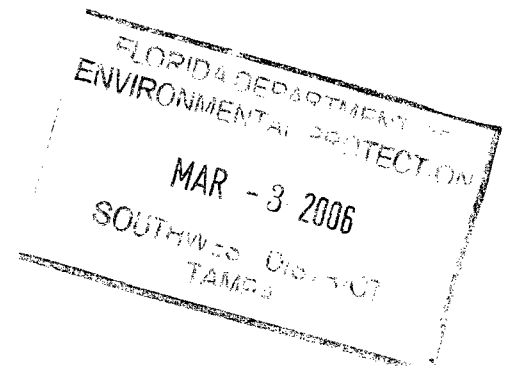
4.1 BACKFILL AND COMPACTION SURVEY

In accordance with specifications, Pickett and Associates completed a subgrade survey. The subgrade survey is contained in Attachment 4-1 in this section.

4.2 CQC CONSULTANT PARTIAL REPORT

As part of the specifications, the CQC consultant, Burcaw and Faulkner were required to perform conformance testing on the backfill material prior to placement and during placement.

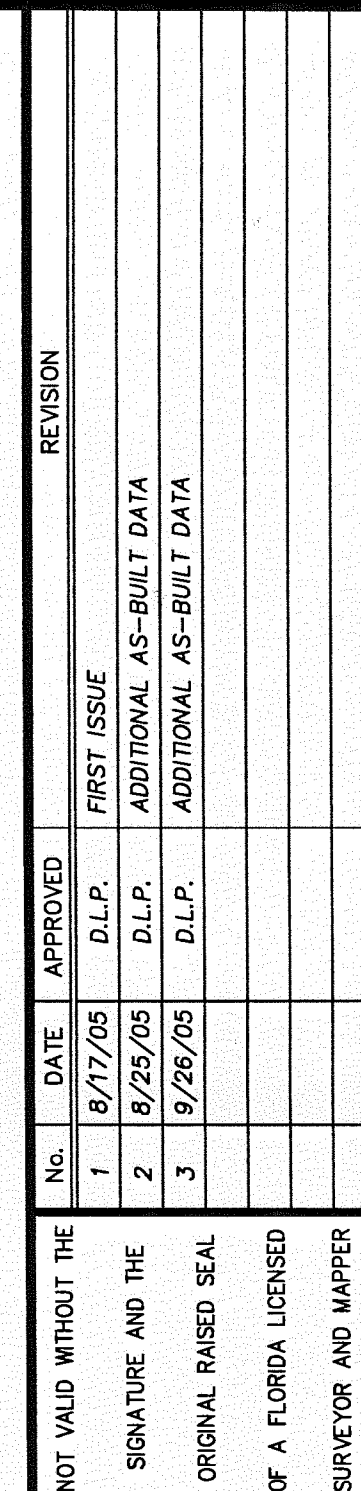
The location of test points per lift and test results are included in Attachment 4.2 and 4.3, respectively.



ATTACHMENT 4-1
BACKFILL SURVEY

ATTACHMENT 4-2

**DRAWINGS OF TESTING POINTS PER LIFT
DRAWINGS BOUND SEPARATELY**

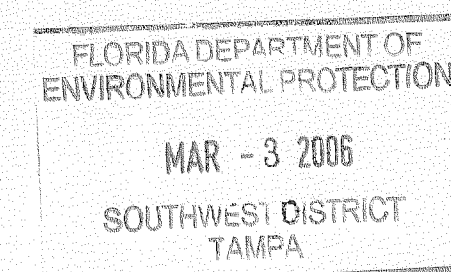


ELEV. Δ	ELEVATION CONTROL POINT
+ 923 138.42 1268	SPOT ELEVATION P&A POINT NUMBER, ELEVATION ERC POINT NUMBER
⊕ 923 138.42 1268	SPOT ELEVATION ON TEST PAD P&A POINT NUMBER, ELEVATION ERC POINT NUMBER

SET 5/8" STEEL ROD
WITH CAP STAMPED
"REF LB 364"
POINT NO. 40853
N 1252007.42
E 599867.55
ELEV.=141.55

SET 5/8" STEEL ROD
WITH CAP STAMPED
"REF LB 364"
POINT NO. 30352
N 1251714.33
E 598858.17
ELEV.=150.33

- 1) North, grid and the Coordinates shown hereon are based on the West Zone of the Florida State Plane Coordinate System, and are based on provided Hillsborough County Horizontal Control Monument LW-D and LW-E, the published values used for this survey are NAD 83 1990 adjustment.
- 2) Limits of wetlands under governmental jurisdiction was not determined as part of this survey.
- 3) Elevations are to National Geodetic Vertical Datum of 1929 and are based on provided Hillsborough County Horizontal Control Monument LW-D, elevation is 118.68'
- 4) Underground improvements, encroachments, foundations and/or utilities were not located as a part of this survey.



DEPARTMENT OF PUBLIC SAFETY
STATE OF MICHIGAN
JAN 1 1964

DATE OF FIELD SURVEY _____

DEBORAH L. PEAVEY, P.S.M.
FLORIDA REGISTRATION No. 6345
PICKETT AND ASSOCIATES, INC.
FLORIDA REGISTRATION No. LB 364

SE LANDFILL-SECTION 8 EXPANSION

AS-BUILT SURVEY

LOCATED IN SECTION 24, TOWNSHIP
31 SOUTH, RANGE 21 EAST
PREPARED FOR: ERC

PROJECT No.	No.
13551	1
DRAWING No.	OF
LD 3050	1

ATTACHMENT 4-3
BURCAW / FAULKNER DENSITY REPORTS
AND
PROCTOR TEST RESULTS

BACKFILL DENSITY TEST LOG

Capacity Expansion Section 8

Southeast County Landfill

Hillsborough County, Florida

Proctors Std P-3 103.1

Std P-8 105.9

TEST NO. in Red SCS has Final Report from Burcaw

TEST NO. in Blue SCS has Final Report from Faulkner

Test No.

Lift 1			Lift 2			Lift 3			Lift 4			Lift 5			
%	Pass/Fail	Date	%	Pass/Fail	Date	%	Pass/Fail	Date	%	Pass/Fail	Date	%	Pass/Fail	Date	
1	98	P	4/4/05	100	P	4/11/05	98	P	4/12/05	99.7	P	4/18/05	99	P	4/28/05
2	99.1	P	4/4/05	97	P	4/11/05	98	P	4/12/05	102	P	4/18/05	98	P	4/28/05
3	97.4	P	4/4/05	100	P	4/8/05	100	P	4/13/05	99	P	4/18/05	100	P	4/28/05
4	99.2	P	4/4/05	98	P	4/11/05	99	P	4/13/05	101	P	4/18/05	98	P	4/28/05
5	99.3	P	4/4/05	99.4	P	4/11/05	101	P	4/14/05	102	P	4/18/05	99	P	4/28/05
6	95	P	4/6/05	100	P	4/12/05	98	P	4/14/05	101	P	4/18/05	98	P	4/28/05
7	98	P	4/6/05	99	P	4/12/05	99	P	4/14/05	99	P	4/19/05	99	P	4/28/05
8	100	P	4/6/05	99	P	4/12/05	99	P	4/14/05	101	P	4/19/05	97	P	4/28/05
9	98	P	4/6/05	100	P	4/12/05	100	P	4/15/05	99	P	4/19/05	98	P	4/28/05
10	98	P	4/6/05	98	P	4/12/05	99	P	4/15/05	100	P	4/21/05	98	P	4/28/05
11	97	P	4/7/05	97	P	4/12/05	100	P	4/15/05	101	P	4/21/05	97	P	4/28/05
12	100	P	4/7/05	98	P	4/12/05	97	P	4/15/05	101	P	4/21/05	100	P	5/3/05
13	97	P	4/8/05	100	P	4/12/05	99	P	4/15/05	102	P	4/22/05	98	P	5/3/05
14	100	P	4/8/05	99	P	4/12/05	100	P	4/15/05	99	P	4/22/05	98	P	5/3/05
15	97	P	4/8/05	98	P	4/12/05	98	P	4/15/05	100	P	4/22/05	96	P	5/3/05
16	98	P	4/18/05	100	P	4/19/05	102	P	4/20/05	99	P	5/13/05	100	P	5/13/05
17	100	P	5/9/05	98	P	4/19/05	100	P	4/20/05	97	P	5/16/05	98	P	5/16/05
18	97	P	5/13/05	98	P	5/13/05	99	P	5/13/05	98	P	6/9/05	100	P	6/9/05
19	97	P	5/16/05	98	P	5/16/05	97	P	5/16/05	100	P	6/9/05	100	P	6/9/05
20	100	P	5/23/05	99	P	5/27/05	99	P	5/27/05	99	P	6/9/05	97	P	6/18/05
21	99	P	5/27/05	98	P	5/27/05	100	P	5/27/05				98	P	7/11/05
22	99	P	5/27/05	98	P	5/28/05	99	P	6/9/05				97	P	7/26/05
23				98	P	5/28/05	98	P	6/18/05						

Test No.

Lift 6			Lift 7			Lift 8			Lift 9			Lift 10			
%	Pass/Fail	Date	%	Pass/Fail	Date	%	Pass/Fail	Date	%	Pass/Fail	Date	%	Pass/Fail	Date	
1	100	P	5/6/05	100	P	5/9/05	98	P	5/13/05	99	P	5/16/05	99	P	5/16/05
2	101	P	5/6/05	99	P	5/9/05	99	P	5/17/05	97	P	5/16/05	100	P	5/16/05
3	100	P	5/6/05	100	P	5/9/05	100	P	5/24/05	99	P	5/28/05	95	P	5/28/05
4	102	P	5/6/05	98	P	5/9/05	98	P	5/24/05	99	P	5/28/05	97	P	6/22/05
5	101	P	5/6/05	99	P	5/9/05	99	P	5/24/05	98	P	6/15/05	101	P	6/22/05
6	98	P	5/10/05	97	P	5/13/05	99	P	5/24/05	98	P	6/15/05	98	P	6/22/05
7	99	P	5/10/05	98	P	5/13/05	98	P	5/24/05	99	P	6/15/05	104	P	6/22/05
8	100	P	5/10/05	98	P	5/13/05	99	P	5/24/05	99	P	6/15/05	98	P	6/22/05
9	99	P	5/10/05	99	P	5/13/05	100	P	5/24/05	97	P	6/15/05	97	P	6/22/05
10	99	P	5/10/05	95	P	5/13/05	99	P	5/24/05	100	P	6/15/05	98	P	6/27/05
11	97	P	5/11/05	100	P	5/13/05	99	P	5/24/05	99	P	6/15/05	96	P	6/27/05
12	97	P	5/11/05	100	P	5/13/05	99	P	5/24/05	100	P	6/15/05	99	P	6/27/05
13	96	P	5/11/05	99	P	5/17/08	99	P	5/24/05	97	P	6/15/05	96	P	6/27/05
14	98	P	5/13/05	100	P	5/17/05	98	P	5/24/05	97	P	6/18/05	98	P	6/27/05
15	95	P	5/17/05	97	P	5/19/05	99	P	5/24/05	98	P	6/18/05	99	P	6/27/05
16	100	P	6/9/05	99	P	5/19/05	98	P	5/24/05	99	P	6/18/05	97	P	6/27/05
17	101	P	6/9/05	98	P	5/19/05	98	P	5/24/05	98	P	6/22/05	95	P	6/27/05
18	100	P	7/11/05	99	P	5/19/05	98	P	5/27/05	99	P	6/22/05	96	P	6/27/05
19	99	P	7/26/05	98	P	5/19/05	98	P	5/27/05	98	P	6/22/05	97	P	6/27/05
20	97	P	8/1/05	98	P	5/19/05	99	P	6/9/05	101	P	6/22/05	99	P	6/27/05
21				97	P	5/19/05	100	P	6/9/05	96	P	6/22/05	99	P	7/8/05
22				101	P	6/9/05				97	P	6/22/05	99	P	7/8/05
23				100	P	6/9/05				97	P	6/27/05	100	P	7/28/05
24										97	P	6/27/05	98	P	7/30/05
25										99	P	6/27/05	99	P	8/1/05
26										98	P	7/28/05			
27										100	P	8/1/05			

**Capacity Expansion Section 8
Southeast County Landfill
Hillsborough County, Florida**

TEST NO. in Red SCS has Final Report from Burcaw

[illegible]

**Capacity Expansion Section 8
Southeast County Landfill
Hillsborough County, Florida**

TEST NO. in Red SCS has Final Report from Burcaw

[illegible]

FAULKNER

Faulkner Engineering Services, Inc.

12904 Dupont Circle, Tampa, Florida 33626

813-818-8307 Office

813-818-8381 Fax

www.faulknereng.com

Southeast County Landfill, Section 8

Hillsborough County, Florida

Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date: April 11, 2005

Project Number: 05-013

REPORT OF FIELD DENSITY TEST

Report Number: Fill 1

BUILDING PAD - Test Referenced from Subgrade

95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required

General Fill Test Number	Lift of Fill Tested	Landfill General Fill Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
1	1, Elev 120	1251850	North	599500	East	P3	103.1	14.0	101.0	98%	Pass
2	1, Elev 120	1251950	North	599500	East	P3	103.1	14.0	102.2	99%	Pass
3	1, Elev 120	1252000	North	599630	East	P3	103.1	14.0	100.4	97%	Pass
4	1, Elev 120	1251900	North	599350	East	P3	103.1	14.2	102.3	99%	Pass
5	1, Elev 119	1251950	North	599225	East	P3	103.1	14.0	102.4	99%	Pass
6	1, Elev 118	1252050	North	599000	East	P3	103.1	16.9	98.3	95%	Pass
7	1, Elev 119	1252090	North	599160	East	P3	103.1	15.5	101.3	98%	Pass
8	1, Elev 119	1252200	North	599080	East	P3	103.1	14.5	103.0	100%	Pass
9	1, Elev 119	1252250	North	599200	East	P3	103.1	14.0	101.0	98%	Pass
10	1, Elev 119	1252150	North	599300	East	P3	103.1	14.2	100.6	98%	Pass
11	1, Elev 119	1252010	North	599190	East	P3	103.1	14.5	99.8	97%	Pass
12	1, Elev 120	1252050	North	599250	East	P3	103.1	17.4	102.9	100%	Pass
13	1, Elev 119	1252020	North	599370	East	P3	103.1	18.4	99.5	97%	Pass
14	1, Elev 119	1252110	North	599440	East	P3	103.1	19.2	102.7	100%	Pass
15	1, Elev 120	1252090	North	599540	East	P3	103.1	17.5	100.2	97%	Pass

Respectfully Submitted,
Faulkner Engineering Services, Inc.

David W. Faulkner, P.E.
Florida Registration No. 50740

Faulkner Engineering Services, Inc.

12904 Dupont Circle, Tampa, Florida 33626
813-818-8307 Office
813-818-8381 Fax
www.faulknereng.com

Southeast County Landfill, Section 8

Hillsborough County, Florida

Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date: April 11, 2005

Project Number: 05-013

REPORT OF FIELD DENSITY TEST

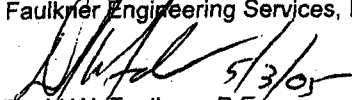
Report Number: Fill 2

BUILDING PAD - Test Referenced from Subgrade

95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required

General Fill Test Number	Lift of Fill Tested	Landfill General Fill Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
1	2, Elev 119	1252160	North	599040	East	P3	103.1	18.0	102.9	100%	Pass
2	2, Elev 121	1252110	North	599160	East	P3	103.1	17.4	100.0	97%	Pass
3	2, Elev 121	1251900	North	599600	East	P3	103.1	14.5	102.8	100%	Pass
4	2, Elev 121	1251920	North	599425	East	P3	103.1	15.5	100.8	98%	Pass
5	2, Elev 121	1252030	North	599530	East	P3	103.1	16.8	102.5	99%	Pass

Respectfully Submitted,
Faulkner Engineering Services, Inc.


David W. Faulkner, P.E.
Florida Registration No. 50740

Faulkner Engineering Services, Inc.

12904 Dupont Circle, Tampa, Florida 33626

813-818-8307 Office

813-818-8381 Fax

www.faulknereng.com

Southeast County Landfill, Section 8

Hillsborough County, Florida

Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date:

April 12, 2005

Project Number:

05-013

REPORT OF FIELD DENSITY TEST

Report Number: Fill 3

BUILDING PAD - Test Referenced from Subgrade

95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required

General Fill Test Number	Lift of Fill Tested	Landfill General Fill Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
6	2, Elev 121	1251820	North	599470	East	P3	103.1	16.8	102.6	100%	Pass
7	2, Elev 120	1251930	North	599270	East	P3	103.1	15.4	101.8	99%	Pass
8	2, Elev 121	1252036	North	599350	East	P3	103.1	17.0	102.2	99%	Pass
9	2, Elev 121	1252172	North	599352	East	P3	103.1	17.4	103.4	100%	Pass
10	2, Elev 120	1252045	North	599250	East	P3	103.1	14.8	101.2	98%	Pass
11	2, Elev 120	1251988	North	599092	East	P3	103.1	13.8	99.8	97%	Pass
12	2, Elev 119	1252070	North	599010	East	P3	103.1	14.4	100.6	98%	Pass
13	2, Elev 120	1252214	North	599232	East	P3	103.1	17.0	103.0	100%	Pass
14	2, Elev 120	1252120	North	599440	East	P3	103.1	16.6	102.4	99%	Pass
15	2, Elev 120	1252262	North	599128	East	P3	103.1	15.2	100.8	98%	Pass

REPORT OF FIELD DENSITY TEST

Report Number: Fill 3

BUILDING PAD - Test Referenced from Subgrade

95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required

General Fill Test Number	Lift of Fill Tested	Landfill General Fill Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
1	3, Elev 122	1251963	North	599635	East	P3	103.1	18.6	100.8	98%	Pass
2	3, Elev 122	1251855	North	599528	East	P3	103.1	16.4	101.4	98%	Pass

Respectfully Submitted,
Faulkner Engineering Services, Inc.

John R. Gregos, Jr. 4/28/05

John R. Gregos, Jr., P.E.
Florida Registration No. 58628

Faulkner Engineering Services, Inc.

12904 Dupont Circle, Tampa, Florida 33626

813-818-8307 Office

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Southeast County Landfill, Section 8

Hillsborough County, Florida

Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date: April 13, 2005

Project Number: 05-013

REPORT OF FIELD DENSITY TEST

Report Number: Fill 4

BUILDING PAD - Test Referenced from Subgrade

95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required

General Fill Test Number	Lift of Fill Tested	Landfill General Fill Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
3	3, Elev 121	1252245	North	599155	East	P3	103.1	15.7	103.5	100%	Pass
4	3, Elev 121	1252146	North	599228	East	P3	103.1	15.2	102.1	99%	Pass

Respectfully Submitted,
Faulkner Engineering Services, Inc.

John R. Gregos, Jr. 4/27/05

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Southeast County Landfill, Section 8

Hillsborough County, Florida

Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170.
Winter Garden, FL 34787

Report Date: April 14, 2005

Project Number: 05-013

REPORT OF FIELD DENSITY TEST

Report Number: Fill 5

BUILDING PAD - Test Referenced from Subgrade

95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required

General Fill Test Number	Lift of Fill Tested	Landfill General Fill Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
5	3, Elev 120	1252140	North	599075	East	P3	103.1	17.8	103.9	101%	Pass
6	3, Elev 122	1252061	North	599214	East	P3	103.1	19.6	101.4	98%	Pass
7	3, Elev 120	1252073	North	598987	East	P3	103.1	18.8	102.2	99%	Pass
8	3, Elev 121	1252006	North	599080	East	P3	103.1	18.4	102.4	99%	Pass

Respectfully Submitted,
Faulkner Engineering Services, Inc.

John R. Gregos, Jr., P.E.
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Southeast County Landfill, Section 8

Hillsborough County, Florida

Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date: April 15, 2005

Project Number: 05-013

REPORT OF FIELD DENSITY TEST

Report Number: Fill 6

BUILDING PAD - Test Referenced from Subgrade

95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required

General Fill Test Number	Lift of Fill Tested	Landfill General Fill Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
9	3, Elev 122	1252050	North	599540	East	P3	103.1	14.4	102.7	100%	Pass
10	3, Elev 122	1251960	North	599462	East	P3	103.1	14.8	102.4	99%	Pass
11	3, Elev 122	1251913	North	599350	East	P3	103.1	17.9	102.8	100%	Pass
12	3, Elev 121	1251943	North	599247	East	P3	103.1	15.1	100.4	97%	Pass
13	3, Elev 122	1252036	North	599362	East	P3	103.1	16.2	101.7	99%	Pass
14	3, Elev 121	1252135	North	599460	East	P3	103.1	18.3	102.8	100%	Pass
15	3, Elev 122	1252160	North	599340	East	P3	103.1	15.4	101.0	98%	Pass

Respectfully Submitted,
Faulkner Engineering Services, Inc.

John R. Gregos, Jr. 4/28/05

John R. Gregos, Jr., P.E.

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Southeast County Landfill, Section 8

Hillsborough County, Florida

Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date:

April 18, 2005

Project Number:

05-013

REPORT OF FIELD DENSITY TEST

Report Number: Fill 7

BUILDING PAD - Test Referenced from Subgrade

95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required

General Fill Test Number	Lift of Fill Tested	Landfill General Fill Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
1	4, Elev 123	1251965	North	599680	East	P3	103.1	14.4	99.7	97%	Pass
2	4, Elev 123	1251820	North	599545	East	P3	103.1	13.9	104.9	102%	Pass
3	4, Elev 123	1252007	North	599586	East	P3	103.1	15.5	101.9	99%	Pass
4	4, Elev 123	1251918	North	599539	East	P3	103.1	14.6	104.6	101%	Pass
5	4, Elev 123	1251847	North	599438	East	P3	103.1	16.0	105.2	102%	Pass
6	4, Elev 123	1251988	North	599449	East	P3	103.1	15.2	103.7	101%	Pass

REPORT OF FIELD DENSITY TEST

Report Number: Fill 7

BUILDING PAD - Test Referenced from Subgrade

95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required

General Fill Test Number	Lift of Fill Tested	Landfill General Fill Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
16	1, Rim Ditch	1252122	North	598988	East	P3	103.1	14.8	101.2	98%	Pass

Respectfully Submitted,
Faulkner Engineering Services, Inc.

John R. Gregos, Jr. 4/28/05
John R. Gregos, Jr., P.E.
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Southeast County Landfill, Section 8

Hillsborough County, Florida

Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date:

April 19, 2005

Project Number:

05-013

REPORT OF FIELD DENSITY TEST

Report Number: Fill 8

BUILDING PAD - Test Referenced from Subgrade

95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required

General Fill Test Number	Lift of Fill Tested	Landfill General Fill Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
7	4, Elev 122	1252108	North	599420	East	P3	103.1	18.8	102.4	99%	Pass
8	4, Elev 123	1252076	North	599317	East	P3	103.1	19.4	103.7	101%	Pass
9	4, Elev 122	1251978	North	599279	East	P3	103.1	17.6	101.9	99%	Pass

REPORT OF FIELD DENSITY TEST
Report Number: Fill 8

BUILDING PAD - Test Referenced from Subgrade

95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required

General Fill Test Number	Lift of Fill Tested	Landfill General Fill Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
16	2, Rim Ditch	1252205	North	599055	East	P3	103.1	19.9	102.8	100%	Pass
17	2, Rim Ditch	1252225	North	599310	East	P3	103.1	15.3	100.7	98%	Pass

Respectfully Submitted,
 Faulkner Engineering Services, Inc.

John R. Gregos, Jr. 4/28/05
 John R. Gregos, Jr., P.E.
 Florida Registration No. 58628

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Southeast County Landfill, Section 8
Hillsborough County, Florida

Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date: April 20, 2005

Project Number: 05-013

REPORT OF FIELD DENSITY TEST
Report Number: Fill 9

BUILDING PAD - Test Referenced from Subgrade

95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required

General Fill Test Number	Lift of Fill Tested	Landfill General Fill Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
16	3, Rim Ditch	1251965	North	598985	East	P3	103.1	14.7	104.9	102%	Pass
17	4, Rim Ditch	1252182	North	599035	East	P3	103.1	15.2	102.9	100%	Pass

Respectfully Submitted,
Faulkner Engineering Services, Inc.

John R. Gregos, Jr. 4/28/05
John R. Gregos, Jr., P.E.
Florida Registration No. 58628

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Southeast County Landfill, Section 8

Hillsborough County, Florida

Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date: April 21, 2005

Project Number: 05-013

REPORT OF FIELD DENSITY TEST**Report Number: Fill 10, REVISED****BUILDING PAD - Test Referenced from Subgrade****95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required**

General Fill Test Number	Lift of Fill Tested	Landfill General Fill Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
10	4, Elev 121	1252062	North	598980	East	P3	103.1	18.5	103.4	100%	Pass
11	4, Elev 121	1252117	North	599090	East	P3	103.1	16.6	104.5	101%	Pass
12	4, Elev 122	1252282	North	599120	East	P3	103.1	17.9	104.1	101%	Pass

Respectfully Submitted,
Faulkner Engineering Services, Inc.

John R. Gregos, Jr., P.E.
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J.R. Gregos Jr. 5/26/05

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Southeast County Landfill, Section 8

Hillsborough County, Florida

Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date:

April 22, 2005

Project Number:

05-013

REPORT OF FIELD DENSITY TEST

Report Number: Fill 11

BUILDING PAD - Test Referenced from Subgrade

95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required

General Fill Test Number	Lift of Fill Tested	Landfill General Fill Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
13	4, Elev 122	1251970	North	599126	East	P3	103.1	16.8	105.0	102%	Pass
14	4, Elev 123	1252071	North	599210	East	P3	103.1	17.4	102.1	99%	Pass
15	4, Elev 123	1252256	North	599245	East	P3	103.1	15.0	102.8	100%	Pass

Respectfully Submitted,
Faulkner Engineering Services, Inc.

John R. Gregos, Jr. 4/28/05
John R. Gregos, Jr., P.E.
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Southeast County Landfill, Section 8

Hillsborough County, Florida

Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date:

April 28, 2005

Project Number:

05-013

REPORT OF FIELD DENSITY TEST

Report Number: Fill 12

BUILDING PAD - Test Referenced from Subgrade

95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required

General Fill Test Number	Lift of Fill Tested	Landfill General Fill Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
1	5, Elev 124	1252010	North	598965	East	P3	103.1	18.5	101.9	99%	Pass
2	5, Elev 124	1252152	North	599022	East	P3	103.1	19.2	101.2	98%	Pass
3	5, Elev 124	1252291	North	599175	East	P4	103.1	19.6	102.6	100%	Pass
4	5, Elev 124	1252174	North	599164	East	P5	103.1	19.0	101.3	98%	Pass
5	5, Elev 124	1252065	North	599091	East	P6	103.1	19.4	101.6	99%	Pass
6	5, Elev 124	1251970	North	599110	East	P7	103.1	18.5	101.4	98%	Pass
7	5, Elev 124	1252108	North	599253	East	P8	103.1	19.0	102.3	99%	Pass
8	5, Elev 124	1251778	North	599506	East	P9	103.1	19.2	100.2	97%	Pass
9	5, Elev 124	1251846	North	599356	East	P10	103.1	18.8	100.6	98%	Pass
10	5, Elev 124	1252015	North	599360	East	P11	103.1	17.6	101.4	98%	Pass
11	5, Elev 124	1251969	North	599517	East	P12	103.1	19.6	100.2	97%	Pass

Respectfully Submitted,
Faulkner Engineering Services, Inc.

John R. Gregos, Jr. 4/30/05
John R. Gregos, Jr., P.E.
Florida Registration No. 58628

BURCAW

BURCAW GEOTECHNICAL GROUP, INC.

6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686
www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS**DATE:** 7/11/05**PROJECT NAME:** South East Landfill- Section 8
Hillsborough County, Florida**TESTED FOR:**

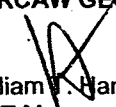
Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO: G04-760**REPORT NO:** 21

Project Specification: (1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density	Moisture	Dry Density	Compaction	Meets
		lb/ft ³		%	lb/ft ³	%	Spec?	
			FILL- Test Referenced From Subgrade (SPEC 3)					
1	7/11/05	12"	1251625N, 599325E, Lift 5	103.1	15.6	100.7	98	Yes
2	7/11/05	12"	1251625N, 599300E, Lift 6	103.1	16.3	102.7	100	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.


William V. Hand., P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.6402 Linebaugh Avenue, Suite A
Tampa, FL 33625813-818-4606 / 813-891-6686
www.burcawinc.com**REPORT OF FIELD COMPACTION TESTS**

DATE: 7/20/05

PROJECT NAME: South East Landfill- Section 8
Hillsborough County, Florida**TESTED FOR:**Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO: G04-760

REPORT NO: 22

Project Specification: (1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max	Dry		Compaction	Meets
				Density	Moisture	Density		
				lb/ft ³	%	lb/ft ³	%	Spec?
			FILL- Test Referenced From Subgrade (SPEC 3)					
1	7/20/05	12"	1251930 N, 599130 E, Lift 12	103.1	16.3	102.5	99	Yes
2	7/20/05	12"	1251900 N, 599250 E, Lift 12	103.1	17.2	103.2	100	Yes
3	7/20/05	12"	1252200 N, 599200 E, Lift 12	103.1	15.5	102.7	100	Yes
4	7/20/05	12"	1252150 N, 599425 E, Lift 12	103.1	16.7	102.1	99	Yes
5	7/20/05	12"	1252025 N, 599070 E, Lift 12	103.1	17.6	103.7	101	Yes
6	7/20/05	12"	1251840 N, 599300 E, Lift 12	103.1	18.2	103.0	100	Yes
7	7/20/05	12"	1252000 N, 599400 E, Lift 12	103.1	17.8	103.2	100	Yes
8	7/20/05	12"	1251900 N, 599600 E, Lift 12	103.1	17.0	103.1	100	Yes
9	7/20/05	12"	1251900 N, 599270 E, Lift 13	103.1	15.4	102.1	99	Yes
10	7/20/05	12"	1252050 N, 599300 E, Lift 13	103.1	16.3	102.5	99	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.
William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.

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Tampa, FL 33625

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REPORT OF FIELD COMPACTION TESTS

DATE: 7/23/05

PROJECT NAME: South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:

Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO: G04-760

REPORT NO: 23

Project Specification: (1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max	Moisture	Dry	Compaction	Meets
		Density lb/ft ³		%	Density lb/ft ³	%	Spec?	
			FILL- Test Referenced From Subgrade (SPEC 3)					
1	7/23/05	12"	1252120 N, 599300 E, Lift 13	103.1	16.8	102.6	100	Yes
2	7/23/05	12"	1252060 N, 599250 E, Lift 13	103.1	16.5	99.9	97	Yes
3	7/23/05	12"	1251920 N, 599130 E, Lift 13	103.1	15.5	101.9	99	Yes
4	7/23/05	12"	1251850 N, 599100 E, Lift 13	103.1	17.0	102.3	99	Yes
5	7/23/05	12"	1252100 N, 599400 E, Lift 13	103.1	14.5	101.6	99	Yes
6	7/23/05	12"	1252000 N, 599350 E, Lift 13	103.1	17.6	100.7	98	Yes
7	7/23/05	12"	1251875 N, 599300 E, Lift 13	103.1	16.2	101.8	99	Yes
8	7/23/05	12"	1251790 N, 599270 E, Lift 13	103.1	17.2	102.7	100	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.

William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.

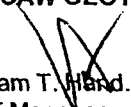
6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686
www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS**DATE:** 7/26/05**PROJECT NAME:** South East Landfill- Section 8
Hillsborough County, Florida**TESTED FOR:**
Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787**PROJECT NO:** G04-760**REPORT NO:** 24**Project Specification:**
(1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max		Dry		Meets Spec?
				Density lb/ft ³	Moisture %	Density lb/ft ³	Compaction %	
			FILL- Test Referenced From Subgrade (SPEC 3)					
1	7/26/05	12"	1251850 N, 599580 E, Lift 12, Rim Ditch	103.1	16.3	102.7	100	Yes
2	7/26/05	12"	1251750 N, 599500 E, Lift 12, Rim Ditch	103.1	14.9	101.6	99	Yes
3	7/26/05	12"	1251920 N, 599480 E, Lift 12	103.1	14.5	100.8	98	Yes
	7/26/05	12"	1251850 N, 599600 E, Lift 11, Rim Ditch	103.1	14.7	102.5	99	Yes
5	7/26/05	12"	1251680 N, 599380 E, Lift 6, Test Pad	103.1	16.3	102.0	99	Yes
6	7/26/05	12"	1251680 N, 599320 E, Lift 5, Test Pad	103.1	16.9	99.6	97	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.


William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.6402 Linebaugh Avenue, Suite A
Tampa, FL 33625813-818-4606 / 813-891-6686
www.burcawinc.com**REPORT OF FIELD COMPACTION TESTS****DATE:** 7/27/05**PROJECT NAME:** South East Landfill- Section 8
Hillsborough County, Florida**TESTED FOR:**Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787**PROJECT NO:** G04-760**REPORT NO:** 25 Revised**Project Specification:**
(1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

Elevation or Depth				Max Density		Moisture		Dry Density		Compaction		Meets Spec?
No.	Date	Depth	Location		lb/ft ³	%	lb/ft ³	%	lb/ft ³	%		
			FILL- Test Referenced From Subgrade (SPEC 3)									
1	7/27/05	12"	1252010 N, 599500 E, Lift 13			103.1	14.9	102.7	100	Yes		
2	7/27/05	12"	1251940 N, 599575 E, Lift 13			103.1	15.3	100.2	97	Yes		
3	7/27/05	6"	Tests 3-12 (Clay Test Pad) 1251730 N, 599200 E			114.2	15.6	108.7	95	Yes		
4	7/27/05	6"	1251730 N, 599200 E			114.2	15.6	109.1	96	Yes		
5	7/27/05	6"	1251700 N, 599200 E			114.2	15.0	109.2	96	Yes		
6	7/27/05	6"	1251700 N, 599200 E			114.2	15.0	109.5	96	Yes		
7	7/27/05	6"	1251710 N, 599300 E			114.2	14.8	108.9	95	Yes		
8	7/27/05	6"	1251710 N, 599300 E			114.2	14.8	109.2	96	Yes		
9	7/27/05	6"	1251615 N, 599430 E			114.2	15.5	109.6	96	Yes		
10	7/27/05	6"	1251615 N, 599430 E			114.2	15.5	109.4	96	Yes		
11	7/27/05	6"	1251600 N, 599430 E			114.2	14.8	109.1	96	Yes		
12	7/27/05	6"	1251600 N, 599430 E			114.2	14.8	109.3	96	Yes		

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.William T. Hand., P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.

6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686

www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS

DATE: 7/28/05

PROJECT NAME: South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:
Jerry L. Pinder
ERC General Contracting Services, Inc.
390 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO: G04-760

REPORT NO: 26

Project Specification: (1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density lb/ft ³	Moisture %	Dry Density lb/ft ³	Compaction %	Meets Spec?
FILL- Test Referenced From Subgrade (SPEC 3)								
1	7/28/05	12"	1251880 N, 599610 E, Rim Ditch, Lift 16	103.1	14.8	101.6	99	Yes
2	7/28/05	12"	1252000 N, 599715 E, Rim Ditch, Lift 12	103.1	15.6	102.2	99	Yes
3	7/28/05	12"	1251840 N, 599580 E, Rim Ditch, Lift 14	103.1	16.7	101.8	99	Yes
4	7/28/05	12"	1251860 N, 599060 E, Lift 14	103.1	14.8	102.1	99	Yes
5	7/28/05	12"	1251990 N, 599140 E, Lift 14	103.1	15.2	101.6	99	Yes
6	7/28/05	12"	1252100 N, 599230 E, Lift 14	103.1	15.0	101.9	99	Yes
7	7/28/05	12"	1251810 N, 599220 E, Lift 14	103.1	15.8	100.6	98	Yes
8	7/28/05	12"	1251990 N, 599310 E, Lift 14	103.1	16.4	100.9	98	Yes
9	7/28/05	12"	1252090 N, 599390 E, Lift 14	103.1	16.8	102.3	99	Yes
10	7/28/05	12"	1252100 N, 599590 E, Rim Ditch, Lift 15	103.1	15.8	102.4	99	Yes
11	7/28/05	12"	1251910 N, 599640 E, Rim Ditch, Lift 13	103.1	17.4	102.5	99	Yes
12	7/28/05	12"	1252000 N, 599730 E, Rim Ditch, Lift 9	103.1	19.8	100.6	98	Yes
13	7/28/05	12"	1252000 N, 599735 E, Rim Ditch, Lift 10	103.1	14.8	103.2	100	Yes
14	7/28/05	12"	1252000 N, 599715 E, Rim Ditch, Lift 11	103.1	14.9	102.7	100	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.

William T. Hand., P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686

www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS

DATE: 7/29/05

PROJECT NAME: South East Landfill- Section 8
Hillsborough County, Florida**TESTED FOR:**Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO: G04-760

REPORT NO: 27

Project Specification: (1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max	Moisture	Dry	Compaction	Meets
				Density	%	Density		
			FILL- Test Referenced From Subgrade (SPEC 3)					
1	7/29/05	12"	1251880 N, 599630 E, Rim Ditch, Lift 17	103.1	16.8	100.0	97	Yes
2	7/29/05	12"	1252030 N, 599520 E, Lift 14	103.1	14.9	101.2	98	Yes
3	7/29/05	12"	1251930 N, 599430 E, Lift 14	103.1	15.5	103.0	100	Yes
4	7/29/05	12"	1251810 N, 599380 E, Lift 14	103.1	14.8	102.3	99	Yes
	7/29/05	12"	1252005 N, 599620 E, Lift 14	103.1	14.9	101.8	99	Yes
6	7/29/05	12"	1251910 N, 599550 E, Lift 14	103.1	15.6	99.5	97	Yes
7	7/29/05	12"	1251750 N, 599450 E, Lift 14	103.1	15.2	99.2	96	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.William T. Hand., P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.

6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686
www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS

DATE: 7/30/05

PROJECT NAME: South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:

Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO: G04-760

REPORT NO: 28

Project Specification: (1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density lb/ft ³	Moisture %	Dry Density lb/ft ³	Compaction %	Meets Spec?
FILL- Test Referenced From Subgrade (SPEC 3)								
1	7/30/05	12"	1252000 N, 599610 E, Lift 15	103.1	14.8	100.6	98	Yes
2	7/30/05	12"	1251900 N, 599530 E, Lift 15	103.1	15.2	100.0	97	Yes
3	7/30/05	12"	1251780 N, 599460 E, Lift 15	103.1	16.3	100.9	98	Yes
4	7/30/05	12"	1252080 N, 599500 E, Lift 15	103.1	17.8	103.0	100	Yes
5	7/30/05	12"	1251980 N, 599410 E, Lift 15	103.1	16.8	102.5	99	Yes
6	7/30/05	12"	1251820 N, 599320 E, Lift 15	103.1	15.3	102.0	99	Yes
7	7/30/05	12"	1252100 N, 599400 E, Lift 15	103.1	16.2	102.7	100	Yes
8	7/30/05	12"	1252050 N, 599320 E, Lift 15	103.1	15.8	103.1	100	Yes
9	7/30/05	12"	1252010 N, 599690 E, Rim Ditch, Lift 15	103.1	17.2	103.3	100	Yes
10	7/30/05	12"	1251950 N, 599620 E, Lift 16	103.1	15.4	100.9	98	Yes
11	7/30/05	12"	1251895 N, 599560 E, Lift 16	103.1	15.0	100.4	97	Yes
12	7/30/05	12"	1251780 N, 599460 E, Lift 16	103.1	17.4	101.3	98	Yes
13	7/30/05	12"	1252050 N, 599520 E, Lift 16	103.1	16.2	102.9	100	Yes
14	7/30/05	12"	1251960 N, 599420 E, Lift 16	103.1	14.8	101.4	98	Yes
15	7/30/05	12"	1251840 N, 599290 E, Lift 16	103.1	15.2	100.8	98	Yes
16	7/30/05	12"	1252060 N, 599430 E, Lift 17	103.1	16.4	103.0	100	Yes
17	7/30/05	12"	1251980 N, 599480 E, Lift 17	103.1	15.2	102.6	100	Yes
18	7/30/05	12"	1251880 N, 599390 E, Lift 17	103.1	14.9	102.9	100	Yes
19	7/30/05	12"	1252080 N, 599540 E, Lift 18	103.1	14.9	100.1	97	Yes
20	7/30/05	12"	1251950 N, 599540 E, Lift 18	103.1	15.4	100.8	98	Yes
21	7/30/05	12"	1252020 N, 599730 E, Rim Ditch, Lift 14	103.1	15.9	102.2	99	Yes
22	7/30/05	12"	1252030 N, 599740 E, Rim Ditch, Lift 13	103.1	15.5	102.7	100	Yes
23	7/30/05	12"	1252010 N, 599730 E, Rim Ditch, Lift 12	103.1	17.4	102.9	100	Yes
24	7/30/05	12"	1252000 N, 599600 E, Lift 12	103.1	18.4	103.0	100	Yes
25	7/30/05	12"	1252020 N, 599725 E, Rim Ditch, Lift 11	103.1	18.6	102.2	99	Yes
26	7/30/05	12"	1252020 N, 599720 E, Rim Ditch, Lift 10	103.1	19.6	100.9	98	Yes
27	7/30/05	12"	1252000 N, 599630 E, Lift 13	103.1	17.4	102.7	100	Yes
28	7/30/05	12"	1251800 N, 599450 E, Lift 13	103.1	16.6	102.1	99	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.

William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.

6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686
www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS

DATE: 8/1/05

PROJECT NAME: South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:

Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO: G04-760

REPORT NO: 29

Project Specification: (1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

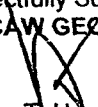
No.	Date	Elevation or Depth	Location	Max Density	Moisture	Dry Density	Compaction	Meets Spec?
		lb/ft ³		%	lb/ft ³	%		
			FILL- Test Referenced From Subgrade (SPEC 3)					
1	8/1/05	12"	1251590 N, 599420 E, Lift 6	103.1	15.6	99.7	97	Yes
2	8/1/05	12"	1252100 N, 599600 E, Rim Ditch, Lift 9	103.1	17.2	102.9	100	Yes
3	8/1/05	12"	1252060 N, 599650 E, Rim Ditch, Lift 10	103.1	16.3	101.8	99	Yes
4	8/1/05	12"	1252090 N, 599610 E, Rim Ditch, Lift 11	103.1	15.9	102.0	99	Yes
5	8/1/05	12"	1252100 N, 599590 E, Rim Ditch, Lift 12	103.1	14.9	102.1	99	Yes
6	8/1/05	12"	1251850 N, 599570 E, Lift 15	103.1	14.9	99.3	96	Yes
7	8/1/05	12"	1251930 N, 599630 E, Lift 15	103.1	16.0	103.0	100	Yes
8	8/1/05	12"	1251940 N, 599650 E, Lift 16	103.1	15.3	100.7	98	Yes
9	8/1/05	12"	1251840 N, 599580 E, Lift 16	103.1	14.9	104.1	101	Yes
10	8/1/05	12"	1251900 N, 599600 E, Lift 17	103.1	15.5	102.3	99	Yes
11	8/1/05	12"	1251710 N, 599510 E, Lift 17	103.1	16.3	102.0	99	Yes
12	8/1/05	12"	1251970 N, 599610 E, Lift 18	103.1	15.0	101.0	98	Yes
13	8/1/05	12"	1251860 N, 599540 E, Lift 18	103.1	14.7	100.2	97	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.

William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.6402 Linebaugh Avenue, Suite A
Tampa, FL 33625813-818-4606 / 813-891-6686
www.burcawinc.com**REPORT OF FIELD COMPACTION TESTS****DATE:** 8/3/05**PROJECT NAME:** South East Landfill- Section 8
Hillsborough County, Florida**TESTED FOR:**
Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787**PROJECT NO:** G04-760**REPORT NO:** 30**Project Specification:**
(1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max	Moisture	Dry	Compaction %	Meets Spec?
		Density lb/ft ³		%	Density lb/ft ³			
			FILL- Test Referenced From Subgrade (SPEC 3)					
1	8/3/05	12"	1251960 N, 599640 E, Lift 19	103.1	16.9	102.2	99	Yes
2	8/3/05	12"	1251900 N, 599650 E, Lift 19	103.1	16.3	101.6	99	Yes
3	8/3/05	12"	1251940 N, 599670 E, Lift 19	103.1	17.2	101.4	98	Yes
	8/3/05	12"	1251635 N, 599550 E, BERMS	103.1	16.2	103.3	100	Yes
5	8/3/05	12"	1251690 N, 599580 E, BERMS	103.1	15.2	100.6	98	Yes
6	8/3/05	12"	1251800 N, 599600 E, Lift 17	103.1	15.6	101.5	98	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.
William T. Hand., P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.6402 Linebaugh Avenue, Suite A
Tampa, FL 33625813-818-4606 / 813-891-6686
www.burcawinc.com**REPORT OF FIELD COMPACTION TESTS****DATE:** 8/4/05**PROJECT NAME:** South East Landfill- Section 8
Hillsborough County, Florida**TESTED FOR:**
Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787**PROJECT NO:** G04-760**REPORT NO:** 31**Project Specification:**
(1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density	Moisture	Dry Density	Compaction	Meets
		lb/ft ³		%	lb/ft ³	%	Spec?	
			FILL- Test Referenced From Subgrade (SPEC 3)					
1	8/4/05	12"	1251925 N, 599740 E, BERMS	103.1	15.8	99.6	97	Yes
2	8/4/05	12"	1251775 N, 599620 E, BERMS	103.1	16.2	101.4	98	Yes
3	8/4/05	12"	1251900 N, 599720 E, BERMS	103.1	14.8	102.1	99	Yes
	8/4/05	12"	1251850 N, 599670 E, BERMS	103.1	15.2	100.3	97	Yes
5	8/4/05	12"	1251920 N, 599735 E, BERMS	103.1	16.3	100.9	98	Yes
6	8/4/05	12"	1251910 N, 599410 E, Lift 18	103.1	15.7	100.0	97	Yes
7	8/4/05	12"	1251800 N, 599400 E, Lift 18	103.1	16.3	102.6	100	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.
William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686

www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS

DATE: 8/5/05

PROJECT NAME:

South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:

PROJECT NO:

G04-760

erry L. Pinder

REPORT NO:

32

ERC General Contracting Services, Inc.

Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
- (2) 98% of ASTM D1557 (Modified Proctor)
- (3) 95% of ASTM D698 (Standard Proctor)

390 Carter Road, Suite 170

Winter Garden, FL 34787

No.	Date	Elevation or Depth	Location	Max	Moisture	Dry	Compaction	Meets
				Density	%	Density		
				lb/ft ³	%	lb/ft ³	%	Spec?
			FILL- Test Referenced From Subgrade (SPEC 3)					
1	8/5/05	12"	1251910 N, 599210 E, Lift 15	103.1	16.4	100.5	97	Yes
2	8/5/05	12"	1251940 N, 599150 E, Lift 17	103.1	14.9	101.6	99	Yes
3	8/5/05	12"	1251800 N, 599180 E, Lift 17	103.1	15.3	99.7	97	Yes
	8/5/05	12"	1251800 N, 599200 E, Lift 16	103.1	15.8	101.4	98	Yes
5	8/5/05	12"	1251900 N, 599100 E, Lift 16	103.1	14.7	99.5	97	Yes
6	8/5/05	12"	1251950 N, 599210 E, Lift 16	103.1	16.8	100.6	98	Yes
7	8/5/05	12"	1251970 N, 599100 E, Lift 16	103.1	15.2	101.9	99	Yes

Respectfully Submitted,

BURCAW GEOTECHNICAL GROUP, INC.

William T. Hand., P.E.

CMT Manager

Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686

www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS

DATE: 8/8/05

PROJECT NAME:

South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:

Jerry L. Pinder

ERC General Contracting Services, Inc.

390 Carter Road, Suite 170

Winter Garden, FL 34787

PROJECT NO:

G04-760

REPORT NO:

33

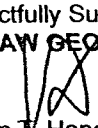
Project Specification:

(1) 95% of ASTM D1557 (Modified Proctor)

(2) 98% of ASTM D1557 (Modified Proctor)

(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max	Moisture	Dry	Compaction	Meets
		Density lb/ft ³		%	Density lb/ft ³	%	Spec?	
			FILL- Test Referenced From Subgrade (SPEC 3)					
1	8/8/05	12"	1251950 N, 599100 E, Lift 15	103.1	15.0	98.4	95	Yes
2	8/8/05	12"	1252050 N, 599200 E, Lift 16	103.1	15.2	100.0	97	Yes
3	8/8/05	12"	1252180 N, 599190 E, Lift 17	103.1	15.8	98.9	96	Yes
	8/8/05	12"	1252180 N, 599170 E, Lift 17	103.1	16.5	99.9	97	Yes
5	8/8/05	12"	1252110 N, 599210 E, Lift 17	103.1	17.8	102.3	99	Yes
6	8/8/05	12"	1252190 N, 599110 E, Lift 17	103.1	14.6	98.5	96	Yes
7	8/8/05	12"	1252190 N, 599105 E, Lift 17	103.1	15.6	99.3	96	Yes
8	8/8/05	12"	1252190 N, 599100 E, Lift 17	103.1	16.3	99.8	97	Yes
9	8/8/05	12"	1252050 N, 599170 E, Lift 18	103.1	16.3	102.6	100	Yes
10	8/8/05	12"	1252060 N, 599180 E, Lift 19	103.1	15.6	100.5	97	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.
William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.6402 Linebaugh Avenue, Suite A
Tampa, FL 33625813-818-4606 / 813-891-6686
www.burcawinc.com**REPORT OF FIELD COMPACTION TESTS**

DATE: 8/11/05

PROJECT NAME: South East Landfill- Section 8
Hillsborough County, FloridaTESTED FOR:
Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO: G04-760

REPORT NO: 34

Project Specification: (1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

Elevation or Depth				Max Density		Moisture		Dry Density		Compaction		Meets Spec?
No.	Date	Depth	Location	lb/ft ³	%	lb/ft ³	%	lb/ft ³	%			
			FILL- Test Referenced From Subgrade (SPEC 3)									
1	8/11/05	12"	1252060 N, 599180 E, Lift 15	103.1	16.3	100.1	97					Yes
2	8/11/05	12"	1252160 N, 599190 E, Lift 17	103.1	15.5	103.0	100					Yes
3	8/11/05	12"	1251990 N, 599065 E, Lift 16	103.1	15.2	100.2	97					Yes
	8/11/05	12"	1251890 N, 599980 E, BERMS	103.1	16.6	102.0	99					Yes
5	8/11/05	12"	1251950 N, 599900 E, BERMS	103.1	17.1	101.7	99					Yes
6	8/11/05	12"	1252010 N, 599055 E, BERMS	103.1	16.0	100.6	98					Yes
7	8/11/05	12"	1252050 N, 599085 E, BERMS	103.1	15.3	98.7	96					Yes
8	8/11/05	12"	1252090 N, 599100 E, BERMS	103.1	14.7	102.5	99					Yes
9	8/11/05	12"	1252120 N, 599130 E, BERMS	103.1	15.2	99.2	96					Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.
William T. Hand., P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.

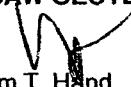
6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686
www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS**DATE:** 8/17/05**PROJECT NAME:** South East Landfill- Section 8
Hillsborough County, Florida**TESTED FOR:**
Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787**PROJECT NO:** G04-760**REPORT NO:** 35**Project Specification:** (1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density	Moisture	Dry Density	Compaction	Meets
		lb/ft ³		%	lb/ft ³	%	Spec?	
			FILL- Test Referenced From Subgrade (SPEC 3)					
1	8/17/05	12"	1252130 N, 599210 E, Lift 18	103.1	15.0	102.1	99	Yes
2	8/17/05	12"	1252050 N, 599400 E, Lift 18	103.1	16.8	101.1	98	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.


William T. Hand., P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.6402 Linebaugh Avenue, Suite A
Tampa, FL 33625813-818-4606 / 813-891-6686
www.burcawinc.com**REPORT OF FIELD COMPACTION TESTS****DATE:** 8/18/05**PROJECT NAME:** South East Landfill- Section 8
Hillsborough County, Florida**TESTED FOR:**Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787**PROJECT NO:** G04-760**REPORT NO:** 36**Project Specification:** (1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density	Moisture	Dry Density	Compaction	Meets Spec?
		lb/ft ³		%	lb/ft ³	%		
			FILL- Test Referenced From Subgrade (SPEC 3)					
1	8/18/05	12"	1252125 N, 599300 E, Lift 16	103.1	16.0	101.9	99	Yes
2	8/18/05	12"	1252175 N, 599180 E, Lift 16	103.1	14.4	102.4	99	Yes
3	8/18/05	12"	1252090 N, 599310 E, Lift 17	103.1	14.8	98.9	96	Yes
	8/18/05	12"	1252100 N, 599550 E, BERMS	103.1	14.4	104.7	102	Yes
5	8/18/05	12"	1252105 N, 599500 E, BERMS	103.1	14.8	102.7	100	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.
William T. Hand., P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.6402 Linebaugh Avenue, Suite A
Tampa, FL 33625813-818-4606 / 813-891-6686
www.burcawinc.com**REPORT OF FIELD COMPACTION TESTS**

DATE: 8/18/05

PROJECT NAME: South East Landfill- Section 8
Hillsborough County, FloridaTESTED FOR:
Jerry L. Pinder
ERC General Contracting Services, Inc.
390 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO: G04-760

REPORT NO: 36

Project Specification: (1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density	Moisture	Dry Density	Compaction	Meets
		lb/ft ³		%	lb/ft ³	%	Spec?	
			FILL- Test Referenced From Subgrade (SPEC 3)					
1	8/18/05	12"	1252125 N, 599300 E, Lift 16 ✓	103.1	16.0	101.9	99	Yes
2	8/18/05	12"	1252175 N, 599180 E, Lift 16 ✓	103.1	14.4	102.4	99	Yes
3	8/18/05	12"	1252090 N, 599310 E, Lift 17 ✓	103.1	14.8	98.9	96	Yes
	8/18/05	12"	1252100 N, 599550 E, BERMS	103.1	14.4	104.7	102	Yes
5	8/18/05	12"	1252105 N, 599500 E, BERMS	103.1	14.8	102.7	100	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.William T. Hand., P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.6402 Linebaugh Avenue, Suite A
Tampa, FL 33625813-818-4606 / 813-891-6686
www.burcawinc.com**REPORT OF FIELD COMPACTION TESTS****DATE:** 5/3/05**PROJECT NAME:** South East Landfill- Section 8
Hillsborough County, Florida**TESTED FOR:**
Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787**PROJECT NO:** G04-760**REPORT NO:** 1**Project Specification:** (1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location		Max Density	Moisture	Dry Density	Compaction	Meets Spec?
		lb/ft ³			%	lb/ft ³	%		
			FILL- Test Referenced From Subgrade (SPEC 3)						
1	5/3/05	12"	1252000 North, 599620 East, 5-12	✓	103.1	18.2	102.9	100	Yes
2	5/3/05	12"	1252120 North, 599420 East, 5-13	✓	103.1	19.4	100.5	98	Yes
3	5/3/05	12"	1251980 North, 599210 East, 5-14	✓	103.1	20.0	101.1	98	Yes
4	5/3/05	12"	1251890 North, 599510 East, 5-15	✓	103.1	19.8	98.9	96	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.
William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686

www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS**DATE:** 5/6/05**PROJECT NAME:**South East Landfill- Section 8
Hillsborough County, Florida**TESTED FOR:**Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787**PROJECT NO:**

G04-760

REPORT NO:

2

Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
- (2) 98% of ASTM D1557 (Modified Proctor)
- (3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location		Max Density	Moisture	Dry Density	Compaction	Meets Spec?
		lb/ft ³			%	lb/ft ³	%		
			FILL- Test Referenced From Subgrade (SPEC 3)						
1	5/6/05	12"	1251850 North, 599500 East, 6-1	✓	103.1	16.5	103.2	100	Yes
2	5/6/05	12"	1251980 North, 599420 East, 6-2	✓	103.1	17.0	104.1	101/98	Yes
3	5/6/05	12"	1251900 North, 599300 East, 6-3	✓	103.1	16.9	102.8	100	Yes
4	5/6/05	12"	1251980 North, 599660 East, 6-4	✓	103.1	18.0	104.7	102	Yes
5	5/6/05	12"	1252080 North, 599530 East, 6-5	✓	103.1	16.9	104.1	101	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686

www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS**DATE:** 5/9/05**PROJECT NAME:**South East Landfill- Section 8
Hillsborough County, Florida**TESTED FOR:**Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787**PROJECT NO:**

G04-760

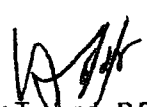
REPORT NO:

3

Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
- (2) 98% of ASTM D1557 (Modified Proctor)
- (3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location		Max Density	Moisture	Dry Density	Compaction	Meets
		lb/ft ³			%	lb/ft ³	%	Spec?	
			FILL- Test Referenced From Subgrade (SPEC 3)						
1	5/9/05	12"	1251850 North, 599360 East, 7-1	✓	103.1	16.0	102.9	100	Yes
2	5/9/05	12"	1251870 North, 599520 East, 7-2	✓	103.1	17.5	102.5	99	Yes
3	5/9/05	12"	1252000 North, 599600 East, 7-3	✓	103.1	16.3	103.0	100	Yes
4	5/9/05	12"	1252090 North, 599500 East, 7-4	✓	103.1	17.9	101.1	98	Yes
5	5/9/05	12"	1252000 North, 599400 East, 7-5	✓	103.1	15.5	102.0	99	Yes
6	5/9/05	12"	1251800 North, 599000 East 1-17	✓	103.1	14.3	102.7	100	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.
William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.6402 Linebaugh Avenue, Suite A
Tampa, FL 33625813-818-4606 / 813-891-6686
www.burcawinc.com**REPORT OF FIELD COMPACTION TESTS****DATE:** 5/10/05**PROJECT NAME:**South East Landfill- Section 8
Hillsborough County, Florida**TESTED FOR:**Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787**PROJECT NO:**

G04-760

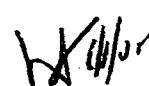
REPORT NO:

4

Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
- (2) 98% of ASTM D1557 (Modified Proctor)
- (3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location		Max Density	Moisture	Dry Density	Compaction	Meets Spec?
		lb/ft ³			%	lb/ft ³	%		
			FILL- Test Referenced From Subgrade (SPEC 3)						
1	5/10/05	12"	1252150 North, 599420 East, 6-6	✓	103.1	19.0	101.1	98	Yes
2	5/10/05	12"	1252030 North, 599310 East, 6-7	✓	103.1	16.3	101.8	99	Yes
3	5/10/05	12"	1251920 North, 599190 East, 6-8	✓	103.1	19.6	103.0	100	Yes
4	5/10/05	12"	1252190 North, 599290 East, 6-9	✓	103.1	19.4	102.5	99	Yes
5	5/10/05	12"	1252075 North, 599190 East, 6-10	✓	103.1	15.8	102.0	99	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.
William T. Hand., P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.

6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686
www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS**DATE:** 5/11/05**PROJECT NAME:**

South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:

Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO:

G04-760

REPORT NO:

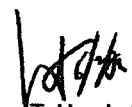
5

Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
- (2) 98% of ASTM D1557 (Modified Proctor)
- (3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location		Max Density	Moisture	Dry Density	Compaction	Meets Spec?
		lb/ft ³			%	lb/ft ³	%		
			FILL- Test Referenced From Subgrade (SPEC 3)						
1	5/11/05	12"	1252000 North, 599000 East, 6-11	✓	103.1	19.6	100.1	97	Yes
2	5/11/05	12"	1252140 North, 599060 East, 6-12	✓	103.1	16.5	100.5	97	Yes
3	5/11/05	12"	1252220 North, 599180 East 6-13	✓	103.1	14.8	98.5	96	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.


William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.

6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686
www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS

DATE: 5/13/05

PROJECT NAME:

South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:

Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO:

G04-760

REPORT NO:

6

Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
- (2) 98% of ASTM D1557 (Modified Proctor)
- (3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density lb/ft ³	Moisture %	Dry Density lb/ft ³	Compaction %	Meets Spec?
FILL- Test Referenced From Subgrade (SPEC 3)								
1	5/13/05	12"	1251800 North, 599340 East, 8-1 Rim Ditch ✓	103.1	18.5	101.3	98	Yes
2	5/13/05	12"	1251820 North, 599275 East, 6-14 Rim Ditch ✓	103.1	15.5	101.1	98	Yes
3	5/13/05	12"	1251790 North, 599350 East, 5-16 Rim Ditch ✓	103.1	19.6	102.9	100	Yes
4	5/13/05	12"	1252010 North, 598990 East, 7-6 ✓	103.1	17.2	100.2	97	Yes
5	5/13/05	12"	1251970 North, 599110 East, 7-7 ✓	103.1	14.8	101.3	98	Yes
6	5/13/05	12"	1252090 North, 599210 East, 7-8 ✓	103.1	16.2	100.8	98	Yes
7	5/13/05	12"	1252200 North, 599300 East, 7-9 ✓	103.1	16.5	101.9	99	Yes
8	5/13/05	12"	1252280 North, 599150 East, 7-10 ✓	103.1	17.4	98.3	95	Yes
9	5/13/05	12"	1252160 North, 599080 East, 7-11 ✓	103.1	18.1	103.2	100	Yes
10	5/13/05	12"	1251840 North, 599240 East, 7-12 Rim Ditch ✓	103.1	16.6	102.6	100	Yes
11	5/13/05	12"	1251820 North, 599300 East, 4-16 Rim Ditch ✓	103.1	16.3	101.6	99	Yes
12	5/13/05	12"	1251970 North, 599460 East, 1-18 Rim Ditch ✓	103.1	14.5	99.6	97	Yes
13	5/13/05	12"	1251810 North, 599300 East, 2-18 Rim Ditch ✓	103.1	15.5	100.8	98	Yes
14	5/13/05	12"	1251800 North, 599340 East, 3-18 Rim Ditch ✓	103.1	15.6	101.9	99	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.


William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.

6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686
www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS

DATE: 5/16/05

PROJECT NAME:

South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:

Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO:

G04-760

REPORT NO:

7

Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
- (2) 98% of ASTM D1557 (Modified Proctor)
- (3) 95% of ASTM D698 (Standard Proctor)

Elevation or Depth			Location	Max Density lb/ft ³	Moisture %	Dry Density lb/ft ³	Compaction %	Moist Spec?
No.	Date							
			FILL- Test Referenced From Subgrade (SPEC 3)					
1	5/16/05	12"	1251890 North, 599620 East, Lift 5-1, Rim Ditch ✓	103.1	16.5	101.4	98	Yes
2	5/16/05	12"	1251750 North, 599450 East, Lift 9-1, Rim Ditch ✓	103.1	14.5	102.1	99	Yes
3	5/16/05	12"	1251850 North, 599250 East, Lift 9-2, Rim Ditch ✓	103.1	15.6	100.0	97	Yes
4	5/16/05	12"	1251780 North, 1251840, 599400 East, Lift 10-1 ✓	103.1	16.2	101.7	99	Yes
5	5/16/05	12"	1251840 North, 599200 East, Lift 10-2 ✓	103.1	19.6	103.2	100	Yes
6	5/16/05	12"	1251840 North, 599590 East, Lift 4-17, Rim Ditch ✓	103.1	19.4	100.1	97	Yes
7	5/16/05	12"	1251920 North, 599650 East, Lift 3-19, Rim Ditch ✓	103.1	19.0	99.9	97	Yes
8	5/16/05	12"	1251850 North, 599600 East, Lift 2-19, Rim Ditch ✓	103.1	15.6	101.1	98	Yes
9	5/16/05	12"	1251950 North, 599680 East, Lift 1-19, Rim Ditch ✓	103.1	15.2	100.2	97	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.

William T. Hand
William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.6402 Linebaugh Avenue, Suite A
Tampa, FL 33625813-818-4606 / 813-891-6686
www.burcawinc.com**REPORT OF FIELD COMPACTION TESTS****DATE:** 5/17/05**PROJECT NAME:** South East Landfill- Section 8
Hillsborough County, Florida**TESTED FOR:**
Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787**PROJECT NO:** G04-760**REPORT NO:** 8**Project Specification:**
(1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density	Moisture	Dry Density	Compaction	Meets Spec?
		lb/ft ³		%	lb/ft ³	%		
			FILL- Test Referenced From Subgrade (SPEC 3)					
1	5/17/05	12"	1251830 North, 599580 East, Lift 7-13, Rim Ditch ✓	103.1	19.4	102.5	99	Yes
2	5/17/05	12"	1251950 North, 599500 East, Lift 7-14, Rim Ditch ✓	103.1	16.8	103.4	100	Yes
3	5/17/05	12"	1251890 North, 599620 East, Lift 8-2, Rim Ditch ✓	103.1	17.8	102.5	99	Yes
4	5/17/05	12"	1251950 North, 599690 East, Lift 6-15, Rim Ditch ✓	103.1	18.4	97.9	95	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.
William T. Hand., P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.6402 Linebaugh Avenue, Suite A
Tampa, FL 33625813-818-4606 / 813-891-6686
www.burcawinc.com**REPORT OF FIELD COMPACTION TESTS****DATE:** 5/19/05**PROJECT NAME:**South East Landfill- Section 8
Hillsborough County, Florida**TESTED FOR:**

Jerry L. Pinder

ERC General Contracting Services, Inc.

890 Carter Road, Suite 170

Winter Garden, FL 34787

PROJECT NO:

G04-760

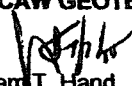
REPORT NO:

9

Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
- (2) 98% of ASTM D1557 (Modified Proctor)
- (3) 95% of ASTM D698 (Standard Proctor)

Elevation or Depth			Location	Max Density lb/ft ³	Moisture %	Dry		Meets Spec?	
No.	Date					Density lb/ft ³	Compaction %		
			FILL- Test Referenced From Subgrade (SPEC 3)						
1	5/19/05	12"	1252160 North, 599430 East, Lift 7-15	✓	103.1	19.6	100.1	97	Yes
2	5/19/05	12"	1252080 North, 599340 East, Lift 7-16	✓	103.1	16.8	102.5	99	Yes
3	5/19/05	12"	1251915 North, 599240 East, Lift 7-17	✓	103.1	19.2	100.6	98	Yes
4	5/19/05	12"	1252200 North, 599200 East, Lift 7-18	✓	103.1	15.5	101.9	99	Yes
5	5/19/05	12"	1252085 North, 599100 East, Lift 7-19	✓	103.1	16.7	100.9	98	Yes
6	5/19/05	12"	1252255 North, 599050 East, Lift 7-20	✓	103.1	14.8	101.4	98	Yes
7	5/19/05	12"	1252080 North, 598910 East, Lift 7-21	✓	103.1	17.6	100.2	97	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.
William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.

6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686
www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS**DATE:** 5/23/05**PROJECT NAME:**

South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:

Jerry L. Pinder

ERC General Contracting Services, Inc.

890 Carter Road, Suite 170

Winter Garden, FL 34787

PROJECT NO:

G04-760

REPORT NO:

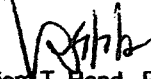
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Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
- (2) 98% of ASTM D1557 (Modified Proctor)
- (3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density lb/ft ³	Moisture %	Dry Density lb/ft ³	Compaction %	Meets Spec?	
			FILL- Test Referenced From Subgrade (SPEC 3)						
1	5/23/05	12"	1251750 North, 599400 East, Lift 1-20	✓	103.1	16.0	102.9	100	Yes

Respectfully Submitted,

BURCAW GEOTECHNICAL GROUP, INC.
William T. Hand, P.E.

CMT Manager

Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.

6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686
www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS

DATE: 5/24/05

PROJECT NAME:

South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:

Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO:

G04-760

REPORT NO:

11

Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density lb/ft ³	Moisture %	Dry Density lb/ft ³	Compaction %	Meets Spec?
FILL- Test Referenced From Subgrade (SPEC 3)								
1	5/24/05	12"	1252060 North, 598940 East, Lift 8-3 ✓	103.1	14.8	102.9	100	Yes
2	5/24/05	12"	1252200 North, 599030 East, Lift 8-4 ✓	103.1	15.2	101.1	98	Yes
3	5/24/05	12"	1252300 North, 599100 East, Lift 8-5 ✓	103.1	14.6	101.6	99	Yes
4	5/24/05	12"	1251950 North, 599070 East, Lift 8-6 ✓	103.1	16.2	101.9	99	Yes
5	5/24/05	12"	1252105 North, 599110 East, Lift 8-7 ✓	103.1	16.2	100.8	98	Yes
6	5/24/05	12"	1252260 North, 599250 East, Lift 8-8 ✓	103.1	15.8	102.4	99	Yes
7	5/24/05	12"	1251990 North, 599680 East, Lift 8-9 ✓	103.1	17.6	103.4	100	Yes
8	5/24/05	12"	1252260 North, 599250 East, Lift 8-10 ✓	103.1	18.5	102.5	99	Yes
9	5/24/05	12"	1251780 North, 599510 East, Lift 8-11 ✓	103.1	17.0	102.0	99	Yes
10	5/24/05	12"	1251800 North, 599400 East, Lift 8-12 ✓	103.1	16.8	102.2	99	Yes
11	5/24/05	12"	1251950 North, 599495 East, Lift 8-13 ✓	103.1	17.1	102.1	99	Yes
12	5/24/05	12"	1252090 North, 599580 East, Lift 8-14 ✓	103.1	16.5	101.4	98	Yes
13	5/24/05	12"	1251895 North, 599240 East, Lift 8-15 ✓	103.1	18.4	101.9	99	Yes
14	5/24/05	12"	1252040 North, 599350 East, Lift 8-16 ✓	103.1	19.2	100.6	98	Yes
15	5/24/05	12"	1252160 North, 599450 East, Lift 8-17 ✓	103.1	18.1	100.9	98	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.

William T. Hand
William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.6402 Linebaugh Avenue, Suite A
Tampa, FL 33625813-818-4606 / 813-891-6686
www.burcawinc.com**REPORT OF FIELD COMPACTION TESTS****DATE:** 5/27/05**PROJECT NAME:**South East Landfill- Section 8
Hillsborough County, Florida**TESTED FOR:**Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787**PROJECT NO:**

G04-760

REPORT NO:

12

Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
- (2) 98% of ASTM D1557 (Modified Proctor)
- (3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location		Max		Dry		Meets Spec?
		Density lb/ft ³			Moisture %	Density lb/ft ³	Compaction %		
			FILL- Test Referenced From Subgrade (SPEC 3)						
1	5/27/05	12"	1252180 North, 599305 East, Lift 8-18	✓	105.9	12.0	103.4	98	Yes
2	5/27/05	12"	1252040 North, 599200 East, Lift 8-19	✓	105.9	13.1	103.7	98	Yes
3	5/27/05	12"	1252170 North, 599470 East, Lift 1-21 Rim Ditch	✓	105.9	14.2	104.6	99	Yes
4	5/27/05	12"	1252070 North, 599660 East, Lift 1-22 Rim Ditch	✓	105.9	13.5	104.9	99	Yes
5	5/27/05	12"	1252080 North, 599130 East, Lift 3-20 Rim Ditch	✓	105.9	12.2	104.9	99	Yes
6	5/27/05	12"	1252140 North, 599540 East, Lift 3-21 Rim Ditch	✓	105.9	13.1	105.4	100	Yes
7	5/27/05	12"	1252140 North, 599540 East, Lift 2-20 Rim Ditch	✓	105.9	14.7	104.7	99	Yes
8	5/27/05	12"	1252080 North, 599640 East, Lift 2-21 Rim Ditch	✓	105.9	14.0	103.9	98	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.
William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.

6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686
www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS**DATE:** 5/28/05**PROJECT NAME:**

South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:

Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO:

G04-760

REPORT NO:

13

Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
- (2) 98% of ASTM D1557 (Modified Proctor)
- (3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density lb/ft ³	Moisture %	Dry Density lb/ft ³	Compaction %	Meets Spec?
FILL- Test Referenced From Subgrade (SPEC 3)								
1	5/28/05	12"	1251780 North, 599060 East, Lift 2-22 ✓	103.1	14.8	101.5	98	Yes
2	5/28/05	12"	1251670 North, 599290 East, Lift 2-23 ✓	103.1	15.4	100.6	98	Yes
3	5/28/05	12"	1251880 North, 599150 East, Lift 11-1 Rim Ditch ✓	103.1	14.6	102.1	99	Yes
4	5/28/05	12"	1251740 North, 599450 East, Lift 11-2 Rim Ditch ✓	103.1	15.9	100.8	98	Yes
5	5/28/05	12"	1257840 North, 599200 East, Lift 12-1 Rim Ditch ✓	103.1	14.5	100.6	98	Yes
6	5/28/05	12"	1251780 North, 599375 East, Lift 12-2 Rim Ditch ✓	103.1	14.7	100.3	97	Yes
7	5/28/05	12"	1251800 North, 599570 East, Lift 9-3 Rim Ditch ✓	103.1	15.2	102.0	99	Yes
8	5/28/05	12"	1251950 North, 599680 East, Lift 9-4 Rim Ditch ✓	103.1	15.8	101.7	99	Yes
9	5/28/05	12"	1251970 North, 599720 East, Lift 10-3 Rim Ditch ✓	105.9	12.2	101.1	95	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.

William T. Hand
William T. Hand., P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.

6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

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REPORT OF FIELD COMPACTION TESTS

DATE: 6/9/05

PROJECT NAME:

South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:

Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO:

G04-760

REPORT NO:

14

Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
- (2) 98% of ASTM D1557 (Modified Proctor)
- (3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density lb/ft ³	Moisture %	Dry Density lb/ft ³	Compaction %	Meets Spec?
FILL- Test Referenced From Subgrade (SPEC 3)								
1	6/9/05	12"	1251680 N, 599300 E, Lift 3 ✓	103.1	15.6	102.3	99	Yes
2	6/9/05	12"	1252080 N, 599625 E, Lift 4- Rim Ditch ✓	103.1	16.5	101.1	98	Yes
3	6/9/05	12"	1252140 N, 599530 E, Lift 4- Rim Ditch ✓	103.1	15.6	102.9	100	Yes
4	6/9/05	12"	1251650 N, 599400 E, Lift 4- Rim Ditch ✓	103.1	18.1	101.8	99	Yes
5	6/9/05	12"	1252085 N, 599620 E, Lift 5- Rim Ditch ✓	103.1	15.6	103.5	100	Yes
6	6/9/05	12"	1252145 N, 599545 E, Lift 5- Rim Ditch ✓	103.1	16.2	102.6	100	Yes
7	6/9/05	12"	1252150 N, 599540 E, Lift 6- Rim Ditch ✓	103.1	17.8	102.9	100	Yes
8	6/9/05	12"	1252090 N, 599625 E, Lift 6- Rim Ditch ✓	103.1	17.5	103.7	101	Yes
9	6/9/05	12"	1252095 N, 599630 E, Lift 7- Rim Ditch ✓	103.1	17.5	104.2	101	Yes
10	6/9/05	12"	1252155 N, 599520 E, Lift 7- Rim Ditch ✓	103.1	18.8	102.6	100	Yes
11	6/9/05	12"	1252090 N, 599630 E, Lift 8- Rim Ditch ✓	103.1	19.4	102.4	99	Yes
12	6/9/05	12"	1252170 N, 599510 E, Lift 8- Rim Ditch ✓	103.1	19.1	103.2	100	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.

[Signature]
William T. Land., P.E.
CMT Manager
Florida Registration No. 56180

6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

BURCAW GEOTECHNICAL GROUP, INC.

813-818-4606 / 813-891-6686
www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS

DATE: 6/15/05

PROJECT NAME:

South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:

Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO:

G04-760

REPORT NO:

15

Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
- (2) 98% of ASTM D1557 (Modified Proctor)
- (3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density lb/ft ³	Moisture %	Dry Density lb/ft ³	Compaction %	Meets Spec?
FILL- Test Referenced From Subgrade (SPEC 3)								
1	6/15/05	12"	1251980 N, 599620 E, Lift 9 ✓	105.9	17.8	104.3	98	Yes
2	6/15/05	12"	1251900 N, 599550 E, Lift 9 ✓	105.9	19.6	103.8	98	Yes
3	6/15/05	12"	1251800 N, 599500 E, Lift 9 ✓	105.9	19.2	104.9	99	Yes
4	6/15/05	12"	1251820 N, 599380 E, Lift 9 ✓	105.9	18.7	105.1	99	Yes
5	6/15/05	12"	1251980 N, 599450 E, Lift 9 ✓	105.9	18.3	103.1	97	Yes
6	6/15/05	12"	1252050 N, 599500 E, Lift 9 ✓	105.9	14.8	105.6	100	Yes
7	6/15/05	12"	1252150 N, 599450 E, Lift 9 ✓	105.9	16.5	105.3	99	Yes
8	6/15/05	12"	1252000 N, 599325 E, Lift 9 ✓	105.9	15.8	106.0	100	Yes
9	6/15/05	12"	1251900 N, 599225 E, Lift 9 ✓	105.9	14.6	102.7	97	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.

William M. Hand., P.E.
CMT Manager
Florida Registration No. 56180

6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

BURCAW GEOTECHNICAL GROUP, INC.

813-818-4606 / 813-891-6686
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REPORT OF FIELD COMPACTION TESTS

DATE: 6/18/05

PROJECT NAME: South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:

Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO: G04-760

REPORT NO: 16

Project Specification: (1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max		Dry		Meets Spec?
		Density lb/ft ³		Moisture %	Density lb/ft ³	Compaction %		
			FILL- Test Referenced From Subgrade (SPEC 3)					
1	6/18/05	12"	1251650 N, 599390 E, Lift 5 ✓	105.9	16.5	102.8	97	Yes
2	6/18/05	12"	1251930 N, 599100 E, Lift 9 ✓	105.9	15.6	102.4	97	Yes
3	6/18/05	12"	1252080 N, 599200 E, Lift 9 ✓	105.9	14.4	103.6	98	Yes
4	6/18/05	12"	1252190 N, 599300 E, Lift 9 ✓	105.9	14.6	104.8	99	Yes
5	6/18/05	12"	1251760 N, 599030 E, Lift 3 ✓	105.9	15.8	104.1	98	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.

William T. Mand., P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.

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REPORT OF FIELD COMPACTION TESTS

DATE: 6/22/05

PROJECT NAME:

South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:

Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO:

G04-760

REPORT NO:

17

Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density lb/ft ³	Moisture %	Dry Density lb/ft ³	Compaction %	Meets Spec?
FILL- Test Referenced From Subgrade (SPEC 3)								
1	6/22/05	12"	1252020 N, 598950 E, Lift 9 ✓	103.1	16.3	100.6	98	Yes
2	6/22/05	12"	1251950 N, 599050 E, Lift 9 ✓	103.1	14.9	101.8	99	Yes
3	6/22/05	12"	1252150 N, 599020 E, Lift 9 ✓	103.1	17.0	101.5	98	Yes
4	6/22/05	12"	1252075 N, 599110 E, Lift 9 ✓	103.1	14.4	104.4	101	Yes
5	6/22/05	12"	1252250 N, 599100 E, Lift 9 ✓	103.1	15.3	98.7	96	Yes
6	6/22/05	12"	1252250 N, 599210 E, Lift 9 ✓	103.1	14.9	99.7	97	Yes
7	6/22/05	12"	1252020 N, 598970 E, Lift 10 ✓	103.1	16.3	100.1	97	Yes
8	6/22/05	12"	1251950 N, 599070 E, Lift 10 ✓	103.1	14.9	104.0	101	Yes
9	6/22/05	12"	1252150 N, 599000 E, Lift 10 ✓	103.1	15.6	101.2	98	Yes
10	6/22/05	12"	1252075 N, 599130 E, Lift 10 ✓	103.1	16.0	107.0	104	Yes
11	6/22/05	12"	1252250 N, 599120 E, Lift 10 ✓	103.1	14.9	101.4	98	Yes
12	6/22/05	12"	1252250 N, 599225 E, Lift 10 ✓	103.1	15.6	99.6	97	Yes
13	6/22/05	12"	1252020 N, 598940 E, Lift 11 ✓	103.1	14.9	104.4	101	Yes
14	6/22/05	12"	1251950 N, 599040 E, Lift 11 ✓	103.1	14.4	103.0	100	Yes
15	6/22/05	12"	1252150 N, 599010 E, Lift 11 ✓	103.1	14.4	99.8	97	Yes
16	6/22/05	12"	1252075 N, 599100 E, Lift 11 ✓	103.1	14.9	100.1	97	Yes
17	6/22/05	12"	1252250 N, 599090 E, Lift 11 ✓	103.1	15.5	100.8	98	Yes
18	6/22/05	12"	1252250 N, 599250 E, Lift 11 ✓	103.1	14.9	99.2	96	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.

William T. Hand., P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.

6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686

www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS

DATE: 6/27/05

PROJECT NAME:

South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:

Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO:

G04-760

REPORT NO:

18

Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
- (2) 98% of ASTM D1557 (Modified Proctor)
- (3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density lb/ft ³	Moisture %	Dry Density lb/ft ³	Compaction %	Meets Spec?
FILL- Test Referenced From Subgrade (SPEC 3)								
1	6/27/05	12"	1251890 N, 599110 E, Lift 9 ✓	103.1	16.3	100.1	97	Yes
2	6/27/05	12"	1252090 N, 599210 E, Lift 9 ✓	103.1	16.5	100.5	97	Yes
3	6/27/05	12"	1252190 N, 599310 E, Lift 9 ✓	103.1	14.6	101.9	99	Yes
4	6/27/05	12"	1251880 N, 599110 E, Lift 10 ✓	103.1	14.9	101.0	98	Yes
5	6/27/05	12"	1252100 N, 599210 E, Lift 10 ✓	103.1	15.6	98.7	96	Yes
6	6/27/05	12"	1252100 N, 599310 E, Lift 10 ✓	103.1	16.2	101.6	99	Yes
7	6/27/05	12"	1252040 N, 599360 E, Lift 10 ✓	103.1	16.9	99.3	96	Yes
8	6/27/05	12"	1252150 N, 599450 E, Lift 10 ✓	103.1	16.4	100.8	98	Yes
9	6/27/05	12"	1252080 N, 599550 E, Lift 10 ✓	103.1	17.2	102.3	99	Yes
10	6/27/05	12"	1251950 N, 599500 E, Lift 10 ✓	103.1	14.9	100.5	97	Yes
11	6/27/05	12"	1251820 N, 599360 E, Lift 10 ✓	103.1	16.5	98.2	95	Yes
12	6/27/05	12"	1251780 N, 599500 E, Lift 10 ✓	103.1	16.8	98.5	96	Yes
13	6/27/05	12"	1251900 N, 599600 E, Lift 10 ✓	103.1	15.2	99.6	97	Yes
14	6/27/05	12"	1251950 N, 599650 E, Lift 10 ✓	103.1	17.8	101.6	99	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.

W. Hand
William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.

6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686

www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS

DATE: 7/5/05

PROJECT NAME:

South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:

Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO:

G04-760

REPORT NO:

19

Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density lb/ft ³	Moisture %	Dry Density lb/ft ³	Compaction %	Meets Spec?
FILL- Test Referenced From Subgrade (SPEC 3)								
1	7/5/05	12"	1252200 N, 599300 E, Lift 11 ✓	103.1	16.6	102.7	100	Yes
2	7/5/05	12"	1252090 N, 599190 E, Lift 11 ✓	103.1	15.5	103.7	101	Yes
3	7/5/05	12"	1252010 N, 599310 E, Lift 11 ✓	103.1	15.9	103.3	100	Yes
4	7/5/05	12"	1252150 N, 599420 E, Lift 11 ✓	103.1	17.2	102.1	99	Yes
5	7/5/05	12"	1252090 N, 599550 E, Lift 11 ✓	103.1	15.2	103.3	100	Yes
6	7/5/05	12"	1251970 N, 599460 E, Lift 11 ✓	103.1	16.8	103.1	100	Yes
7	7/5/05	12"	1251820 N, 599330 E, Lift 11 ✓	103.1	15.7	102.7	100	Yes
8	7/5/05	12"	1251780 N, 599505 E, Lift 11 ✓	103.1	16.9	103.3	100	Yes
9	7/5/05	12"	1251910 N, 599590 E, Lift 11 ✓	103.1	17.6	103.4	100	Yes
10	7/5/05	12"	1252010 N, 599660 E, Lift 11 ✓	103.1	16.8	103.0	100	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.

[Signature]
William T. Mand., P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.6402 Linebaugh Avenue, Suite A
Tampa, FL 33625813-818-4606 / 813-891-6686
www.burcawinc.com**REPORT OF FIELD COMPACTION TESTS**

DATE: 7/8/05

PROJECT NAME:

South East Landfill- Section 8
Hillsborough County, Florida**TESTED FOR:**Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO:

G04-760

REPORT NO:

20

Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
- (2) 98% of ASTM D1557 (Modified Proctor)
- (3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density lb/ft ³	Moisture %	Dry Density lb/ft ³	Compaction %	Meets Spec?
			FILL- Test Referenced From Subgrade (SPEC 3)					
1	7/8/05	12"	1251930 N, 599100 E, Lift 11 ✓	103.1	14.6	102.7	100	Yes
2	7/8/05	12"	1251890 N, 599220 E, Lift 11 ✓	103.1	18.5	100.1	97	Yes
3	7/8/05	12"	1252100 N, 599250 E, Lift 12 ✓	103.1	15.4	104.1	101	Yes
4	7/8/05	12"	1252150 N, 599300 E, Lift 12 ✓	103.1	14.4	100.0	97	Yes
5	7/8/05	12"	1251930 N, 599150 E, Lift 10 ✓	103.1	16.5	102.2	99	Yes
6	7/8/05	12"	1251890 N, 599200 E, Lift 10 ✓	103.1	14.9	102.1	99	Yes

Respectfully Submitted,
BURCAW GEOTECHNICAL GROUP, INC.
William T. Pinder, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW
GEOTECHNICAL GROUP, INC.

6402 Linebaugh Avenue, Suite A
Tampa, Florida 33625

Phone 813-818-4606 Fax 818-891-6686
www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS

TESTED BY: Jason Doyle

PROJECT NAME: Land Fill Section 8

DATE: 8/8/05

PROJECT NUMBER: G0 4 - 760

PROOFROLL (FILL) BUILDING PAD SUBGRADE COMPACTED SUBGRADE STABILIZED SUBBASE BASE ASPHALT
STORM WATER WATER CROSSING SANITARY FOOTING CURB PAD OTHER RETEST

TEST NO.	DEPTH	ELEV	SOIL ID NUMBER	MAXIMUM LAB DRY	MOISTURE CONTENT	IN-PLACE DRY DENSITY	PERCENT COMPACTION	COMMENTS*
NB1	12"	139	PJ	103.1	15.8	98.9	96% ✓	A
NB2		140			16.5	99.9	97% ✓	A
NB3		141			17.8	102.3	99% ✓	A
NB4		142			14.6	98.5	96% ✓	A
NB5		143			15.6	99.3	96% ✓	A
NB6		144			16.3	99.8	97% ✓	A

TEST LOCATION:

NB1	1252080N, 599190E
NB2	1252080N, 599170E
NB3	1252010N, 599290E
NB4	1252090N, 599110E
NB5	125490N, 599105E
NB6	125490N, 599100E

Depth / Elevation of Test Referenced From:

- (1) Subgrade
- (2) Bottom of Structure and/or Top of Pipe
- (3) Bottom of Pipe
- (4) Bottom of Footing

Comments:

- *A. TEST RESULTS COMPLY WITH SPECIFICATIONS
- *B. TEST RESULTS DO NOT COMPLY WITH SPECIFICATIONS
- *C. TEST IS AFTER RECOMPACTION

Specification

- (1) 95% of ASTM D1557 (Modified Proctor)
- (2) 98% of ASTM D1557 (Modified Proctor)
- (3) 100% of ASTM D698 (Standard Proctor)
- (4) 98% of FM4-T434 (Soil Cement)
- (5) 95% of ASTM D2172 (Asphalt)
- (6) 96% of ASTM D2172 (Asphalt)

Method:

- D2922 (Nuclear)
- D2937 (Drive Cylinder)
- D1556 (Sand Cone)

Equipment:

Gauge Serial No. _____
Speedy No. _____
Cylinder Lot No. _____
Gram Scale No. _____
Pound Scale No. _____
Sand Cone Set No. _____

Phone 813-818-4606 Fax 818-891-6686
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PROJECT NUMBER: GO 4 - 760

Gauge Serial No. _____
Speedy No. _____
Cylinder Lot No. _____
Gram Scale No. _____
Pound Scale No. _____
Sand Cone Set No.: _____

6402 Linebaugh Avenue, Suite A
Tampa, Florida 33625

REPORT OF THE COMMISSION

TESTED BY: Josiah D. [Signature]

PROJECT NAME: Cornell Section 8

DATE: 8/18/05

PROJECT NUMBER: GO 4 - 7000

[illegible][illegible]

- (1) Subgrade
- (2) Bottom of Structure and/or Top of Pipe
- (3) Bottom of Pipe
- (4) Bottom of Footing

- (1) 95% of ASTM D1557 (Modified Proctor)
- (2) 98% of ASTM D1557 (Modified Proctor)
- ~~(3) 100% of ASTM D698 (Standard Proctor)~~
- (4) 98% of FM1-T134 (Soil Cement)
- (5) 95% of ASTM D2172 (Asphalt)
- (6) 96% of ASTM D2172 (Asphalt)

*A. TEST RESULTS COMPLY WITH SPECIFICATIONS
*B. TEST RESULTS DO NOT COMPLY WITH SPECIFICATIONS
*C. TEST IS AFTER RECOMPACTION

D2922 (Nuclear)
D2937 (Drive Cylinder)
D1556 (Sand Cone)

Gauge Serial No. _____
Speedy No. _____
Cylinder Lot No. _____
Gram Scale No. _____
Pound Scale No. _____
Sand Cone Set No.: _____

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REPORT OF FIELD COMPACTION TESTS

TESTED BY: Jason Doyle

PROJECT NAME: Landfill Section 8

DATE: 8/11/05

PROJECT NUMBER: G04 - 7600

PROOFROLL (FILL) BUILDING PAD SUBGRADE COMPACTED SUBGRADE STABILIZED SUBBASE BASE ASPHALT

STORM WATER WATER CROSSING SANITARY FOOTING CURB PAD OTHER RETEST

TEST NO.	DEPTH	ELEV	SOIL ID NUMBER	MAXIMUM LAB DRY	MOISTURE CONTENT	IN-PLACE DRY DENSITY	PERCENT COMPACTION	COMMENTS*
WB1	12"	137	PJ	103.1	16.6	102.0	99% ✓	A
WB2		139			17.1	101.7	99% ✓	A
WB3		139			16.0	100.6	98% ✓	A
WB4		140			15.3	98.7	96% ✓	A
WB5		141			14.7	102.5	99% ✓	A
WB6		142			15.2	99.2	96% ✓	A

TEST LOCATION:

WB1	1251890N, 598980E
WB2	1251950N, 599000E
WB3	1252040N, 599055E
WB4	1252080N, 599085E
WB5	1252090N, 599100E
WB6	1252120N, 599130E

Depth / Elevation of Test Referenced From:

- (1) Subgrade
- (2) Bottom of Structure and/or Top of Pipe
- (3) Bottom of Pipe
- (4) Bottom of Footing

Comments:

- *A. TEST RESULTS COMPLY WITH SPECIFICATIONS
*B. TEST RESULTS DO NOT COMPLY WITH SPECIFICATIONS
*C. TEST IS AFTER RECOMPACTION

Specification

- (1) 95% of ASTM D1557 (Modified Proctor)
- (2) 98% of ASTM D1557 (Modified Proctor)
- (3) 100% of ASTM D698 (Standard Proctor)
- (4) 98% of FM1-T134 (Soil Cement)
- (5) 95% of ASTM D2172 (Asphalt)
- (6) 96% of ASTM D2172 (Asphalt)

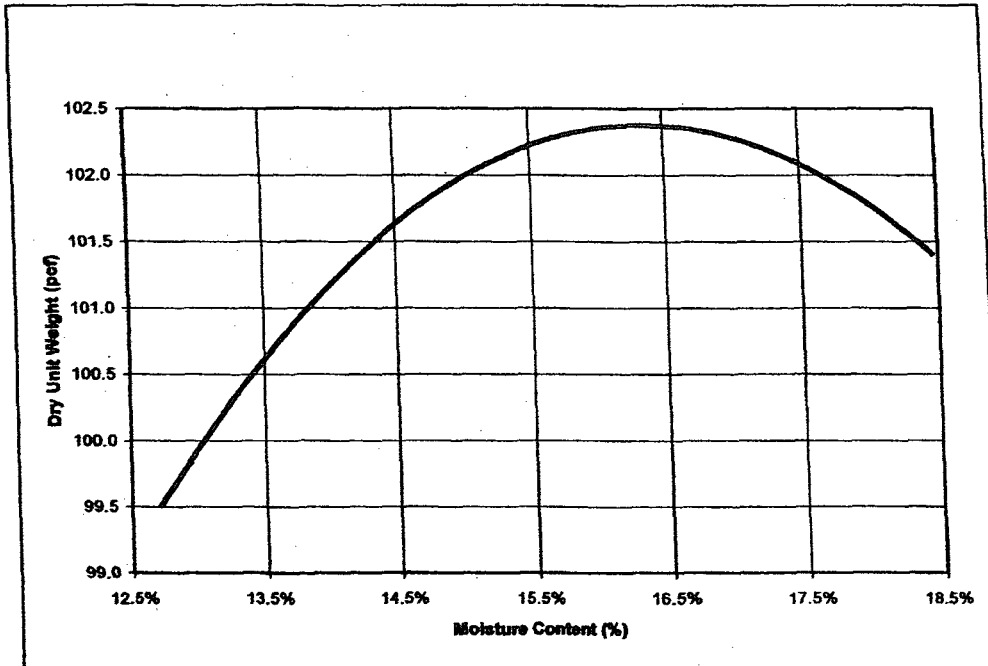
Method:

- D2922 (Nuclear)
D2937 (Drive Cylinder)
D1556 (Sand Cone)

Equipment:

- Gauge Serial No. _____
Speedy No. _____
Cylinder Lot No. _____
Gram Scale No. _____
Pound Scale No. _____
Sand Cone Set No.: _____

BACKFILL PROCTOR

BURCAW GEOTECHNICAL GROUP, INC.6402 W. Linebaugh Avenue, Suite A
Tampa, Florida 33625813-818-4606 / 813-891-6686
www.burcawinc.com**Tested For:** Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787**Project:** Southeast County Landfill Capacity
Expansion Section 8
Hillsborough County, Florida**Date:** 2/9/2005**Project No.** G04-760
Report No. P1**MOISTURE-DENSITY RELATIONSHIP**

Maximum Density: 102.4 PCF
Optimum Moisture: 16.3 %
Test Method: ASTM D-698, Standard
Sampled by: Jason Brenneman
Sample Date: 2/2/2005
% Passing No. 200 Sieve: 1.50%
Liquid Limit: Non-Plastic
Plasticity Index: Non-Plastic
USCS Classification: SP

Description: Light Brown to Tan Fine Sand

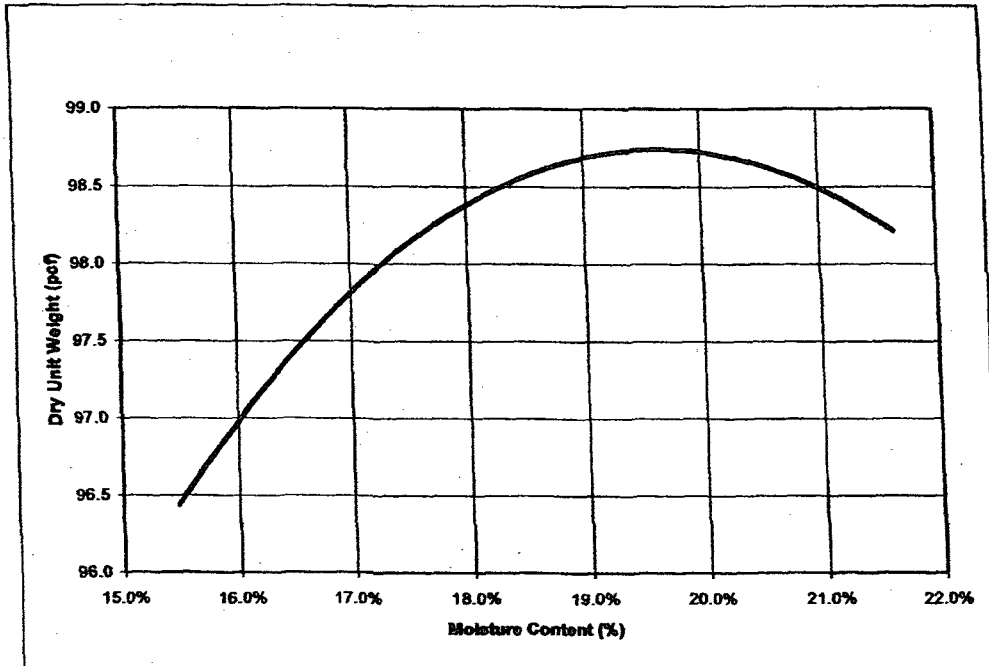
Sample Location: Shelly Lakes Mine

Sieve No.	% Passing by Weight	Max. % Passing*
No. 10	100	100
No. 30	91	95
No. 50	46	65
No. 70	24	20
No. 200	2	0-5

*From 02220, 2.05.A. of Specifications

Respectfully Submitted,
Burcaw Geotechnical Group, Inc.

John R. Gregos, Jr. 2/23/05
John R. Gregos, Jr., P.E.
CMT Manager
Florida Registration No. 58628

BURCAW GEOTECHNICAL GROUP, INC.6402 W. Linebaugh Avenue, Suite A
Tampa, Florida 33625813-818-4606 / 813-891-6686
www.burcawinc.com**Tested For:** Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787**Project:** Southeast County Landfill Capacity
Expansion Section 8
Hillsborough County, Florida**Date:** 2/9/2005**Project No.** G04-760
Report No. P2**MOISTURE-DENSITY RELATIONSHIP**

Maximum Density: 98.7 PCF
Optimum Moisture: 19.6 %
Test Method: ASTM D-698, Standard
Sampled by: Jason Brenneman
Sample Date: 2/2/2005
% Passing No. 200 Sieve: 4.70%
Liquid Limit: Non-Plastic
Plasticity Index: Non-Plastic
USCS Classification: SP

Description: Mottled Light Brown and Dark Brown
Fine Sand with Hard Pan

Sample Location: Shelly Lakes Mine

Sieve No.	% Passing by Weight	Max. % Passing*
No. 10	100	100
No. 30	81	95
No. 50	34	65
No. 70	20	20
No. 200	5	0-5

*From 02220, 2.05.A. of Specifications

Respectfully Submitted,
Burcaw Geotechnical Group, Inc.

John R. Gregos, Jr. 2/23/05
John R. Gregos, Jr., P.E.
CMT Manager
Florida Registration No. 58628

BURCAW GEOTECHNICAL GROUP, INC.

6402 W. Linebaugh Avenue, Suite A
Tampa, Florida 33625

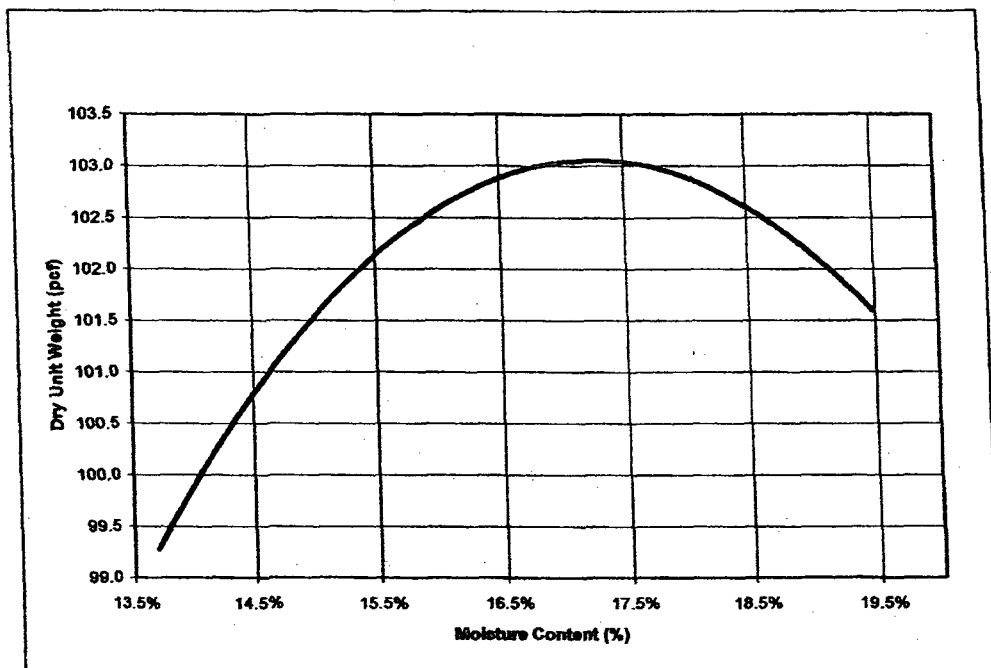
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www.burcawinc.com

Tested For: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Project: Southeast County Landfill Capacity
Expansion Section 8
Hillsborough County, Florida

Date: 2/9/2005

Project No. G04-760
Report No. P3

MOISTURE-DENSITY RELATIONSHIP

Maximum Density: 103.1 PCF
Optimum Moisture: 17.2 %
Test Method: ASTM D-698, Standard
Sampled by: Jason Brenneman
Sample Date: 2/2/2005
% Passing No. 200 Sieve: 3.30%
Liquid Limit: Non-Plastic
Plasticity Index: Non-Plastic
USCS Classification: SP

Description: Dark Brown Fine Sand
with Hard Pan

Sample Location: Shelly Lakes Mine

Sieve No.	% Passing by Weight	Max. % Passing*
No. 10	99	100
No. 30	72	95
No. 50	29	65
No. 70	15	20
No. 200	4	0-5

*From 02220, 2.05.A. of Specifications

Respectfully Submitted,
Burcaw Geotechnical Group, Inc.

John R. Gregos, Jr. 2/23/05
John R. Gregos, Jr., P.E.
CMT Manager
Florida Registration No. 58628

BURCAW GEOTECHNICAL GROUP, INC.

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Tampa, Florida 33625

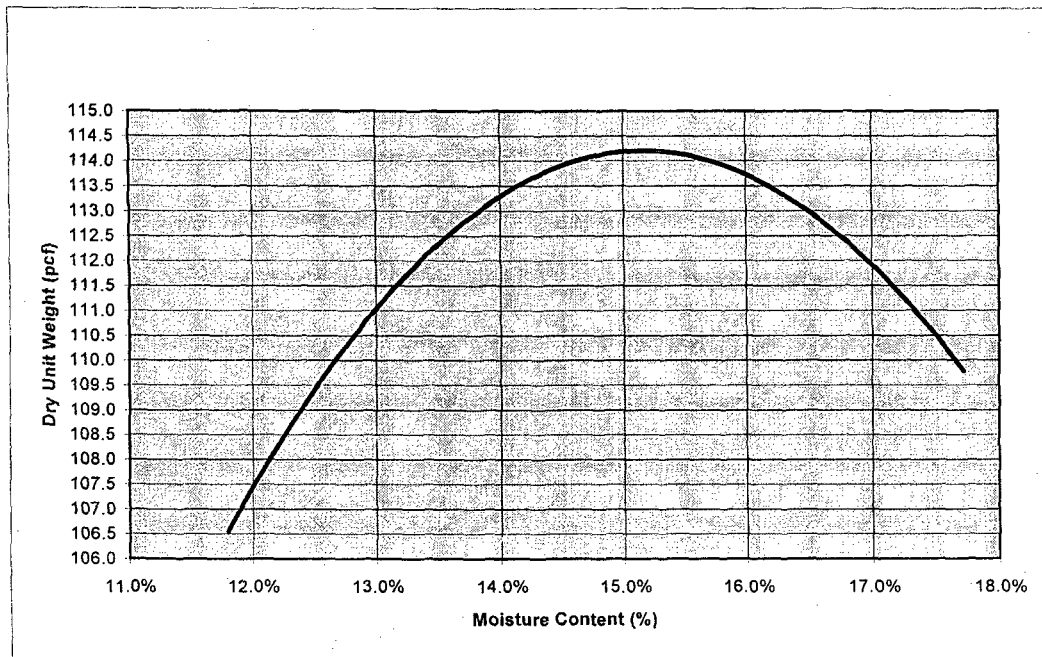
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Tested For: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Project: Southeast County Landfill Capacity
Expansion Section 8
Hillsborough County, Florida

Date: 4/7/2005

Project No. G04-760
Report No. P4

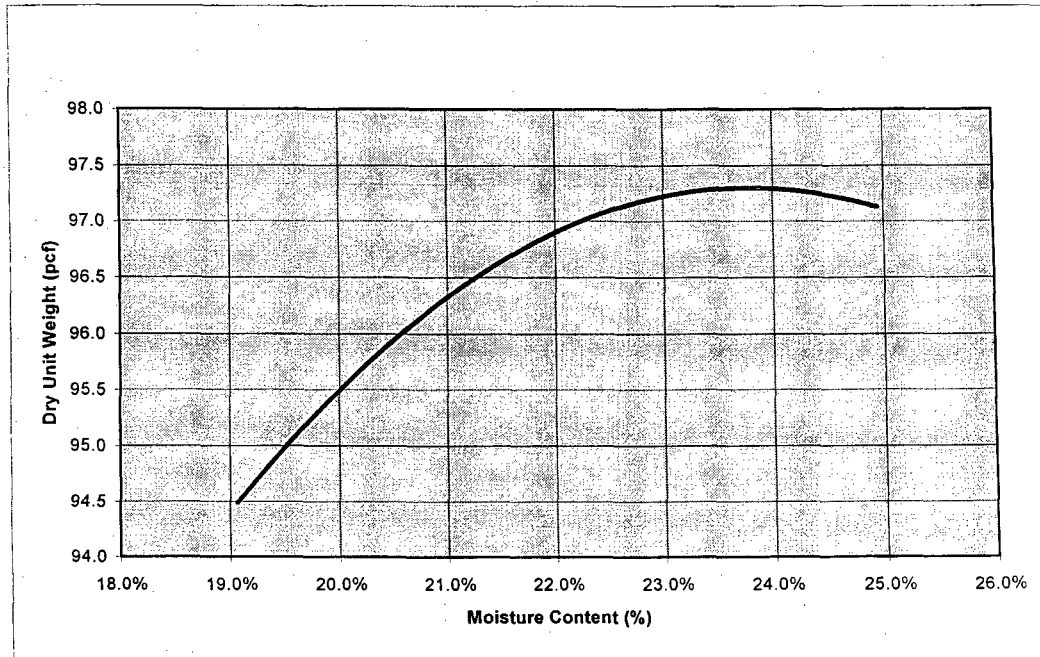
MOISTURE-DENSITY RELATIONSHIP

Maximum Density: 114.2 PCF
Optimum Moisture: 15.2 %
Test Method: ASTM D-698, Standard
Sampled by: Jason Doyle
Sample Date: 4/4/05
% Passing No. 200 Sieve: 27%

Description: Orange Clayey Sand
Sample Location: Whetterington Tractor Service

Respectfully Submitted,
Burcaw Geotechnical Group, Inc.

George J. Stepanchak, P.E.
Vice President Geotechnical
Florida Registration No. 58390

BURCAW GEOTECHNICAL GROUP, INC.6402 W. Linebaugh Avenue, Suite A
Tampa, Florida 33625813-818-4606 / 813-891-6686
www.burcawinc.com**Tested For:** Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787**Project:** Southeast County Landfill Capacity
Expansion Section 8
Hillsborough County, Florida**Date:** 4/7/2005**Project No.** G04-760**Report No.** P5**MOISTURE-DENSITY RELATIONSHIP**

Maximum Density: 97.3 PCF
Optimum Moisture: 23.7 %
Test Method: ASTM D-698, Standard
Sampled by: Jason Brennenman
Sample Date: 3/14/05
% Passing No. 200 Sieve: 34%
Liquid Limit: 47
Plasticity Index: 21
USCS Classification: SC

Description: Orange Clayey Sand**Sample Location:** Racetrack and Infields Road

Sieve No.	% Passing by Weight
No. 4	100
No. 8	98
No. 16	96
No. 30	95
No. 50	91
No. 100	51
No. 200	34

Respectfully Submitted,
Burcaw Geotechnical Group, Inc.

George J. Stepanchak, P.E.
Vice President Geotechnical
Florida Registration No. 58390

BURCAW GEOTECHNICAL GROUP, INC.

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Tampa, Florida 33625

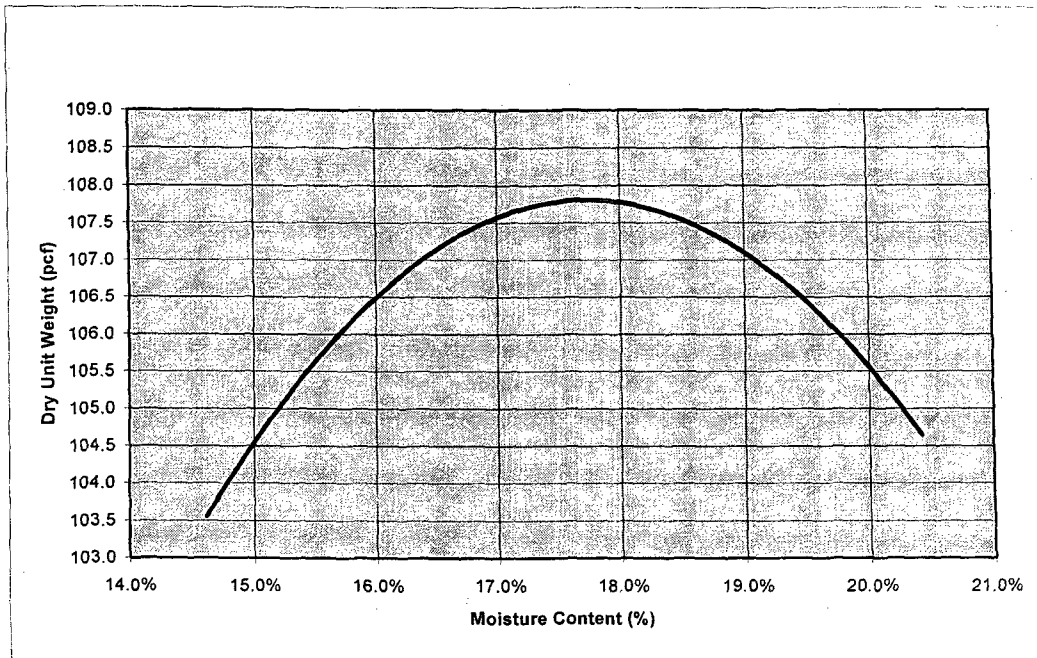
813-818-4606 / 813-891-6686
www.burcawinc.com

Tested For: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Project: Southeast County Landfill Capacity
Expansion Section 8
Hillsborough County, Florida

Date: 4/7/2005

Project No. G04-760
Report No. P6

MOISTURE-DENSITY RELATIONSHIP

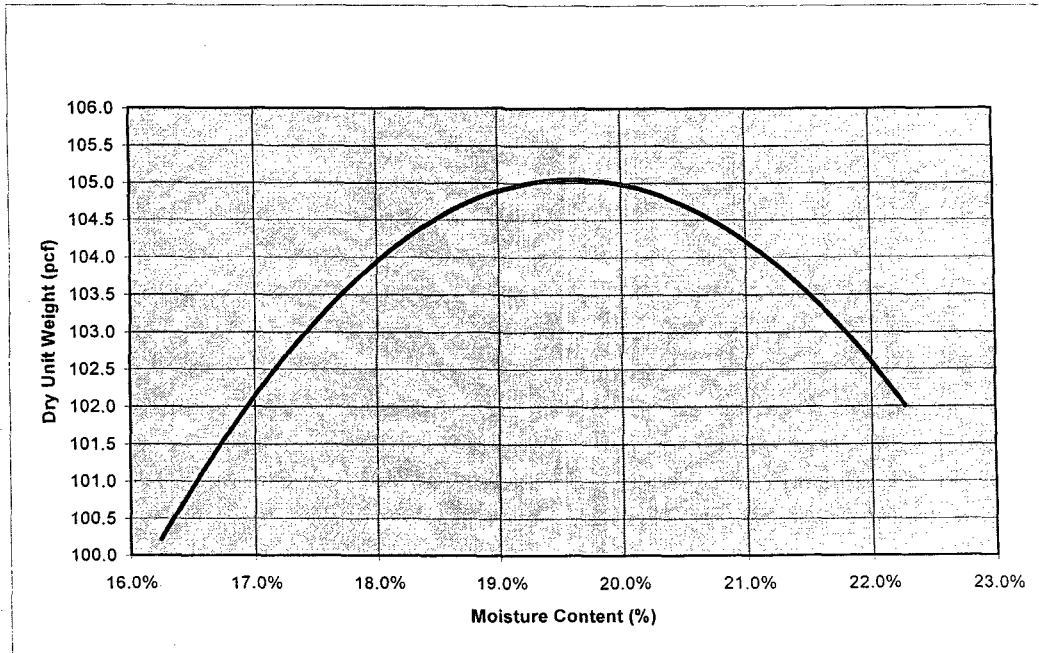
Maximum Density: 107.7 PCF
Optimum Moisture: 17.7 %
Test Method: ASTM D-698, Standard
Sampled by: Jason Brenneman
Sample Date: 3/14/05
% Passing No. 200 Sieve: 29%
Liquid Limit: 32
Plasticity Index: 11
USCS Classification: SC

Description: Orange Clayey Sand
Sample Location: Racetrack and Infields Road

Sieve No.	% Passing by Weight
No. 4	100
No. 8	96
No. 16	94
No. 30	92
No. 50	86
No. 100	45
No. 200	29

Respectfully Submitted,
Burcaw Geotechnical Group, Inc.

George J. Stepanchak, P.E.
Vice President Geotechnical
Florida Registration No. 58390

BURCAW GEOTECHNICAL GROUP, INC.6402 W. Linebaugh Avenue, Suite A
Tampa, Florida 33625813-818-4606 / 813-891-6686
www.burcawinc.com**Tested For:** Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787**Project:** Southeast County Landfill Capacity
Expansion Section 8
Hillsborough County, Florida**Date:** 4/7/2005**Project No.** G04-760**Report No.** P7**MOISTURE-DENSITY RELATIONSHIP**

Maximum Density: 105.1 PCF
Optimum Moisture: 19.6 %
Test Method: ASTM D-698, Standard
Sampled by: Jason Brenneman
Sample Date: 3/14/05
% Passing No. 200 Sieve: 29%
Liquid Limit: 37
Plasticity Index: 14
USCS Classification: SC

Description: Orange Clayey Sand

Sample Location: Racetrack and Infields Road

Sieve No.	% Passing by Weight
No. 4	100
No. 8	96
No. 16	94
No. 30	92
No. 50	86
No. 100	45
No. 200	29

Respectfully Submitted,
Burcaw Geotechnical Group, Inc.

George J. Stepanchak, P.E.
Vice President Geotechnical
Florida Registration No. 58390

BURCAW GEOTECHNICAL GROUP, INC.

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Tested For: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Southeast County Landfill Capacity
Expansion Section 8
Hillsborough County, Florida

Project No.

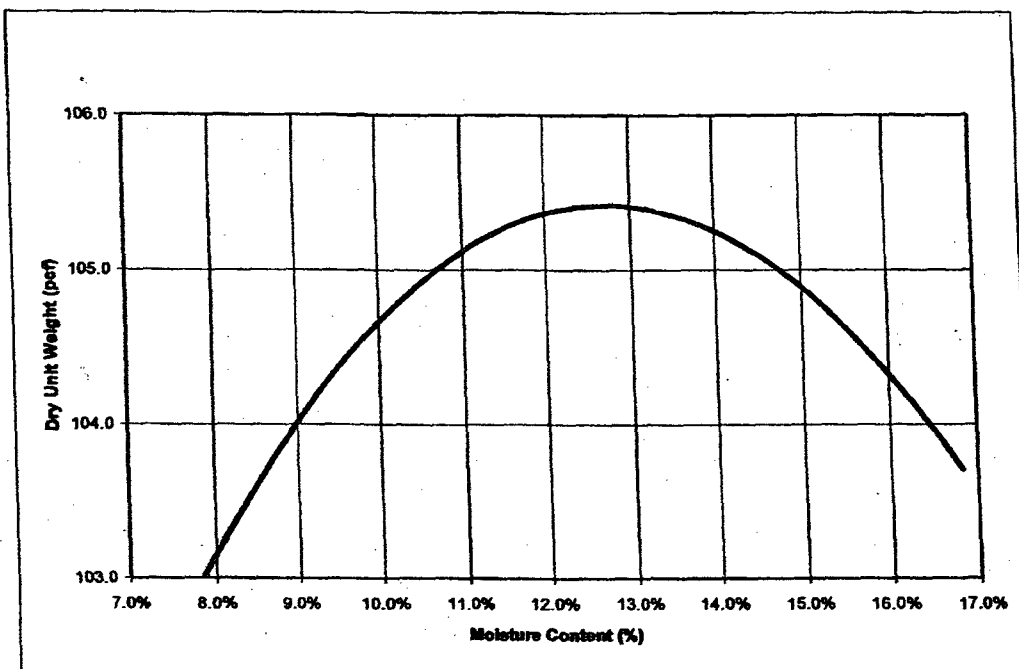
G04-760

Date: 5/30/2005

Report No.

P8

MOISTURE-DENSITY RELATIONSHIP



Maximum Density 105.0 PCF
Optimum Moisture 13.0 %
Test Method: ASTM D-698, Standard ✓
Sampled by: JD
Sample Date: 5/26/05

Description: Grey Fine Sand
Sample Location: 125 2000 N and 599 300 E

Respectfully Submitted,
Burcaw Geotechnical Group, Inc.

[Signature] 7/1/05
William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

SECTION 5

SUBBASE LOW PERMEABILITY SOIL

5.1 SUBBASE SURVEY

In accordance with specifications, Pickett and Associates completed a subbase survey. The subbase survey is contained in Attachment 5-1 in this section.

5.2 BORROW SOURCE TESTING

In accordance with specifications, the contractor was required to submit field and laboratory test data prior to importing and/or prior to any construction using the subbase. The borrow source report contained in Attachment 5-2, includes the borrow source information, soil classification, and test result data.

5.3 CQA TESTING

The SCS CQA monitor removed conformance samples. The samples were then sent to an independent laboratory, Professional Service Industries, Inc. (PSI) located in Pensacola Florida for permeability tests. The test location points and test results are contained in Attachment 5-3.

5.4 CQC CONSULTANT PARTIAL TESTING REPORT

Prior to the installation of the subbase the contractor was required to construct a test section not less than 50 feet wide by 200 feet long and submit field and laboratory tests. The purpose of the test section is to verify that the proposed subbase and construction techniques will be consistently achieved in accordance to the specified parameters as presented in Table 02221-1 of the Project Specifications. In addition to the test section field and laboratory testing, laboratory testing was required during the installation of the subbase. The partial test report is included in Attachment 5-4.

ATTACHMENT 5-1

SUBBASE SURVEY

ATTACHMENT 5-2

BORROW SOURCE TESTING

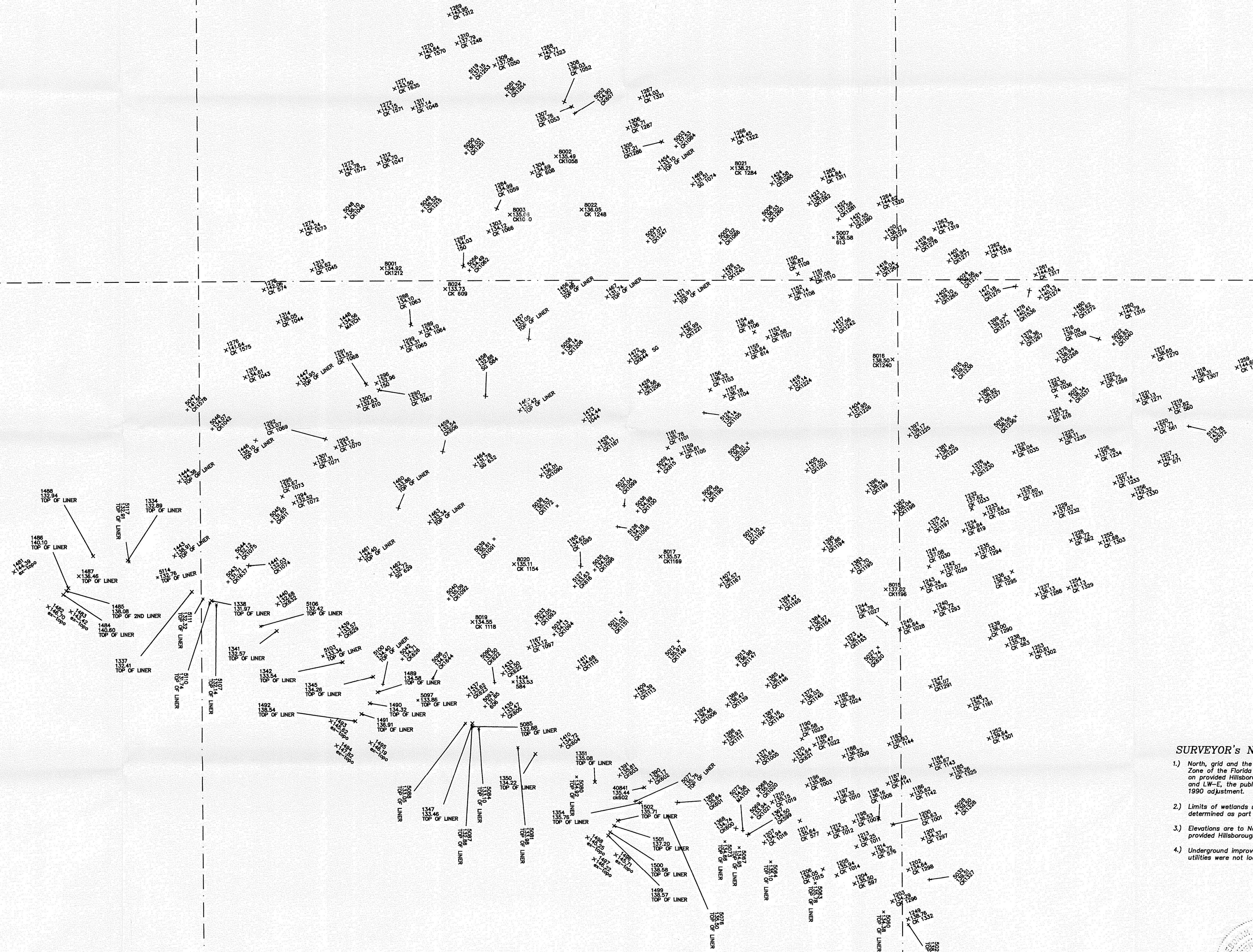
X:\PROJECTS\13551-ERC-SE LANDFILL SURVEY\misc\13551-ASB7.dwg, 9/28/2005 3:05:47 PM, deborah

N 1252000

N 1251500

E 599000

E 599500

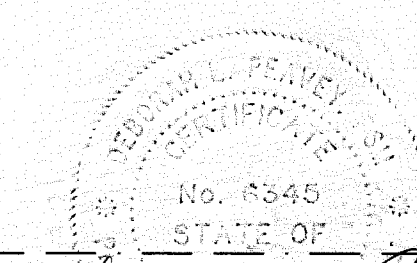


LEGEND:

ELEV.	ELEVATION
△	CONTROL POINT
+	SPOT ELEVATION
+	P&A POINT NUMBER, ELEVATION
+	ERC POINT NUMBER
+	SPOT ELEVATION ON TEST PAD
+	P&A POINT NUMBER, ELEVATION
+	ERC POINT NUMBER

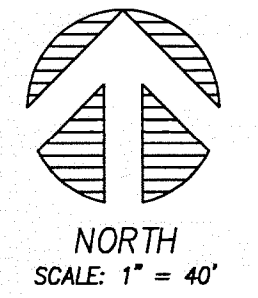
SURVEYOR'S NOTES:

- 1) North, grid and the Coordinates shown hereon are based on the West Zone of the Florida State Plane Coordinate System, and are based on provided Hillsborough County Horizontal Control Monument LW-D and LW-E, the published values used for this survey are NAD 83 1990 adjustment.
- 2) Limits of wetlands under governmental jurisdiction was not determined as part of this survey.
- 3) Elevations are to National Geodetic Vertical Datum of 1929 and are based on provided Hillsborough County Horizontal Control Monument LW-D, elevation is 118.68'
- 4) Underground improvements, encroachments, foundations and/or utilities were not located as a part of this survey.



DEBORAH L. PEAVEY, P.S.M.
FLORIDA REGISTRATION No. 6345
PICKETT AND ASSOCIATES, INC.
FLORIDA REGISTRATION No. LB 364

9/12/05
DATE OF FIELD SURVEY



SE LANDFILL-SECTION 8 EXPANSION
CLAY AREA OF THE

AS-BUILT SURVEY
LOCATED IN SECTION 24, TOWNSHIP
31 SOUTH, RANGE 21 EAST
PREPARED FOR: ERC

NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER		REVISION	
No.	DATE	APPROVED	FIRST ISSUE
1	9/13/05	D.L.P.	D.L.P.
2	9/20/05	D.L.P.	D.L.P.
3	9/26/05	D.L.P.	D.L.P.
SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER		REVISION	
565 WEST MAIN STREET WINTER FLORIDA 33800 PHONE (888) 773-3890 FAX (888) 773-3892		REVISION	
475 SOUTH FIRST AVENUE BARTOW FLORIDA 33800 PHONE (888) 773-3890 FAX (888) 773-3892		REVISION	
PICKETT & PHOTOGRAMMETRY PICKETT & ASSOCIATES, INC. LICENSED BUSINESS No. LB04		REVISION	
HORIZ. SCALE: 1" = 40'		REVISION	
VERT. SCALE: N/A		REVISION	
FIELD BOOK(S): 482		REVISION	
PAGE(S): 136-139		REVISION	
DRAWN BY: DLP		REVISION	
CHECKED BY: DLP		REVISION	
DRAWING NAME: 13551-ASB7		REVISION	

Faulkner Engineering Services, Inc.

12904 Dupont Circle, Tampa, Florida 33626

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www.faulknereng.com

Southeast County Landfill, Section 8

Hillsborough County, Florida

Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date: July 18, 2005

Project Number: 05-013

LABORATORY PERMEABILITY REPORT

Report Number: Permeability 2

Dear Mr. Pinder:

Faulkner Engineering Services, Inc. (FES) has completed the requested laboratory testing for soil samples from the referenced project. One Orange Clayey Sand sample representing the Subbase material was obtained from the borrow source located at Weatherington Tractor Service at US301 and McIntosh. The sample was tested in general accordance with ASTM D5084 to measure hydraulic conductivity.

Sample 1.

Hydraulic Conductivity:

1.9×10^{-7} cm/sec at 20 degrees C

Re-Molded at 95% of the Maximum Dry Density per Standard Proctor (ASTM D698) at approximately 107.8 lbs/ft³ at 18.7 % moisture content.

If you have any questions or if we can be of further service, please contact us at (813) 818-4606

Respectfully Submitted,
Faulkner Engineering Services, Inc.

John R. Gregos, Jr. 7/18/05

John R. Gregos, Jr., P.E.
Florida Registration No. 58628

Faulkner Engineering Services, Inc.

12904 Dupont Circle, Tampa, Florida 33626

813-818-8307 Office

813-818-8381 Fax

www.faulknereng.com

Southeast County Landfill, Section 8

Hillsborough County, Florida

Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date: May 3, 2005

Project Number: 05-013

BORROW SOURCE CERTIFICATION LETTER

Dear Mr. Pinder:

Faulkner Engineering Services, Inc. (FES) has completed the requested laboratory testing for soil samples obtained from Weatherington Tractor Service at US301 and McIntosh Road in Hillsborough County, Florida. Three samples representing the Subbase material were tested for various material property values.

Material Properties

US EPA Test Method 9100:

3.5×10^{-7} cm/sec at 20 degrees C

Re-Molded at 95% of the Maximum Dry Density per Standard Proctor (ASTM D698) at approximately 92.6 lbs/ft³ at 26.3 % moisture content. The leachate was obtained from the Southeast County Landfill.

Standard Proctor, ASTM D698:	Maximum Dry Density (LBS/FT ³)	Optimum Moisture Content (%)
Sample 1:	97.3	23.7
Sample 2:	107.7	17.7
Sample 3:	105.1	19.6

Flexible Wall Permeability, ASTM D5084	Hydraulic Conductivity (cm/sec at 20 deg. C)	Remolded at: Dry Density (LBS/FT ³)	Moisture Content (%)
Sample 1:	2.0E-07	92.4	26.6
Sample 2:	5.2E-06	102.3	20.7
Sample 3:	1.0E-05	99.8	22.6

Atterberg Limits, ASTM D4318	Liquid Limit	Plasticity Index
Sample 1:	47	21
Sample 2:	32	11
Sample 3:	37	14

Faulkner Engineering Services, Inc.

12904 Dupont Circle, Tampa, Florida 33626

813-818-8307 Office

813-818-8381 Fax

www.faulknereng.com

Southeast County Landfill, Section 8

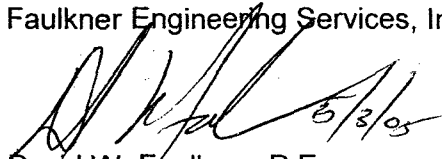
Hillsborough County, Florida

Grain Size Analysis, ASTM D422, for USCS Classification	% Passing No. 200 Sieve	USCS Classification based on Gradation
Sample 1:	33	SC
Sample 2:	27	SC
Sample 3:	29	SC
Average Natural Moisture Content	26.0	

Based on the sample test results, the three samples meet the specifications indicated in Section 2221.

If you have any questions or if we can be of further service, please contact us at (813) 818-4606

Respectfully Submitted,
Faulkner Engineering Services, Inc.



David W. Faulkner, P.E.
President
Florida Registration No. 50740

ATTACHMENT 5-3
CQA TEST RESULTS

G:\PROJECT\Hillsborough 09200020.35\Section8Construction\CLAY TEST LOCATIONS.dwg Sep 28, 2005 - 7:14pm Layout Name: CLAY TEST LOCATIONS Bx.cadd

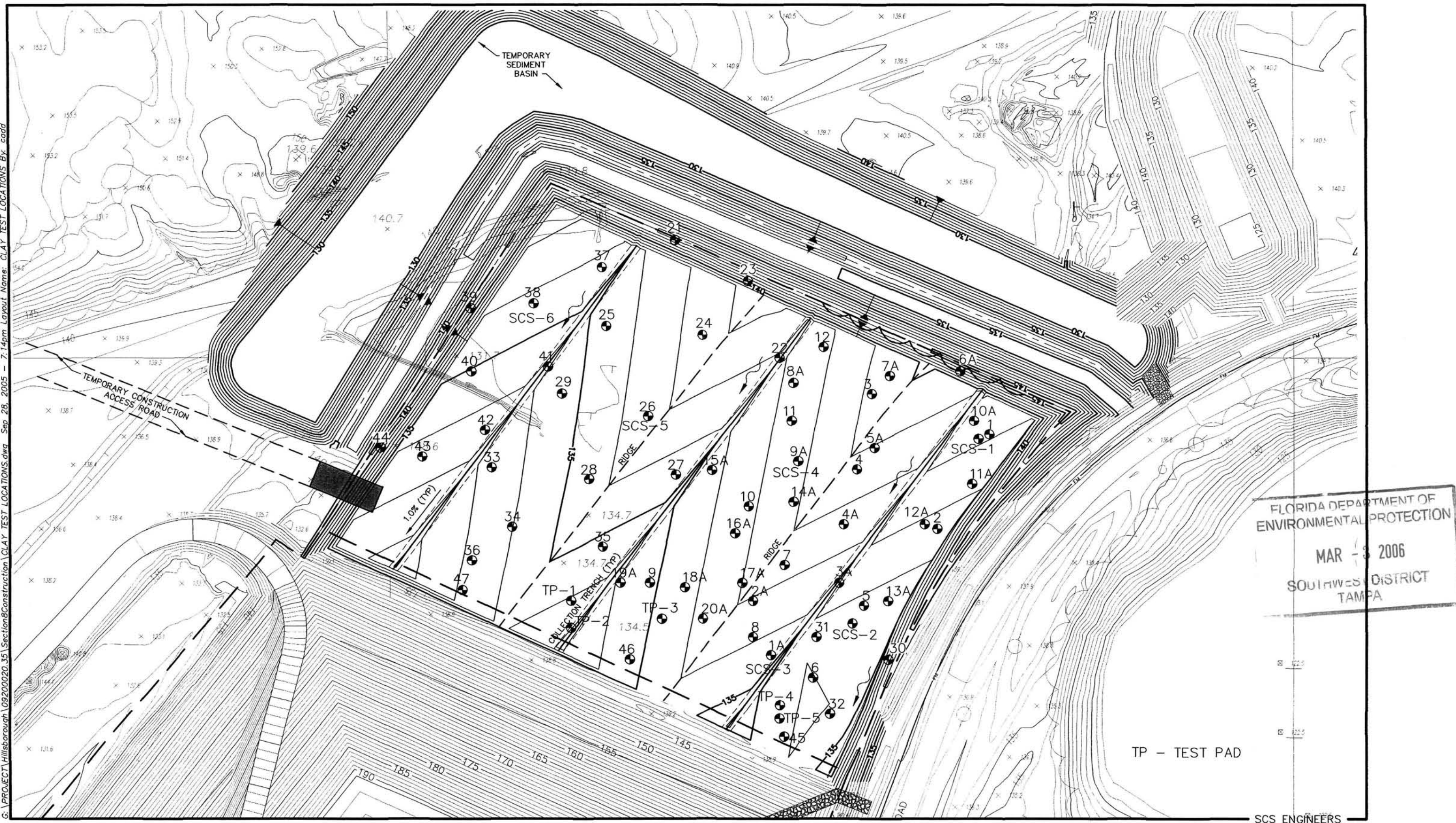


Figure 1. CLAY TEST LOCATIONS, SOUTHEAST COUNTY LANDFILL, HILLSBOROUGH COUNTY, FLORIDA

PSI**PERM WORK SHEET**

CELL

31830
4

PROJECT NAME : HILLSBOROUGH COUNTY SE LANDFILL PROJECT # : 783-50139
ASTM METHOD : ASTM D-5084 DATE : 9.8.5
SAMPLE SOURCE : Test # 1NE corner 1251910N 599650E
VISUAL CLASSIFICATION : BROWN SANDY CLAY

WET WEIGHT	(gms)	275.260
MOISTURE	(%)	20.133
LENGTH *L*	(cm)	3.492
DIAMETER	(cm)	7.206
WET DENSITY	(pcf)	120.608
DRY DENSITY	(pcf)	100.395
SPECIMEN AREA *A*	(cm ²)	40.783
SPECIMEN VOLUME	(cm ³)	142.414
VOID RATIO *e*		0.736
Initial Height of Mercury		3.000
Final Height of Mercury		2.500
ELAPSED TIME *t*	(sec)	22.92
TEMP	(C)	20
hydraulic gradient		5
VISCOSITY CORR. *R*		1
K	(cm/sec)	4.6E-06
CHAMBER PRESSURE (psi) :		90
BACKPRESSURE (psi) :		80
PORE PRESSURE (psi) :		10

1.305 =H1

0.784 =H2

4.6E-06

TARE #	TARE WGT.	TARE+WET	TARE+DRY	MOISTURE
C45	13.64	55.17	48.21	20.1

TESTED BY:

Ariel David

Technician Date

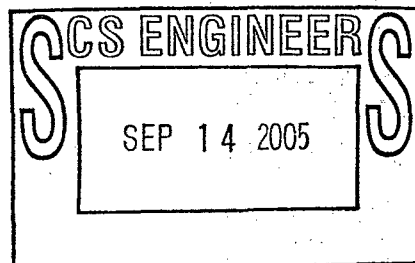
REVIEWED BY:

JAMES EVANS, P.E.

Supervisor/ Manager Date

This report may not be reproduce, except in full, without written permission by PSI.

Results relate only to the specific samples/locations tested.



PSI**PERM WORK SHEET****CELL**

PROJECT NAME : HILLSBOROUGH COUNTY SE LANDFILL PROJECT # : 783-50139
ASTM METHOD : ASTM D-5084 DATE : 9.8.5
SAMPLE SOURCE : TEST #2 SE CORNER 1251705N 599510E (SMALL SHELBY TUBE)
VISUAL CLASSIFICATION : BROWN SANDY CLAY

WET WEIGHT	(gms)	477.440
MOISTURE	(%)	21.095
LENGTH *L*	(cm)	5.799
DIAMETER	(cm)	7.244
WET DENSITY	(pcf)	124.653
DRY DENSITY	(pcf)	102.938
SPECIMEN AREA *A*	(cm ²)	41.214
SPECIMEN VOLUME	(cm ³)	239.001
VOID RATIO *e*		0.700
Initial Height of Mercury		4.000
Final Height of Mercury		3.500
ELAPSED TIME *t*	(sec)	54
TEMP	(C)	20
hydraulic gradient		5
VISCOSITY CORR. *R*		1
K	(cm/sec)	1.6E-06
CHAMBER PRESSURE (psi) :		65
BACKPRESSURE (psi) :		60
PORE PRESSURE (psi) :		5

2.347 =H1

1.826 =H2

1.6E-06

TARE #	TARE WGHT.	TARE+WET	TARE+DRY	MOISTURE
M13	13.65	68.7	59.11	21.1

TESTED BY:

Ariel David

REVIEWED BY:

James Evans, P.E.

Technician Date

Supervisor/ Manager Date

This report may not be reproduce, except in full, without written permission by PSI.

Results relate only to the specific samples/locations tested.

PROJECT NAME : HILLSBOROUGH COUNTY SE LANDFILL PROJECT # : 783-50139
 ASTM METHOD : ASTM D-5084 DATE : 9.8.5
 SAMPLE SOURCE : TEST #3 1251660N 599415E (SMALL SHELBY TUBE)
 VISUAL CLASSIFICATION : BROWN SANDY CLAY

WET WEIGHT	(gms)	481.510
MOISTURE	(%)	16.626
LENGTH *L*	(cm)	5.829
DIAMETER	(cm)	7.259
WET DENSITY	(pcf)	124.552
DRY DENSITY	(pcf)	106.797
SPECIMEN AREA *A*	(cm ²)	41.385
SPECIMEN VOLUME	(cm ³)	241.233
VOID RATIO *e*		0.610

Initial Height of Mercury	
Final Height of Mercury	
ELAPSED TIME *t* (sec)	
TEMP	

2.347 =H1

1.826 =H2

7.3E-07

CHAMBER PRESSURE (psi) :

BACKPRESSURE (psi) :

PORE PRESSURE (psi) :

TARE #	TARE WGT.	TARE+WET	TARE+DRY	MOISTURE
74	13.72	56.37	50.29	16.6

TESTED BY: Ariel David
 Technician Date

REVIEWED BY: James Evans, P.E.
 Supervisor/ Manager Date

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Results relate only to the specific samples/locations tested.

PSI**PERM WORK SHEET****CELL**

PROJECT NAME : HILLSBOROUGH COUNTY SE LANDFILL PROJECT # : 783-50139
ASTM METHOD : ASTM D-5084 DATE : 9.8.5
SAMPLE SOURCE : Test # 4 1251880N 599450E
VISUAL CLASSIFICATION : BROWN SANDY CLAY

WET WEIGHT	(gms)	680.160
MOISTURE	(%)	18.539
LENGTH *L*	(cm)	8.440
DIAMETER	(cm)	7.173
WET DENSITY	(pcf)	124.440
DRY DENSITY	(pcf)	104.978
SPECIMEN AREA *A*	(cm ²)	40.410
SPECIMEN VOLUME	(cm ³)	341.063
VOID RATIO *e*		0.650

Initial Height of Mercury
Final Height of Mercury
ELAPSED TIME *t* (sec)
TEMP (C)
hydraulic gradient
VISCOSITY CORR. *R*
K (cm/sec)

5.000
4.500
13.79
20
5
1
6.1E-06
85
80
5

3.388 =H1

2.868 =H2

6.1E-06

CHAMBER PRESSURE (psi) :

BACKPRESSURE (psi) :

PORE PRESSURE (psi) :

TARE #	TARE WGHT.	TARE+WET	TARE+DRY	MOISTURE
M39	13.69	70.66	61.75	18.5

TESTED BY: Arrel David REVIEWED BY: James Evans, P.E.
Technician Date Supervisor/ Manager Date

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Results relate only to the specific samples/locations tested.

PROJECT NAME : HILLSBOROUGH COUNTY SE LANDFILL PROJECT # : 783-50139
 ASTM METHOD : ASTM D-5084 DATE : 9.13.5
 SAMPLE SOURCE : TEST #5 1251935 N 599283E
 VISUAL CLASSIFICATION : BROWN SANDY CLAY

WET WEIGHT (gms)	468.110	
MOISTURE (%)	20.938	
LENGTH *L* (cm)	5.829	
DIAMETER (cm)	7.186	
WET DENSITY (pcf)	123.559	
DRY DENSITY (pcf)	102.168	
SPECIMEN AREA *A* (cm ²)	40.557	
SPECIMEN VOLUME (cm ³)	236.406	
VOID RATIO *e*	0.712	
Initial Height of Mercury	4.000	2.347 =H1
Final Height of Mercury	3.500	1.826 =H2
ELAPSED TIME *t* (sec)	152.31	
TEMP (C)	20	
hydraulic gradient	5	
VISCOSITY CORR. *R*	1	
K (cm/sec)	5.7E-07	5.7E-07
CHAMBER PRESSURE (psi) :	65	
BACKPRESSURE (psi) :	60	
PORE PRESSURE (psi) :	5	

TARE #	TARE WGHT.	TARE+WET	TARE+DRY	MOISTURE
9	13.56	55.61	48.33	20.9

TESTED BY: Ariel David
 Technician Date

REVIEWED BY: James Evans, P.E.
 Supervisor/ Manager Date

This report may not be reproduce, except in full, without written permission by PSI.

Results relate only to the specific samples/locations tested.

PROJECT NAME : HILLSBOROUGH COUNTY SE LANDFILL PROJECT # : 783-50139
 ASTM METHOD : ASTM D-5084 DATE : 9.19.5
 SAMPLE SOURCE : TEST #6 1252060N 599160E
 VISUAL CLASSIFICATION : BROWN SANDY CLAY

WET WEIGHT	(gms)	380.750
MOISTURE	(%)	19.807
LENGTH *L*	(cm)	4.699
DIAMETER	(cm)	7.221
WET DENSITY	(pcf)	123.462
DRY DENSITY	(pcf)	103.051
SPECIMEN AREA *A*	(cm ²)	40.953
SPECIMEN VOLUME	(cm ³)	192.438
VOID RATIO *e*		0.689

Initial Height of Mercury	3.500
Final Height of Mercury	3.000
ELAPSED TIME *t* (sec)	55.82
TEMP (C)	20
hydraulic gradient	5
VISCOSITY CORR. *R*	1
K (cm/sec)	1.7E-06

1.826 =H1

1.305 =H2

1.7E-06

CHAMBER PRESSURE (psi) :

BACKPRESSURE (psi) :

PORE PRESSURE (psi) :

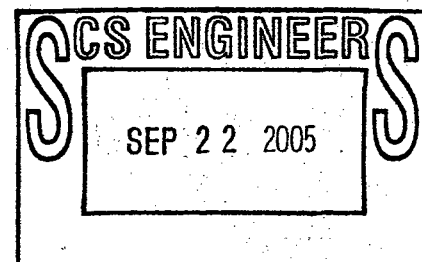
TARE #	TARE WGHT.	TARE+WET	TARE+DRY	MOISTURE
14	13.67	65.81	57.19	19.8

TESTED BY: Ariel David
 Technician Date

REVIEWED BY: James Evans, P.E.
 Supervisor/ Manager Date

This report may not be reproduce, except in full, without written permission by PSI.

Results relate only to the specific samples/locations tested.



ATTACHMENT 5-4
CQC TEST RESULTS

TEST STRIP



Geotechnical and
Environmental Engineering.

September 7, 2005

Mr. Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

RE: **Clay Test Strip Documentation and Testing**
SOUTHEAST COUNTY LANDFILL CAPACITY EXPANSION SECTION 8
Hillsborough County, Florida
BGG Project No.: G04-760

Dear Mr. Pinder:

A representative of *Burcaw Geotechnical Group, Inc. (BGG)* was onsite on July 27, 2005 to document and test the construction of the clay test strip required in the project specifications. In accordance with project specifications, ERC constructed the test strip at least 50 feet wide by 200 feet long. The clay material used to construct the test strip was from an onsite stockpile imported from The Whetherington Tractor Service (WTS) Mine.

During construction of the test strip, material was trucked from the stockpile to the test strip location. Once dumped the material was mixed and spread by a Case 650 Dozer. The material was placed in an approximate 8 inch loose lift thickness at a moisture content consistent with the stockpile. A six inch compacted section was obtained by multiple passes with a Dynapac CA250 smooth drum roller. At least four overlapping passes forward and back were made over the entire test strip area. The roller was operated in vibratory mode at full throttle.

Subsequent to placement and compaction of the clay material, in-place density testing was performed on the test strip. Density testing was performed in accordance with ASTM D 2937 Drive Cylinder Method, ASTM D 4944 Moisture Content by Calcium Carbide Gas Pressure Tester and ASTM D 2922 Nuclear Method. Measurement of field moisture contents by the Calcium Carbide Gas Pressure Tester and the Nuclear Method resulted in a measured discrepancy of 8 percent. Moisture content measured in the laboratory soils oven corresponded with the Calcium Carbide Gas Pressure Tester, therefore the gas pressure tester was used to evaluate the moisture content for both the drive cylinder and nuclear test methods. Ten field density tests were performed across the test strip. Five tests were performed by the drive cylinder method and five by the nuclear method for comparison. The results of the density testing indicate good correlation between the two methods with a relative compaction of at least 95 percent of maximum dry density at a moisture content near or slightly above optimum. The location and results of the in-place density tests in addition to the laboratory standard Proctor (ASTM D 698) for the soil tested are attached.

In addition, five samples of the in-place material were obtained at the density test locations by pushing thin walled Shelby Tubes for laboratory testing in accordance with (ASTM D 5084) "Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter". The testing was performed in accordance with ASTM standards and project specifications. A summary of the test results are as follows:

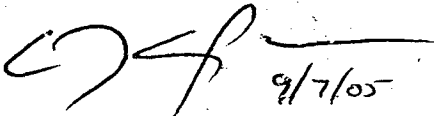
Sample No.	Hydraulic Conductivity (cm/sec)	Sample No.	Hydraulic Conductivity (cm/sec)
P1	2.3×10^{-6}	P4	1.7×10^{-6}
P2	1.9×10^{-6}	P5	2.9×10^{-8}
P3	1.1×10^{-6}		

All samples tested for hydraulic conductivity meet or exceed the project requirement for sub-base material. Samples of the sub-base material was also obtained for natural moisture content (ASTM D 2216) and Atterberg Limits (ASTM D 4318). The result of all laboratory testing performed are attached.

Burcaw Geotechnical Group, Inc. (BGG) appreciates the opportunity to be of service by providing these testing and inspection services and we look forward to assisting you through project completion. If you have any questions concerning this letter please do not hesitate to contact the undersigned.

Sincerely,

Burcaw Geotechnical Group, Inc.



George J. Stepanchak, P.E.

Vice President Geotechnical

Fla. Registration No. 58390

Enclosures: Moisture – Density Relationship
Report of Field Compaction Tests – Clay Test Pad
Laboratory Test Results

Moisture – Density Relationship
Report of Field Compaction Tests

BURCAW GEOTECHNICAL GROUP, INC.

6402 W. Linebaugh Avenue, Suite A
Tampa, Florida 33625

813-818-4606 / 813-891-6686
www.burcawinc.com

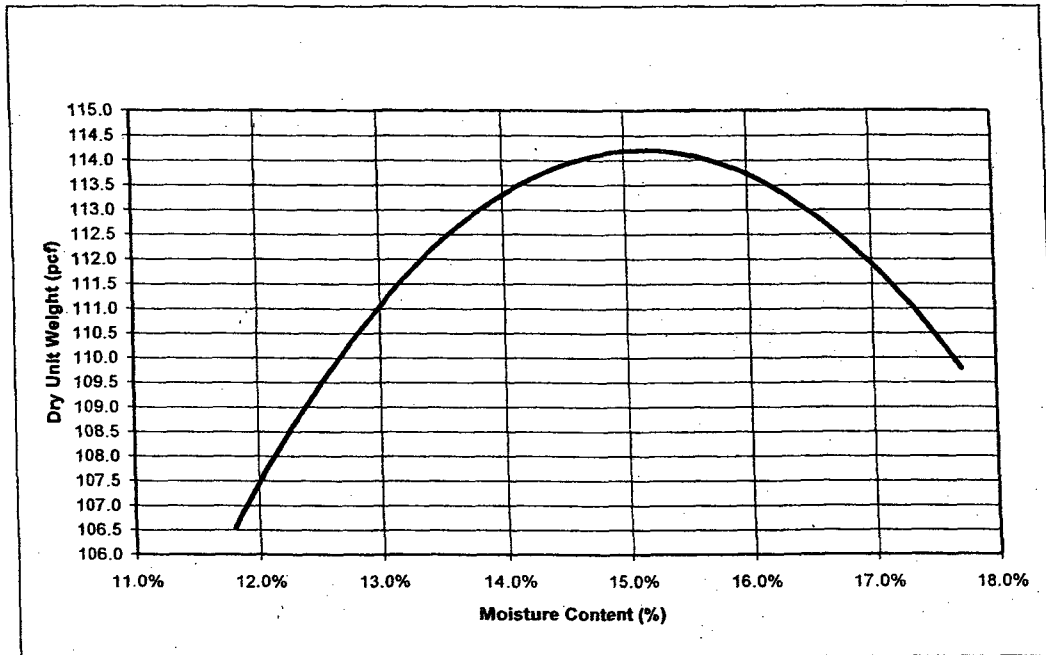
Tested For: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Project: Southeast County Landfill Capacity
Expansion Section 8
Hillsborough County, Florida

Date: 4/7/2005

Project No. G04-760
Report No. P4

MOISTURE-DENSITY RELATIONSHIP



Maximum Density: 114.2 PCF
Optimum Moisture: 15.2 %
Test Method: ASTM D-698, Standard
Sampled by: Jason Doyle
Sample Date: 4/4/05
% Passing No. 200 Sieve: 27.10%

Description: Orange Clayey Sand
Sample Location: Whetherington Tractor Service

BURCAW GEOTECHNICAL GROUP, INC.

6402 Linebaugh Avenue, Suite A
Tampa, FL 33625

813-818-4606 / 813-891-6686
www.burcawinc.com

REPORT OF FIELD COMPACTION TESTS**DATE:** 7/27/05**PROJECT NAME:**

South East Landfill- Section 8
Hillsborough County, Florida

TESTED FOR:

Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

PROJECT NO:

G04-760

REPORT NO:

25A

Project Specification:

- (1) 95% of ASTM D1557 (Modified Proctor)
(2) 98% of ASTM D1557 (Modified Proctor)
(3) 95% of ASTM D698 (Standard Proctor)

No.	Date	Elevation or Depth	Location	Max Density lb/ft ³	Moisture %	Dry Density lb/ft ³	Compaction %	Meets Spec?
FILL- Test Referenced From Subgrade (SPEC 3)								
1	7/27/05	6"	Clay Test Pad 1251730 N, 599200 E (Drive Cylinder)	114.2	15.6	108.7	95	Yes
2	7/27/05	6"	1251730 N, 599200 E (Nuclear)	114.2	15.6	109.1	96	Yes
3	7/27/05	6"	1251700 N, 599200 E (Drive Cylinder)	114.2	15.0	109.2	96	Yes
4	7/27/05	6"	1251700 N, 599200 E (Nuclear)	114.2	15.0	109.5	96	Yes
5	7/27/05	6"	1251710 N, 599300 E (Drive Cylinder)	114.2	14.8	108.9	95	Yes
6	7/27/05	6"	1251710 N, 599300 E (Nuclear)	114.2	14.8	109.2	96	Yes
7	7/27/05	6"	1251615 N, 599430 E (Drive Cylinder)	114.2	15.5	109.6	96	Yes
8	7/27/05	6"	1251615 N, 599430 E (Nuclear)	114.2	15.5	109.4	96	Yes
9	7/27/05	6"	1251600 N, 599430 E (Drive Cylinder)	114.2	14.8	109.1	96	Yes
10	7/27/05	6"	1251600 N, 599430 E (Nuclear)	114.2	14.8	109.3	96	Yes

Laboratory Test Results

Sample No.	Location	Natural Moisture Content (%)	Atterberg Limits			USCS Classification
	Test Pad		LL	PL	PI	
P1	1251730 N 599200 E	18	25	15	10	CL
P2	1251700 N 599200 E	18	27	19	8	CL
P3	1251710 N 599300 E	19	32	14	18	CL
P4	1251615 N 599430 E	21	31	15	16	CL
P5	1251600 N 599430 E	20	32	17	15	CL

BURCAW

GEOTECHNICAL GROUP, INC.

Geotechnical Engineering
Construction Materials
Testing

Fax

TO:

Jerry Pender

FROM:

William T. Hand, P.E.

FAX #:

407-656-2128

DATE:

08/19/05

RE:

Hillsborough County Landfill Section 8

COMMENTS:

Jerry,

Attached is the Qore results of the Flexible Wall Permeability Test (ASTM D-422) for the clay samples.

It is a pleasure to be of continued service and we appreciate your business.

5402 W. Linebaugh Ave., Ste A
Tampa, Florida 33625
Phone: 813.818.4606
Fax: 813.891.6686
www.burcawinc.com

This fax contains

7

Pages. (including this cover)

If you did not receive every page, please call 818-4606



August 10, 2005

Burcaw Geotechnical Group, Inc.
6402 Lindberg Avenue, Suite A
Tampa, Florida 33625

Attention: Mr. William Hand

Subject: Burcaw/Hillsborough County Landfill
QORE Job No. 26421

Gentlemen:

QORE, Inc. has completed the laboratory testing on the soil samples sent by your office. The following tests were performed:

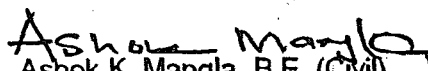
♦ Flexible Wall Permeability Test (ASTM D-422)

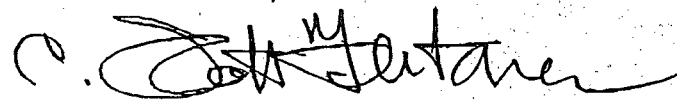
*Confining pressure of 10 psi was used as requested by your office

QORE, Inc. performs soil tests in general accordance with the applicable American Society for Testing and Materials (ASTM) or AASHTO procedures. These procedures are generally recognized as the basis for uniformity and consistency of test results in the geotechnical engineering profession. All the work is supervised by a qualified engineer. Attached are test results for your review.

QORE, Inc. appreciates the opportunity to provide these laboratory services. Please contact us if you have any questions concerning this report or if we may be of further service.

Respectfully submitted,
QORE, INC.


Ashok K. Mangla, B.E. (Civil)
Geotechnical Laboratory Manager
Member ASTM D-18, D-35


C. Scott Fletcher, P.E.
Chief Geotechnical Engineer
Reg. Ga. 16170

AKM/CSF/jk

Attachment



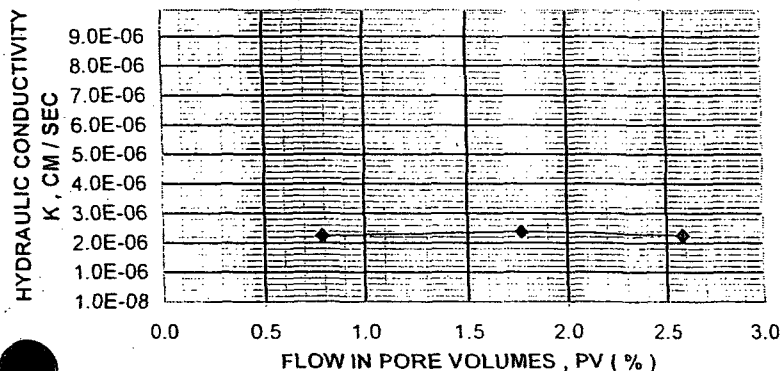
FLEXIBLE WALL PERMEABILITY TEST REPORT (ASTM D 5084)



REV0,11/19/02

JOB NAME : Burcaw/ Hillsborough County Landfill Section 8

JOB NO. :	26421	REPORT NO. :	-	DATE:	08/02/05	REVIEWED BY :	
BORING / PIT:	-	DEPTH / ELEV. :	-	SAMPLE NO. :	-	SAMPLE TYPE:	UD
SAMPLE LOCATION: P-1						DIAMETER, INCHES :	2.88
SOIL DESCRIPTION : Tan with gray sandy clay						LENGTH, INCHES :	4.53
LIQUID LIMIT, % :	-	PLASTICITY INDEX, % :	-	FINES, % :	-	SPECIFIC GRAVITY, Gs :	2.74



HYDRAULIC CONDUCTIVITY, k
2.3E-06 CM / SEC @ 20 °C

SPECIMEN PROPERTIES

INITIAL

MOISTURE CONTENT	W _o	19.8	%
DRY BULK DENSITY	γ _{dryo}	105.0	pcf
SATURATION	S _o	86.5	%
VOID RATIO	e _o	0.626	

AFTER CONSOLIDATION

MOISTURE CONTENT	W _c	21.3	%
DRY BULK DENSITY	γ _{dryc}	105.4	pcf
SATURATION	S _c	100	%
VOID RATIO	e _c	0.619	

PERMEATION

FINAL BACK PRESSURE	u _o	70.0	psi
EFFECTIVE CONSOLIDATION PRESSURE	σ' _v	10.0	psi
PORE PRESSURE DIFFERENCE TO INDUCE FLOW	Δu _o	1.6	psi
HYDRAULIC GRADIENT	i	10	
QUANTITY OF FLOW	Q	4.8	cm ³
TOTAL PORE VOLUME	PV	2.6	%

PERMEANT PROPERTIES

PERMEANT DESCRIPTION :

Deaired Tap Water
@ 22 °C

REMOLDED SOIL PROPERTIES

N/A

MAXIMUM DRY DENSITY :	-	PCF
OPTIMUM MOISTURE CONTENT :	-	%



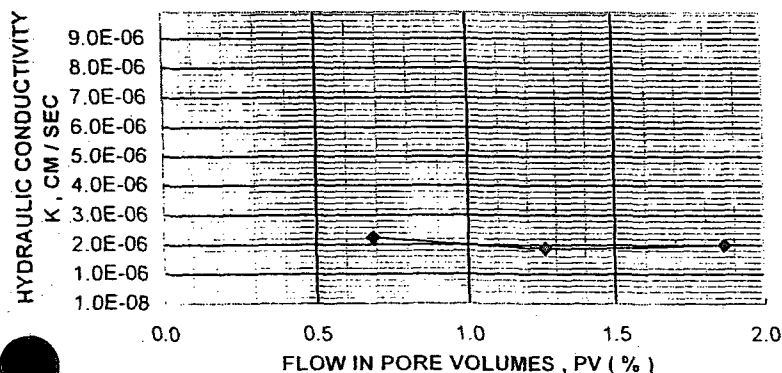
FLEXIBLE WALL PERMEABILITY TEST REPORT (ASTM D 5084)



REV0.11/19/02

JOB NAME : Burcaw/ Hillsborough County Landfill Section 8

JOB NO. :	26421	REPORT NO. :	-	DATE:	08/02/05	REVIEWED BY :	
BORING / PIT:	-	DEPTH / ELEV. :	-	SAMPLE NO. :	-	SAMPLE TYPE:	UD
SAMPLE LOCATION: P-2						DIAMETER, INCHES :	2.90
SOIL DESCRIPTION : Tan with gray sandy clay						LENGTH, INCHES :	4.32
LIQUID LIMIT, % :	-	PLASTICITY INDEX, % :	-	FINES, % :	-	SPECIFIC GRAVITY, G _s :	2.74



HYDRAULIC CONDUCTIVITY, k
1.9E-06 CM / SEC @ 20 °C

SPECIMEN PROPERTIES

INITIAL

MOISTURE CONTENT	W _o	20.0	%
DRY BULK DENSITY	γ _{dryo}	106.2	pcf
SATURATION	S _o	90.2	%
VOID RATIO	e _o	0.608	

AFTER CONSOLIDATION

MOISTURE CONTENT	W _c	21.2	%
DRY BULK DENSITY	γ _{dryc}	106.6	pcf
SATURATION	S _c	100	%
VOID RATIO	e _c	0.601	

PERMEATION

FINAL BACK PRESSURE	u _o	70.0	psi
EFFECTIVE CONSOLIDATION PRESSURE	σ' _v	10.0	psi
PORE PRESSURE DIFFERENCE TO INDUCE FLOW	Δu _o	1.6	psi
HYDRAULIC GRADIENT	i	10	
QUANTITY OF FLOW	Q	3.3	cm ³
TOTAL PORE VOLUME	PV	1.9	%

PERMEANT PROPERTIES

PERMEANT DESCRIPTION :

Deaired Tap Water

@ 22 °C

REMOLDED SOIL PROPERTIES

N/A

MAXIMUM DRY DENSITY :	-	PCF
OPTIMUM MOISTURE CONTENT :	-	%

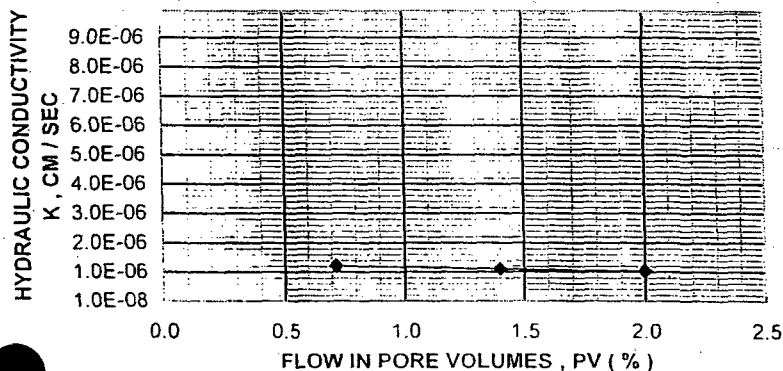
FLEXIBLE WALL PERMEABILITY TEST REPORT (ASTM D 5084)



REV0,11/19/02

JOB NAME : Burcaw/ Hillsborough County Landfill Section 8

JOB NO. : 26421	REPORT NO. : -	DATE: 08/02/05	REVIEWED BY :
BORING / PIT: -	DEPTH / ELEV. : -	SAMPLE NO. : -	SAMPLE TYPE: UD
SAMPLE LOCATION: P-3			DIAMETER, INCHES : 2.86
SOIL DESCRIPTION : Tan with gray sandy clay			LENGTH, INCHES : 3.15
LIQUID LIMIT, % : -	PLASTICITY INDEX, % : -	FINES, % : -	SPECIFIC GRAVITY, Gs : 2.74



HYDRAULIC CONDUCTIVITY, k
1.1E-06 CM / SEC @ 20 °C

SPECIMEN PROPERTIES

INITIAL

MOISTURE CONTENT	W _o	19.8	%
DRY BULK DENSITY	γ _{dryo}	105.3	pcf
SATURATION	S _o	87.0	%
VOID RATIO	e _o	0.621	

AFTER CONSOLIDATION

MOISTURE CONTENT	W _c	21.3	%
DRY BULK DENSITY	γ _{dryc}	105.9	pcf
SATURATION	S _c	100	%
VOID RATIO	e _c	0.611	

PERMEATION

FINAL BACK PRESSURE	u _o	70.0	psi
EFFECTIVE CONSOLIDATION PRESSURE	σ' _v	10.0	psi
PORE PRESSURE DIFFERENCE TO INDUCE FLOW	Δu _o	1.1	psi
HYDRAULIC GRADIENT	i	10	
QUANTITY OF FLOW	Q	2.5	cm ³
TOTAL PORE VOLUME	PV	2.0	%

PERMEANT PROPERTIES

PERMEANT DESCRIPTION :

Deaired Tap Water

@ 22 °C

REMOLDED SOIL PROPERTIES

N/A

MAXIMUM DRY DENSITY :	-	PCF
OPTIMUM MOISTURE CONTENT :	-	%



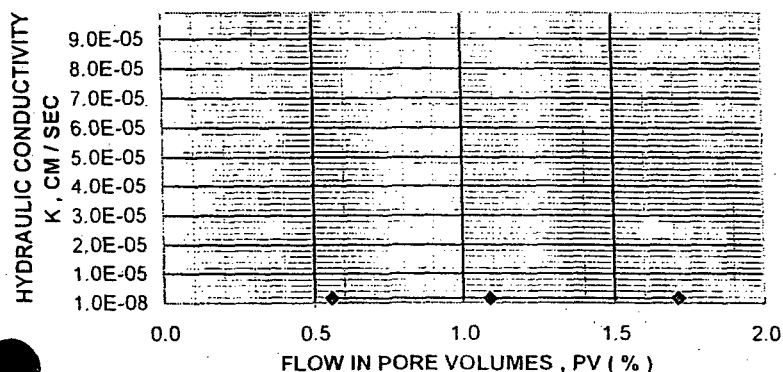
FLEXIBLE WALL PERMEABILITY TEST REPORT (ASTM D 5084)



REV0,11/19/02

JOB NAME : Burcaw/ Hillsborough County Landfill Section 8

JOB NO. :	26421	REPORT NO. :	-	DATE:	08/02/05	REVIEWED BY :	
BORING / PIT:	-	DEPTH / ELEV. :	-	SAMPLE NO. :	-	SAMPLE TYPE:	UD
SAMPLE LOCATION: P-4						DIAMETER , INCHES :	2.86
SOIL DESCRIPTION : Tan with gray sandy clay						LENGTH , INCHES :	3.78
LIQUID LIMIT, % :	-	PLASTICITY INDEX , %	-	FINES , % :	-	SPECIFIC GRAVITY, G _s :	2.74



HYDRAULIC CONDUCTIVITY, k
1.7E-06 CM / SEC @ 20 °C

SPECIMEN PROPERTIES

INITIAL

MOISTURE CONTENT	W _o	22.7	%
DRY BULK DENSITY	γ _{dryo}	101.0	pcf
SATURATION	S _o	89.9	%
VOID RATIO	e _o	0.691	

AFTER CONSOLIDATION

MOISTURE CONTENT	W _c	23.6	%
DRY BULK DENSITY	γ _{dryc}	101.5	pcf
SATURATION	S _c	100	%
VOID RATIO	e _c	0.682	

PERMEATION

FINAL BACK PRESSURE	u _o	70.0	psi
EFFECTIVE CONSOLIDATION PRESSURE	σ' _v	10.0	psi
PORE PRESSURE DIFFERENCE TO INDUCE FLOW	Δu _o	1.4	psi
HYDRAULIC GRADIENT	i	10	
QUANTITY OF FLOW	Q	2.8	cm ³
TOTAL PORE VOLUME	PV	1.7	%

PERMEANT PROPERTIES

PERMEANT DESCRIPTION :

Deaired Tap Water

@ 22 °C

REMOLDED SOIL PROPERTIES

N/A

MAXIMUM DRY DENSITY :	-	PCF
OPTIMUM MOISTURE CONTENT :	-	%



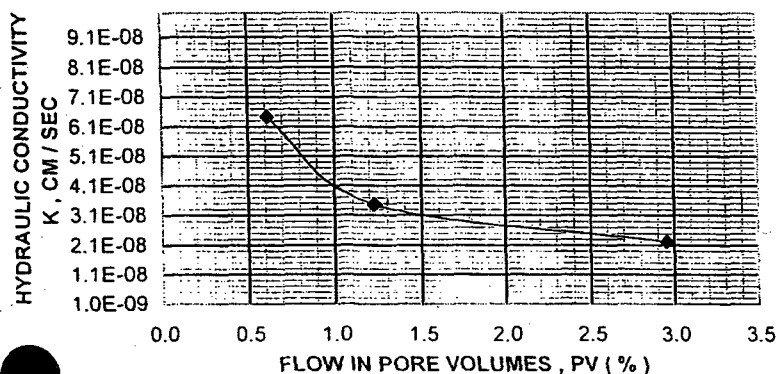
FLEXIBLE WALL PERMEABILITY TEST REPORT (ASTM D 5084)



REV0,11/19/02

JOB NAME : Burcaw/ Hillsborough County Landfill Section 8

JOB NO. :	26421	REPORT NO. :	-	DATE:	08/09/05	REVIEWED BY :	
BORING / PIT:	-	DEPTH / ELEV. :	-	SAMPLE NO. :	-	SAMPLE TYPE:	UD
SAMPLE LOCATION: P-5						DIAMETER, INCHES :	2.89
SOIL DESCRIPTION : Tan with gray sandy clay						LENGTH, INCHES :	4.34
LIQUID LIMIT, % :	-	PLASTICITY INDEX, % :	-	FINES, % :	-	SPECIFIC GRAVITY, G _s :	2.74



HYDRAULIC CONDUCTIVITY, k

2.9E-08 CM / SEC @ 20 °C

SPECIMEN PROPERTIES

INITIAL

MOISTURE CONTENT	W _o	20.8	%
DRY BULK DENSITY	γ _{dryo}	104.4	pcf
SATURATION	S _o	89.5	%
VOID RATIO	e _o	0.635	

AFTER CONSOLIDATION

MOISTURE CONTENT	W _c	21.2	%
DRY BULK DENSITY	γ _{dryc}	104.9	pcf
SATURATION	S _c	100	%
VOID RATIO	e _c	0.628	

PERMEATION

FINAL BACK PRESSURE	u _o	70.0	psi
EFFECTIVE CONSOLIDATION PRESSURE	σ _v [']	10.0	psi
PORE PRESSURE DIFFERENCE TO INDUCE FLOW	Δu _o	1.6	psi
HYDRAULIC GRADIENT	i	10	
QUANTITY OF FLOW	Q	5.3	cm ³
TOTAL PORE VOLUME	PV	3.0	%

PERMEANT PROPERTIES

PERMEANT DESCRIPTION :

Deaired Tap Water

@ 22 °C

REMOLDED SOIL PROPERTIES

N/A

MAXIMUM DRY DENSITY :	-	PCF
OPTIMUM MOISTURE CONTENT :	-	%

INSTALLATION TESTING

September 28, 2005

Mr. Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, Florida 34787

**RE: Subbase Layer Certification
SOUTHEAST COUNTY LANDFILL EXPANSION, SECTION 8
Hillsborough County, Florida
FES Project No.: 05-152**

Dear Mr. Pinder:

Faulkner Engineering Services, Inc. (FES) representatives has provided Quality Control Testing Services during the installation of the Subbase Layer. We have performed field and laboratory testing in general accordance with the requirements provided in the project specifications. Please refer to the attached reports for test data and locations.

Note: Quality Control Testing Services for the Test Section were provided by others.

If you should have any questions or we can be of further service, please do not hesitate to contact us at our office.

Respectfully Submitted,
Faulkner Engineering Services, Inc.

John R. Gregos, Jr., P.E.
Florida Registration No. 58628

Enclosures: Appendix A: Sample Location Plan
Appendix B: Test Data Summary Spreadsheet
Appendix C: Sample Laboratory Test Reports
Appendix D: Sample Field Test Reports

*SOUTHEAST COUNTY LANDFILL EXPANSION, SECTION 8
FES Project No. 05-010*

September 28, 2005

APPENDIX A
SAMPLE LOCATION PLAN

G:\PROJECT\Hillsborough\09200020.35\Section8Construction\CLAY TEST LOCATIONS.dwg Sep 28, 2005 - 7:14pm Layout Name: CLAY TEST LOCATIONS Br. cadd

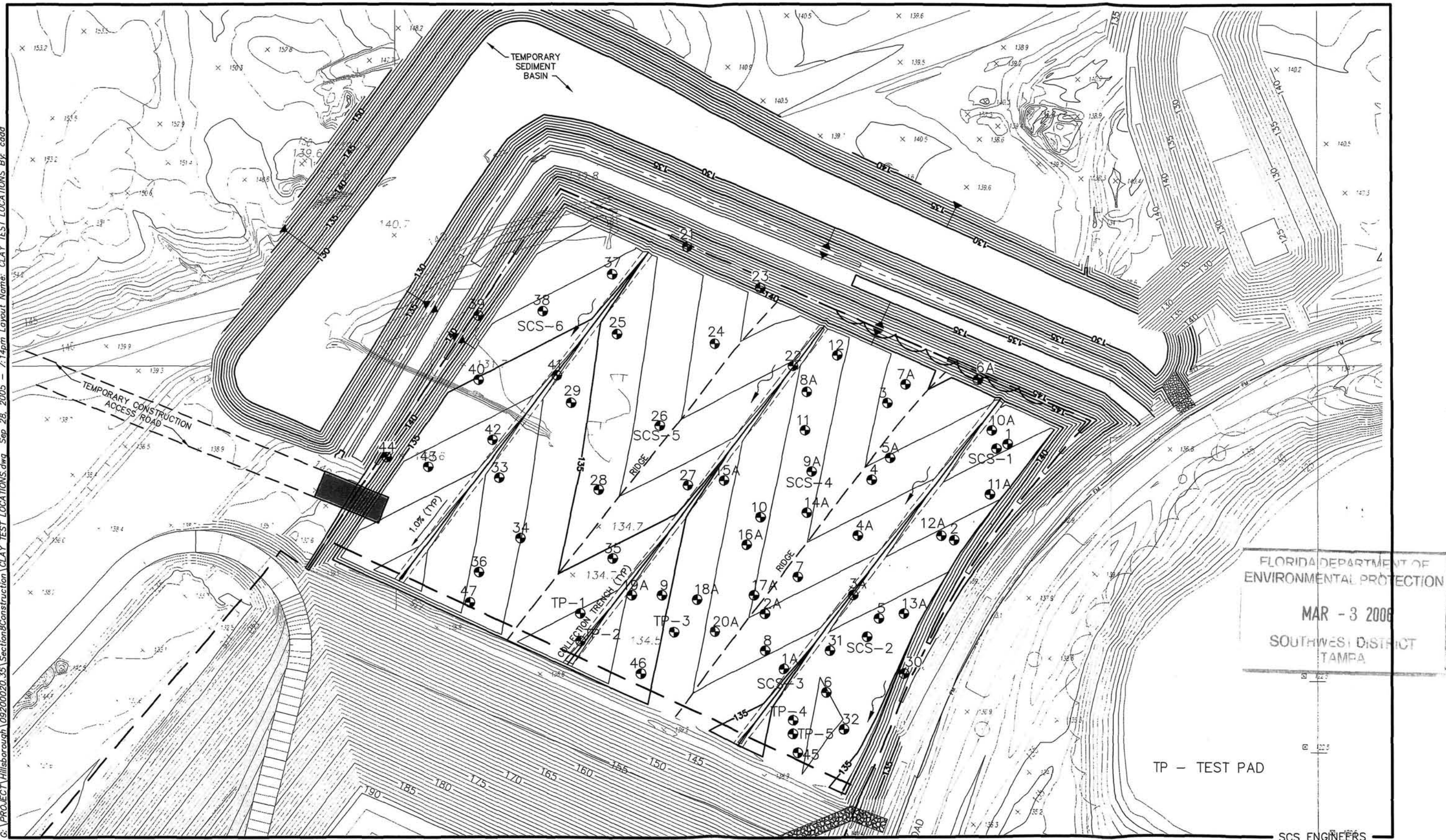


Figure 1. CLAY TEST LOCATIONS, SOUTHEAST COUNTY LANDFILL, HILLSBOROUGH COUNTY, FLORIDA

*SOUTHEAST COUNTY LANDFILL EXPANSION, SECTION 8
FES Project No. 05-010*

September 28, 2005

APPENDIX B

TEST DATA SUMMARY SPREADSHEET

Table No. 1. Summary of Test Results.

SAMPLE NUMBER	NORTH	EAST	DATE SAMPLED	USCS CLASSIFICATION	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	HYDRAULIC CONDUCTIVITY (CM/SEC)	THICKNESS CHECK (IN)	FIELD DENSITY COMPACTION (%)	FIELD DENSITY MOISTURE CONTENT (%)
1	1251915	599662	8/29/05	SC	0.6	34	15	16.4	NP	NP	NP	NP
2	1251810	599604	8/29/05	SC	NP	31	12	NP	NP	NP	NP	NP
3	1251960	599532	8/29/05	SC	NP	32	13	NP	NP	NP	NP	NP
4	1251875	599515	8/29/05	SC	NP	32	18	NP	NP	NP	NP	NP
5	1251725	599523	8/29/05	SC	0.5	31	13	NP	NP	NP	NP	NP
6	1251645	599488	8/29/05	SC	NP	33	16	NP	NP	NP	NP	NP
7	1251770	599435	8/29/05	SC	NP	34	18	NP	NP	NP	NP	NP
8	1251690	599400	8/29/05	SC	0.8	32	14	19.9	NP	NP	NP	NP
9	1251750	599287	8/29/05	SC	0.6	30	12	15.5	NP	NP	NP	NP
10	1251835	599395	8/29/05	SC	NP	32	19	NP	NP	NP	NP	NP
11	1251930	599443	8/29/05	SC	NP	34	17	NP	NP	NP	NP	NP
12	1252015	599478	8/29/05	SC	0.5	31	14	NP	NP	NP	NP	NP
1A	1251670	599420	9/1/05	NP	NP	NP	NP	NP	5.0E-07	> Than 6.0	97	16.0
2A	1251730	599400	9/1/05	NP	NP	NP	NP	NP	5.0E-08	6.0	96	17.1
3A	1251750	599485	9/1/05	NP	NP	NP	NP	NP	2.0E-08	> Than 6.0	97	18.4
4A	1251815	599500	9/1/05	NP	NP	NP	NP	NP	7.0E-08	> Than 6.0	NP	NP
5A	1251900	599535	9/1/05	NP	NP	NP	NP	NP	5.0E-08	> Than 6.0	95	18.4
6A	1251985	599630	9/1/05	NP	NP	NP	NP	NP	4.0E-08	> Than 6.0	NP	NP
7A	1251980	599552	9/1/05	NP	NP	NP	NP	NP	3.0E-08	> Than 6.0	NP	NP
8A	1251972	599446	9/1/05	NP	NP	NP	NP	NP	3.0E-08	> Than 6.0	NP	NP
9A	1251885	599450	9/1/05	NP	NP	NP	NP	NP	3.0E-08	> Than 6.0	95	17.1
10A	1251930	599645	9/1/05	NP	NP	NP	NP	NP	5.0E-06	> Than 6.0	97	16.4

09/28/2005 WED 18:29

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FALKNER ENGINEERING

PAGE 07/13

0008/047

Table No. 1. Summary of Test Results.

SAMPLE NUMBER	NORTH	EAST	DATE SAMPLED	USCS CLASSIFICATION	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	HYDRAULIC CONDUCTIVITY (CM/SEC)	THICKNESS CHECK (IN)	FIELD DENSITY COMPACTION (%)	FIELD DENSITY MOISTURE CONTENT (%)
11A	1251860	599843	9/1/05	NP	NP	NP	NP	NP	1.0E-06	> Than 6.0	NP	NP
12A	1251815	599590	9/1/05	NP	NP	NP	NP	NP	3.0E-06	> Than 6.0	95	18.0
13A	1251730	599550	9/1/05	NP	NP	NP	NP	NP	1.0E-07	> Than 6.0	NP	NP
14A	1251840	599445	9/6/05	NP	NP	NP	NP	NP	5.0E-08	> Than 6.0	98	18.6
15A	1251875	599355	9/6/05	NP	NP	NP	NP	NP	1.0E-07	> Than 6.0	NP	NP
16A	1251805	599380	9/6/05	NP	NP	NP	NP	NP	2.0E-07	> Than 6.0	97	14.6
17A	1251750	599388	9/6/05	NP	NP	NP	NP	NP	8.0E-07	> Than 6.0	NP	NP
18A	1251745	599325	9/6/05	NP	NP	NP	NP	NP	2.0E-07	> Than 6.0	95	18.2
19A	1251760	599255	9/6/05	NP	NP	NP	NP	NP	5.0E-06	> Than 6.0	NP	NP
20A	1251710	599345	9/6/05	NP	NP	NP	NP	NP	6.0E-07	> Than 6.0	NP	NP
21A	1252130	599315	9/6/05	NP	NP	NP	NP	NP	2.0E-07	> Than 6.0	95	18.4
22	1252000	599430	9/6/05	SC	0.9	34	16	NP	8.0E-08	> Than 6.0	95	18.8
23	1252085	599395	9/6/05	NP	NP	NP	NP	NP	3.0E-07	> Than 6.0	NP	NP
24	1252025	599345	9/6/05	NP	NP	NP	NP	NP	3.0E-08	> Than 6.0	NP	NP
25	1252035	599240	9/6/05	NP	NP	NP	NP	NP	2.0E-07	> Than 6.0	NP	NP
26	1251935	599285	9/6/05	SC	0.6	33	12	NP	3.0E-08	> Than 6.0	95	19.2
27	1251870	599315	9/6/05	SC	0.6	35	15	NP	4.0E-08	> Than 6.0	95	17.2
28	1251885	599220	9/6/05	NP	NP	NP	NP	NP	2.0E-07	6.0	NP	NP
29	1251980	599190	9/6/05	SC	NP	34	14	NP	4.0E-08	> Than 6.0	95	19.2
30	1251665	599550	9/6/05	SC	NP	31	14	NP	2.0E-06	> Than 6.0	95	18.2
31	1251690	599470	9/6/05	NP	NP	NP	NP	NP	3.0E-08	> Than 6.0	NP	NP
32	1251605	599485	9/7/05	SC	NP	33	15	NP	5.0E-08	> Than 6.0	95	18.8

Table No. 1. Summary of Test Results.

SAMPLE NUMBER	NORTH	EAST	DATE SAMPLED	USCS CLASSIFICATION	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	HYDRAULIC CONDUCTIVITY (CM/SEC)	THICKNESS CHECK (IN)	FIELD DENSITY COMPACTION (%)	FIELD DENSITY MOISTURE CONTENT (%)
33	1251878	599112	9/12/05	SC	0.7	34	15	NP	6.0E-06	> Than 6.0	98	17.3
34	1251812	599135	9/12/05	NP	NP	NP	NP	NP	9.0E-07	6.0	97	17.1
35	1251790	599235	9/12/05	NP	NP	NP	NP	NP	3.0E-06	> Than 6.0	97	17.4
36	1251775	599090	9/12/05	NP	NP	NP	NP	NP	9.0E-08	> Than 6.0	NP	NP
37	1252100	599235	9/12/05	SC	0.8	35	14	NP	9.0E-08	> Than 6.0	NP	NP
38	1252060	599160	9/12/05	NP	NP	NP	NP	NP	2.0E-07	> Than 6.0	NP	NP
39	1252055	599090	9/12/05	SC	0.4	34	13	NP	8.0E-08	> Than 6.0	95	20.0
40	1251885	599090	9/12/05	NP	NP	NP	NP	NP	2.0E-07	> Than 6.0	NP	NP
41	1251990	599175	9/12/05	NP	NP	NP	NP	NP	7.0E-08	> Than 6.0	NP	NP
42	1251920	599105	9/12/05	NP	NP	NP	NP	NP	9.0E-08	> Than 6.0	NP	NP
43	1251890	599035	9/12/05	SC	0.8	35	16	NP	2.0E-07	> Than 6.0	95	20.8
44	1251900	599990	9/12/05	NP	NP	NP	NP	NP	4.0E-08	> Than 6.0	NP	NP
45	1251580	599435	9/20/05	NP	NP	NP	NP	NP	NP	> Than 6.0	98	17.2
46	1251665	599265	9/20/05	NP	NP	NP	NP	NP	NP	> Than 6.0	98	16.8
47	1251742	599080	9/20/05	NP	NP	NP	NP	NP	NP	> Than 6.0	95	18.8

NP = Not Performed - Not Required

* = Test Results Pending

Note: Test Reports will be provided when laboratory testing is completed.

Respectfully Submitted,
Faulkner Engineering Services, Inc.

John R. Gregos, Jr., P.E.
Florida Registration No. 58628

*SOUTHEAST COUNTY LANDFILL EXPANSION, SECTION 8
FES Project No. 05-010*

September 28, 2005

APPENDIX C

SAMPLE LABORATORY TEST REPORTS

SAMPLE LABORATORY TEST REPORTS FAULKNER ENGINEERING SERVICES, INC.

Project No.: <u>05-010</u>		Date: <u>8/29/05</u>	
Project: <u>SOUTHEAST COUNTY LANDFILL SECTION 8</u>		FES No: <u>1</u>	
Sample Location: <u>1</u>			
Soil Description: <u>Brown to Orange Clayey Sand</u>			
Soil Classification:	<u>SC</u>	LL <u>34</u>	PI <u>15</u>
Moisture Content:	<u>16.4</u> %	Organic Content:	<u>0.6</u> %

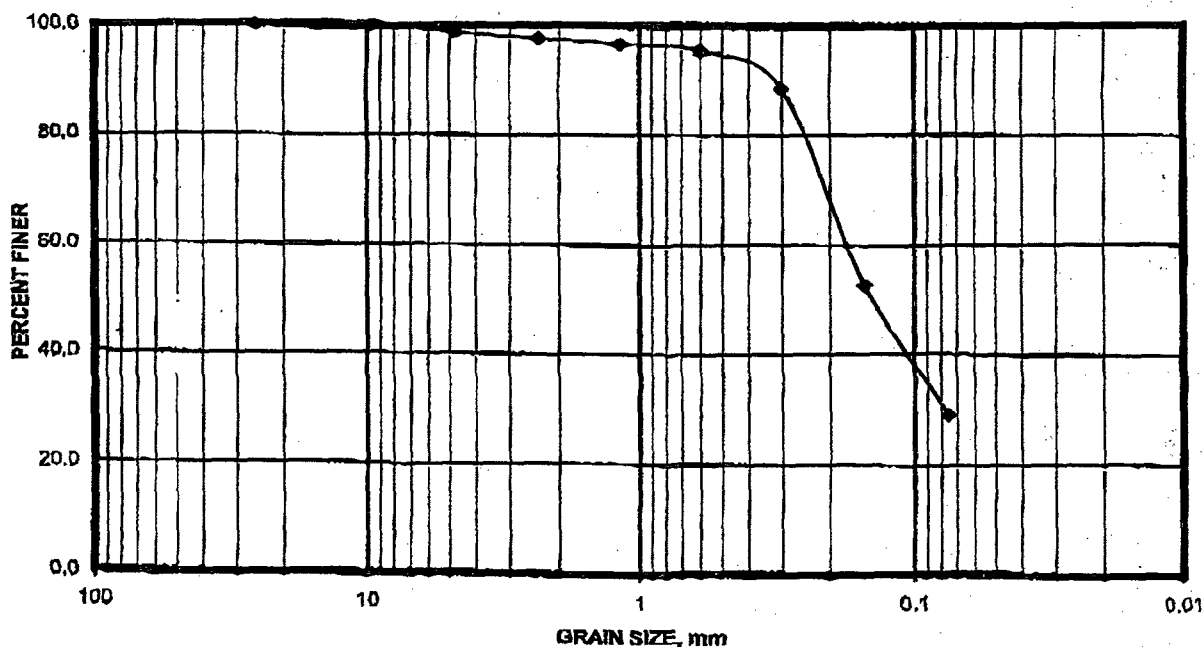
GRAIN SIZE DISTRIBUTION

% Gravel	% Sand	%-200
0.0	70.4	29.6
D60	D30	CC
0.19	0.08	CU

SAMPLE LABORATORY TEST REPORTS
FAULKNER ENGINEERING SERVICES, INC.

Project No.: 05-010 Date: 8/29/05Project: SOUTHEAST COUNTY LANDFILL SECTION 8 FES No: 2Sample Location: 2Soil Description: Brown to Orange Clayey SandSoil Classification: SC LL 31 PI 12

GRAIN SIZE DISTRIBUTION



% Gravel

0.0

% Sand

71.0

% -200

29.0

D60

D30

D10

CC

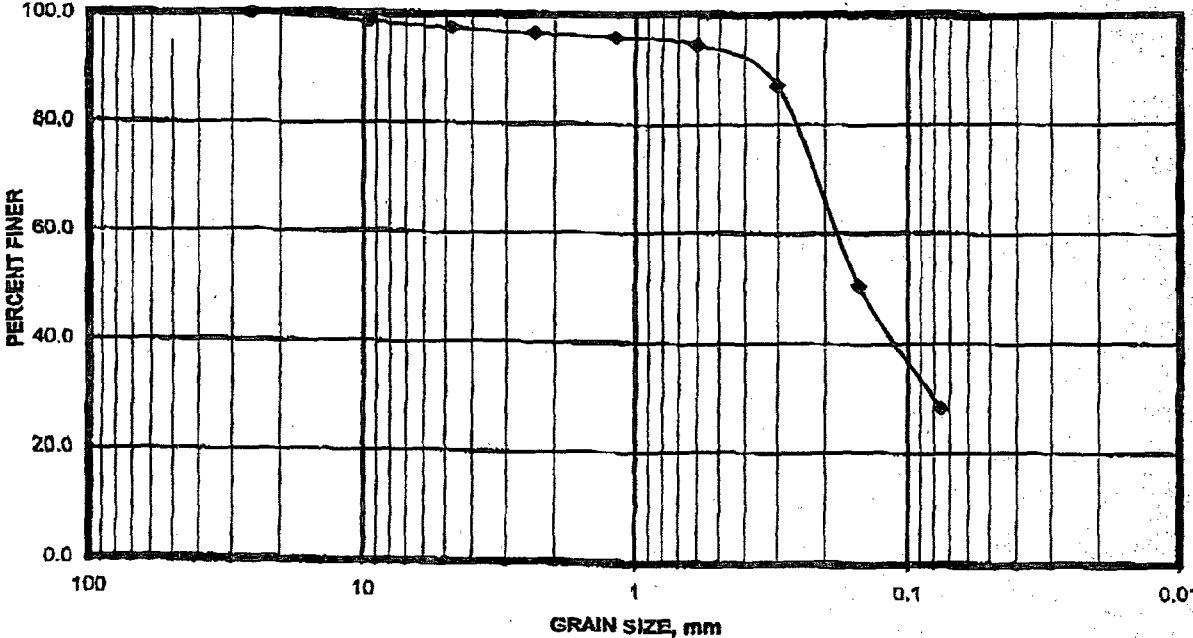
CU

0.18

0.08

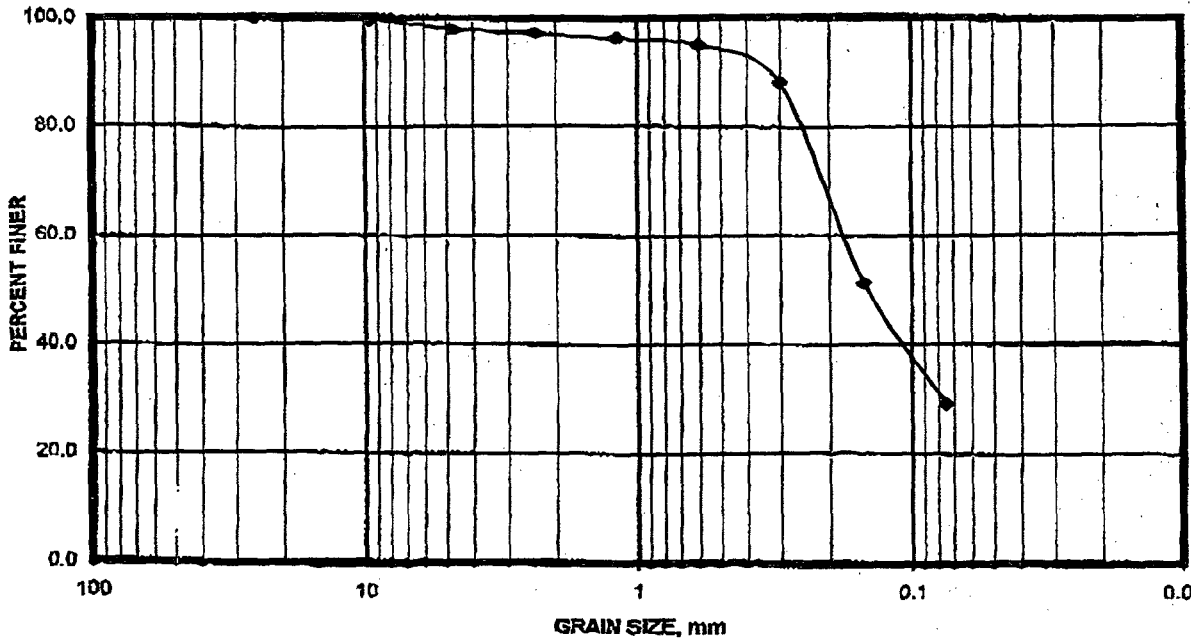
SAMPLE LABORATORY TEST REPORTS
FAULKNER ENGINEERING SERVICES, INC.

Project No.: <u>05-010</u>		Date: <u>8/29/05</u>	
Project: <u>SOUTHEAST COUNTY LANDFILL SECTION 8</u>		FES No: <u>3</u>	
Sample Location: <u>3</u>			
Soil Description: <u>Orange Clayey Sand</u>			
Soil Classification: <u>SC</u>		LL <u>32</u>	PI <u>13</u>

GRAIN SIZE DISTRIBUTION				
				
% Gravel 1.4		% Sand 70.5		%-200 28.1
D60 0.19	D30 0.08	D10	CC	CU

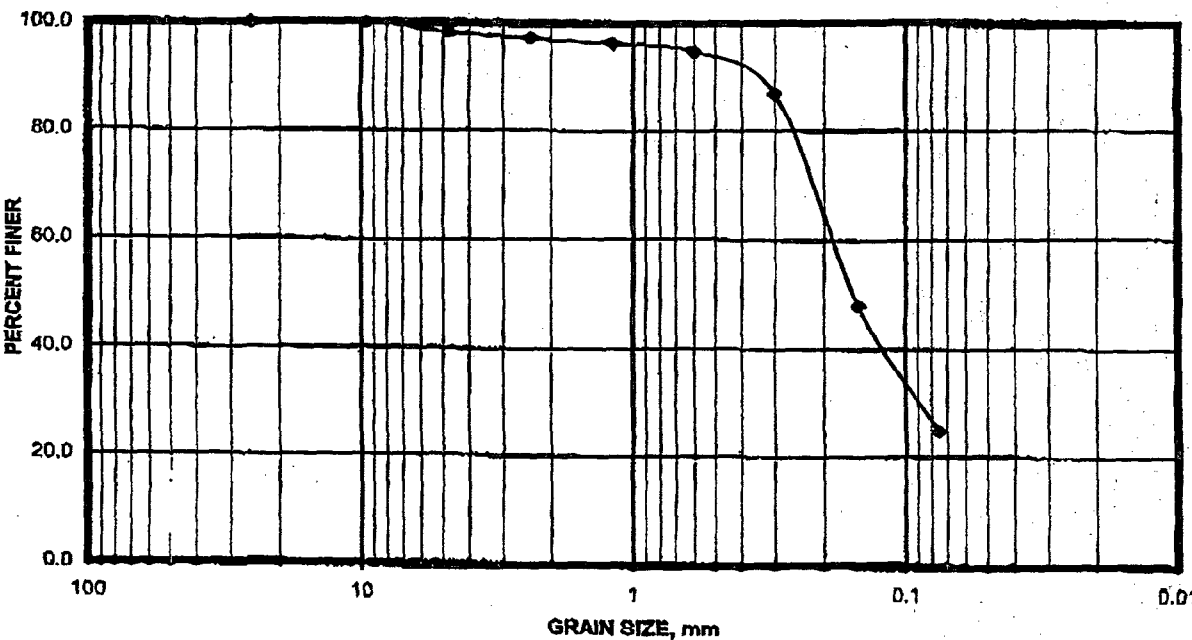
SAMPLE LABORATORY TEST REPORTS
FAULKNER ENGINEERING SERVICES, INC.

Project No.: <u>05-010</u>		Date: <u>8/29/05</u>	
Project: <u>SOUTHEAST COUNTY LANDFILL SECTION 8</u>		FES No: <u>4</u>	
Sample Location: <u>4</u>			
Soil Description: <u>Brown to Orange Clayey Sand</u>			
Soil Classification: <u>SC</u>		LL <u>32</u>	PI <u>19</u>

GRAIN SIZE DISTRIBUTION				
				
% Gravel 0.4		% Sand 70.5		%-200 29.1
D60 0.19	D30 0.08	D10	CC	CU

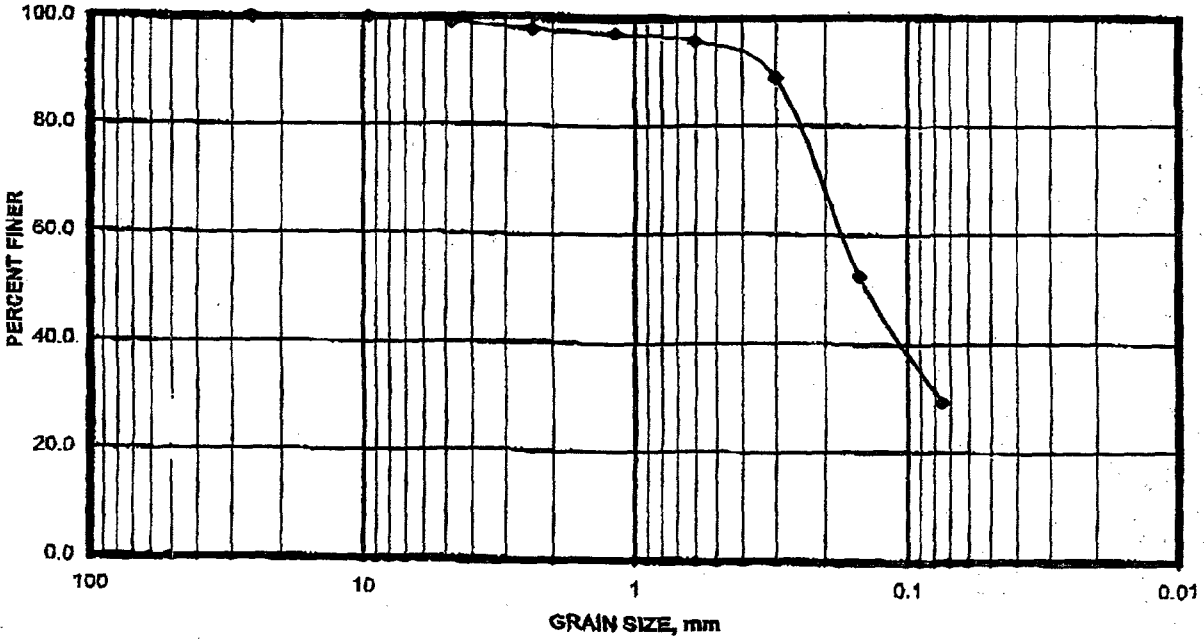
SAMPLE LABORATORY TEST REPORTS
FAULKNER ENGINEERING SERVICES, INC.

Project No.: <u>05-010</u>		Date: <u>8/29/05</u>	
Project: <u>SOUTHEAST COUNTY LANDFILL SECTION 8</u>		FES No: <u>5</u>	
Sample Location: <u>5</u>			
Soil Description: <u>Orange Clayey Sand</u>			
Soil Classification: <u>SC</u>		LL <u>31</u>	PI <u>13</u>
Organic Content: <u>0.5</u> %			

GRAIN SIZE DISTRIBUTION				
				
% Gravel 0.0		% Sand 75.2		%-200 24.8
D60 0.20	D30 0.09	D10	CC	CU

SAMPLE LABORATORY TEST REPORTS
FAULKNER ENGINEERING SERVICES, INC.

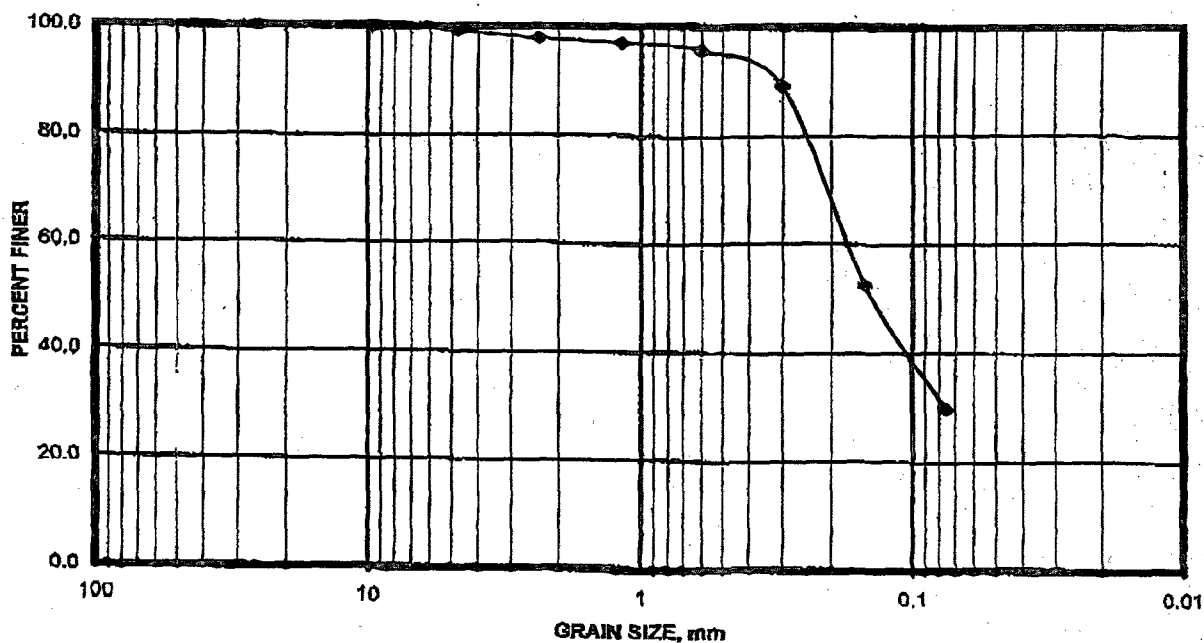
Project No.:	<u>05-010</u>	Date:	<u>8/29/05</u>
Project:	<u>SOUTHEAST COUNTY LANDFILL SECTION 8</u>	FES No:	<u>6</u>
Sample Location:	<u>6</u>		
Soil Description:	<u>Orange Clayey Sand</u>		
Soil Classification:	<u>SC</u>	LL <u>33</u>	PI <u>16</u>

GRAIN SIZE DISTRIBUTION			
			
% Gravel	% Sand	%-200	
0.0	70.8	29.2	
D60	D30	D10	CC CU
0.18	0.08		

SAMPLE LABORATORY TEST REPORTS **FAULKNER ENGINEERING SERVICES, INC.**

Project No.: 05-010Date: 8/29/05Project: SOUTHEAST COUNTY LANDFILL SECTION 8 FES No: 7Sample Location: 7Soil Description: Orange Clayey SandSoil Classification: SC LL 34 PI 18

GRAIN SIZE DISTRIBUTION



% Gravel

0.0

% Sand

70.3

% -200

29.7

D60

0.18

D30

0.08

D10

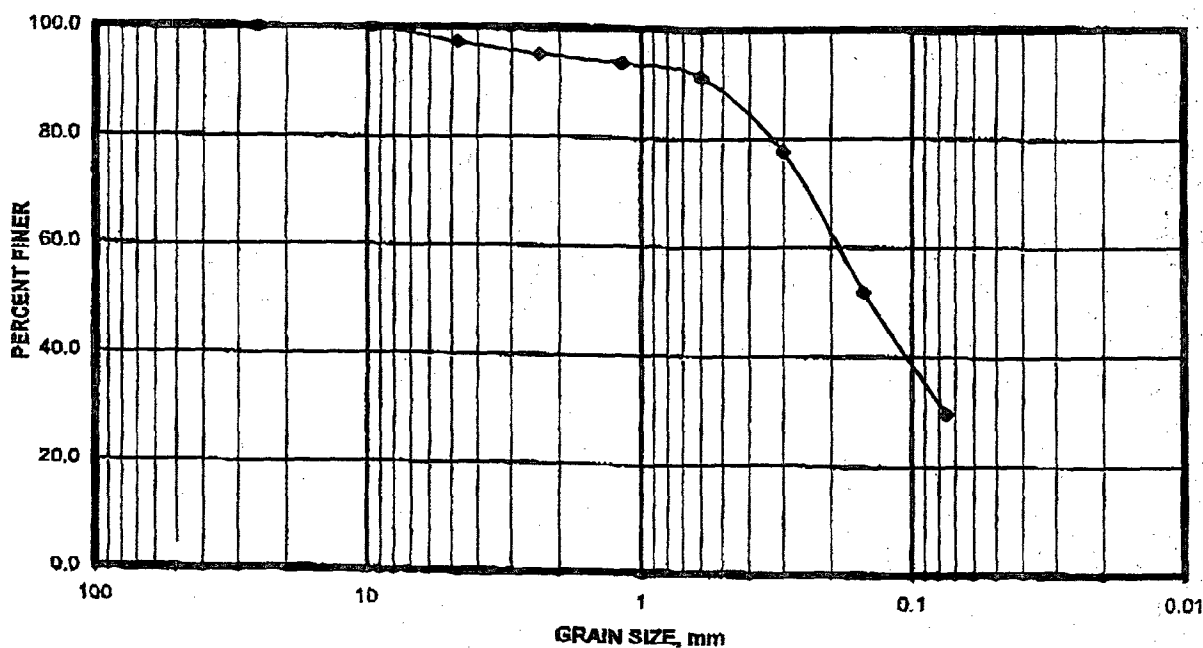
CC

CU

SAMPLE LABORATORY TEST REPORTS **FAULKNER ENGINEERING SERVICES, INC.**

Project No.: 05-010Date: 8/29/05Project: SOUTHEAST COUNTY LANDFILL SECTION 8 FES No: 8Sample Location: 8Soil Description: Brown to Orange Clayey SandSoil Classification: SC LL 32 PI 14Moisture Content: 19.9 % Organic Content: 0.8 %

GRAIN SIZE DISTRIBUTION



% Gravel

0.0

% Sand

70.4

% -200

29.6

D60

D30

D10

CC

CU

0.20

0.08

SAMPLE LABORATORY TEST REPORTS **FAULKNER ENGINEERING SERVICES, INC.**

Project No.: <u>05-010</u>		Date: <u>8/29/05</u>	
Project: <u>SOUTHEAST COUNTY LANDFILL SECTION 8</u>		FES No: <u>9</u>	
Sample Location: <u>9</u>			
Soil Description: <u>Orange Clayey Sand</u>			
Soil Classification:	<u>SC</u>	<u>LL 30</u>	<u>PI 12</u>
Moisture Content: <u>15.5</u> %	Organic Content: <u>0.6</u> %		

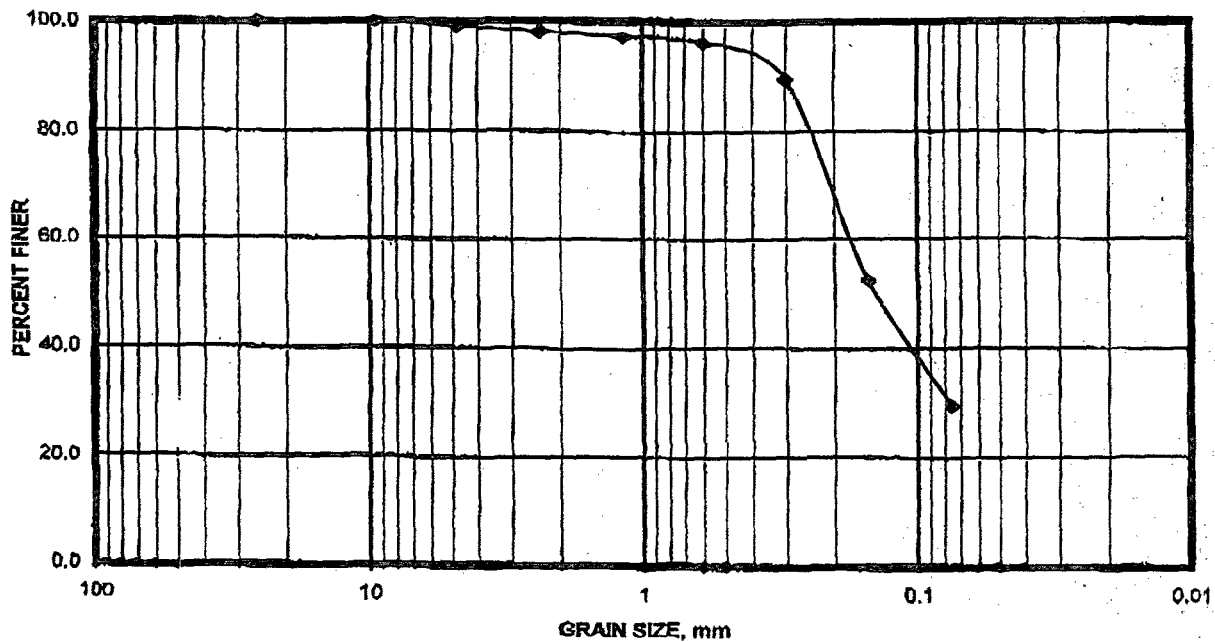
GRAIN SIZE DISTRIBUTION

% Gravel	% Sand	%-200
1.1	69.6	29.3
D60	D30	D10
0.25	0.08	CC
		CU

SAMPLE LABORATORY TEST REPORTS
FAULKNER ENGINEERING SERVICES, INC.

Project No.: 05-010 Date: 8/29/05Project: SOUTHEAST COUNTY LANDFILL SECTION 8 FES No: 10Sample Location: 10Soil Description: Brown to Orange Clayey SandSoil Classification: SC LL 32 PI 19

GRAIN SIZE DISTRIBUTION



% Gravel

0

% Sand

70.6

% -200

29.4

D60

0.18

D30

0.08

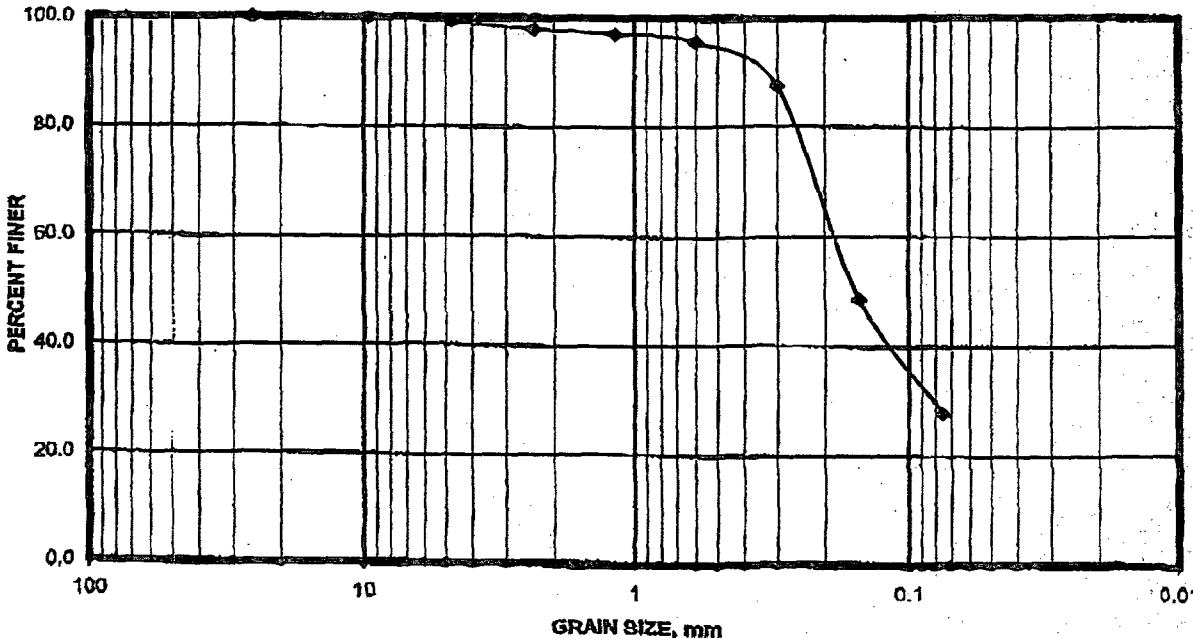
D10

CC

CU

SAMPLE LABORATORY TEST REPORTS
FAULKNER ENGINEERING SERVICES, INC.

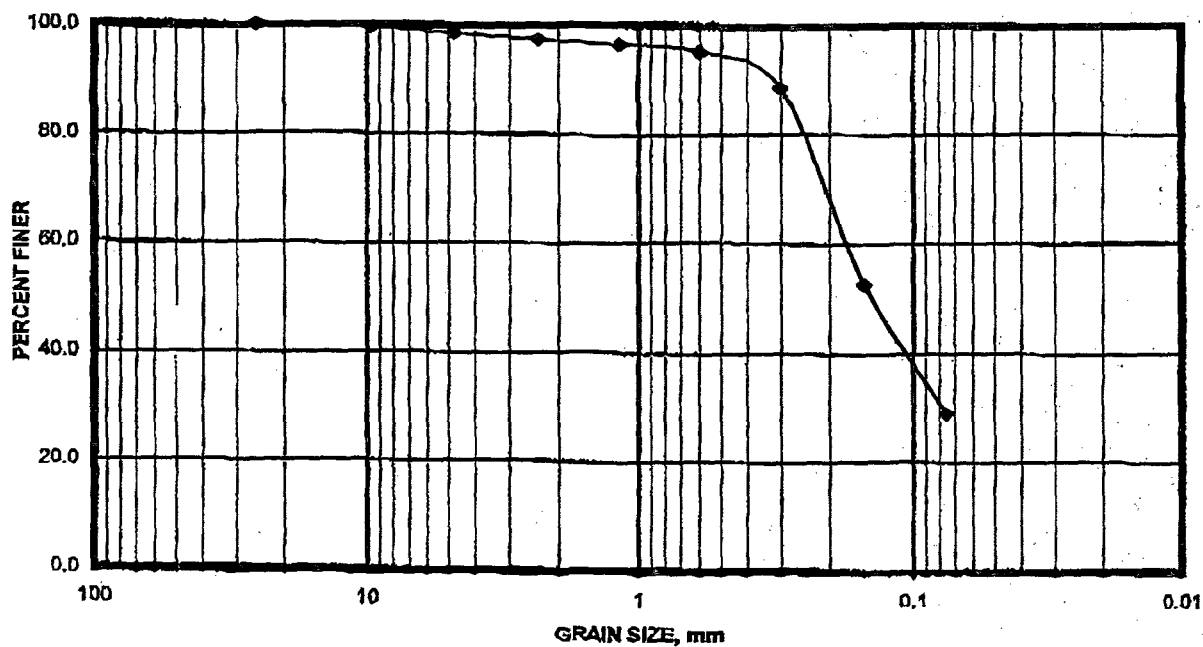
Project No.: <u>05-010</u>		Date: <u>8/29/05</u>	
Project: <u>SOUTHEAST COUNTY LANDFILL SECTION 8</u>		FES No: <u>11</u>	
Sample Location: <u>11</u>			
Soil Description: <u>Orange Clayey Sand</u>			
Soil Classification: <u>SC</u>		LL <u>34</u>	PI <u>17</u>

GRAIN SIZE DISTRIBUTION				
				
% Gravel		% Sand		%-200
0		72.3		27.7
D60	D30	D10	CC	CU
0.19	0.08			

SAMPLE LABORATORY TEST REPORTS
FAULKNER ENGINEERING SERVICES, INC.

Project No.: 05-010 Date: 8/29/05Project: SOUTHEAST COUNTY LANDFILL SECTION 8 FES No: 12Sample Location: 12Soil Description: Brown to Orange Clayey SandSoil Classification: SC LL 31 PI 14Organic Content: 0.5 %

GRAIN SIZE DISTRIBUTION

% Gravel
0.4336513% Sand
70.6% -200
28.9D60
0.18D30
0.08

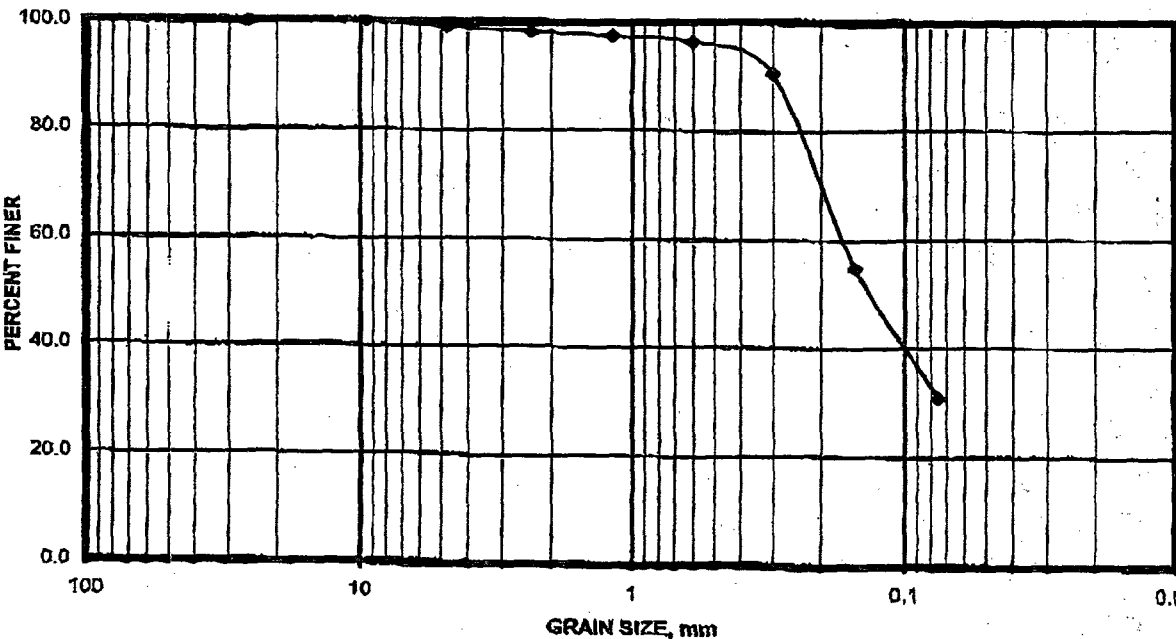
D10

CC

CU

SAMPLE LABORATORY TEST REPORTS
FAULKNER ENGINEERING SERVICES, INC.

Project No.: <u>05-010</u>		Date: <u>9/6/05</u>	
Project: <u>SOUTHEAST COUNTY LANDFILL SECTION 8</u>		FES No: <u>22</u>	
Sample Location: <u>22</u>			
Soil Description: <u>Orange Clayey Sand</u>			
Soil Classification: <u>SC</u>	LL <u>34</u>	PI <u>16</u>	
Organic Content: <u>0.9</u> %			

GRAIN SIZE DISTRIBUTION				
				
% Gravel <u>0</u>		% Sand <u>69.3</u>		%-200 <u>30.7</u>
D60 <u>0.17</u>	D30	D10	CC	CU

SAMPLE LABORATORY TEST REPORTS

FAULKNER ENGINEERING SERVICES, INC.

Project No.:	<u>05-010</u>		Date:	<u>9/6/05</u>	
Project:	<u>SOUTHEAST COUNTY LANDFILL SECTION 8</u>		FES No:	<u>26</u>	
Sample Location:	<u>26</u>				
Soil Description:	<u>Brown to Orange Clayey Sand</u>				
Soil Classification:	<u>SC</u>	LL	<u>33</u>	PI	<u>12</u>
			Organic Content:	<u>0.6</u>	%

GRAIN SIZE DISTRIBUTION																					
PERCENT FINER GRAIN SIZE, mm <table border="1"><caption>Grain Size Distribution Data Points (Estimated from Graph)</caption><thead><tr><th>Grain Size (mm)</th><th>Percent Finer (%)</th></tr></thead><tbody><tr><td>100</td><td>100</td></tr><tr><td>10</td><td>100</td></tr><tr><td>2</td><td>100</td></tr><tr><td>0.85</td><td>95</td></tr><tr><td>0.425</td><td>55</td></tr><tr><td>0.25</td><td>35</td></tr><tr><td>0.075</td><td>30</td></tr></tbody></table>						Grain Size (mm)	Percent Finer (%)	100	100	10	100	2	100	0.85	95	0.425	55	0.25	35	0.075	30
Grain Size (mm)	Percent Finer (%)																				
100	100																				
10	100																				
2	100																				
0.85	95																				
0.425	55																				
0.25	35																				
0.075	30																				
% Gravel		% Sand		% < 200																	
0.0		69.8		30.2																	
D60	D30	D10	CC	CU																	
0.17																					

SAMPLE LABORATORY TEST REPORTS
FAULKNER ENGINEERING SERVICES, INC.

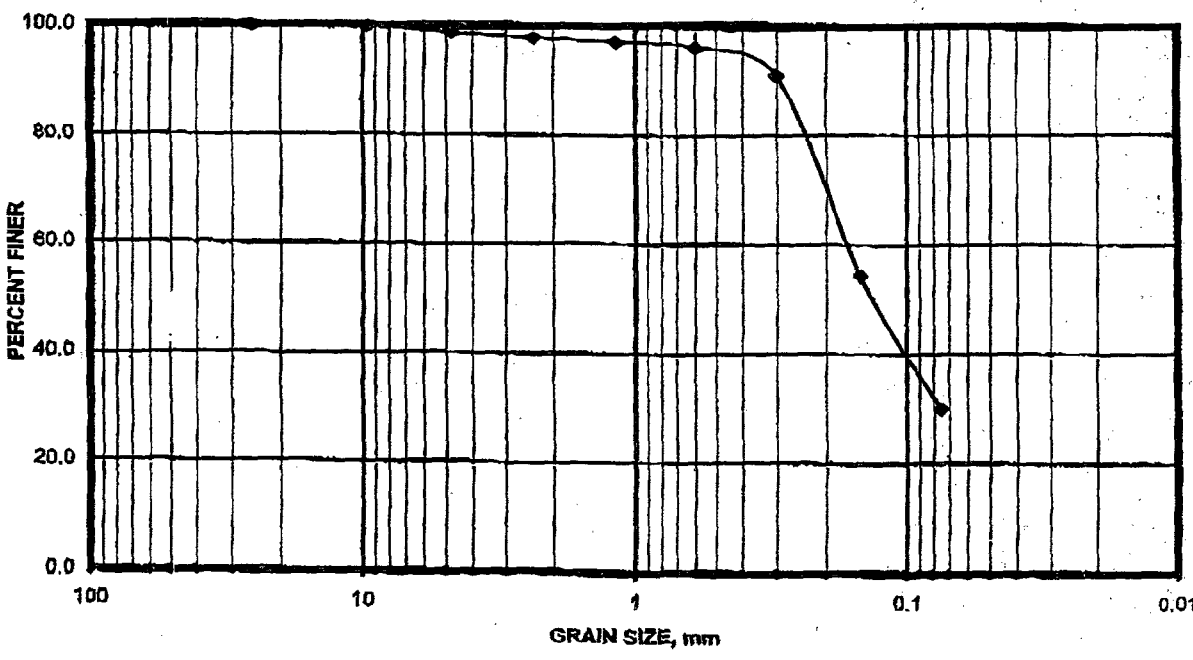
Project No.:	<u>05-010</u>	Date:	<u>9/6/05</u>
Project:	<u>SOUTHEAST COUNTY LANDFILL SECTION 8</u>	FES No:	<u>27</u>
Sample Location:	<u>27</u>		
Soil Description:	<u>Orange Clayey Sand</u>		
Soil Classification:	<u>SC</u>	LL <u>35</u>	PI <u>15</u>
		Organic Content:	<u>0.6</u> %

GRAIN SIZE DISTRIBUTION

% Gravel 0.0	% Sand 75.4	%-200 24.6
D60 0.18	D30 0.09	D10 0.075
		CC CU

SAMPLE LABORATORY TEST REPORTS
FAULKNER ENGINEERING SERVICES, INC.

Project No.: <u>05-010</u>		Date: <u>9/6/05</u>	
Project: <u>SOUTHEAST COUNTY LANDFILL SECTION 8</u>		FES No: <u>29</u>	
Sample Location: <u>29</u>			
Soil Description: <u>Orange Clayey Sand</u>			
Soil Classification: <u>SC</u>		LL <u>34</u>	PI <u>14</u>

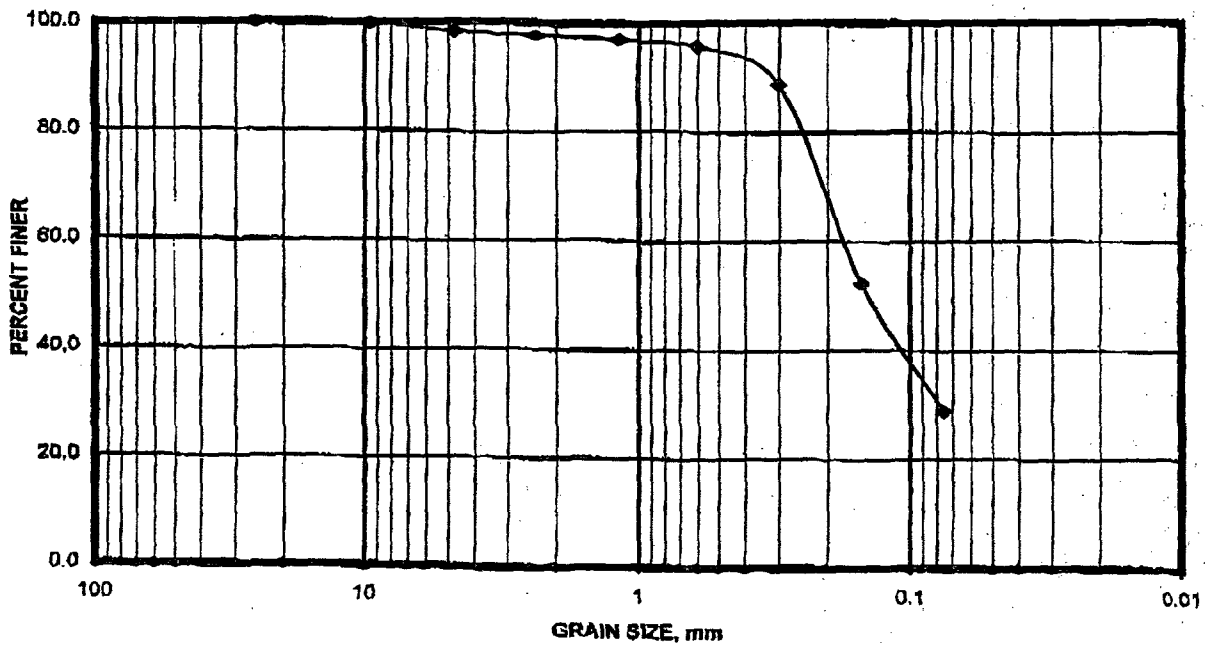
GRAIN SIZE DISTRIBUTION			
			
% Gravel 0.0	% Sand 70.1	%-200 29.9	
D60 0.17	D30 0.08	D10 0.075	
		CC	CU

SAMPLE LABORATORY TEST REPORTS

FAULKNER ENGINEERING SERVICES, INC.

Project No.: 05-010 Date: 9/6/05Project: SOUTHEAST COUNTY LANDFILL SECTION 8 FES No: 30Sample Location: 30Soil Description: Orange Clayey SandSoil Classification: SC LL 31 PI 14

GRAIN SIZE DISTRIBUTION



% Gravel

0.3

% Sand

71.0

% -200

28.7

D60

D30

D10

CC

CU

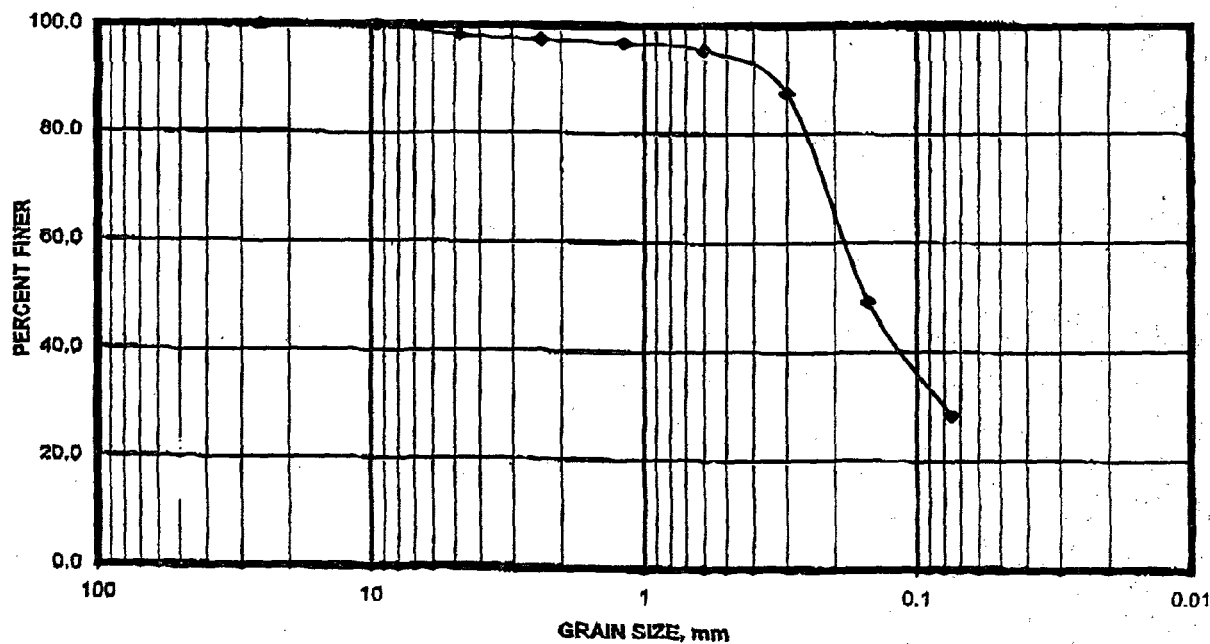
0.18

0.08

SAMPLE LABORATORY TEST REPORTS
FAULKNER ENGINEERING SERVICES, INC.

Project No.: 05-010Date: 9/7/05Project: SOUTHEAST COUNTY LANDFILL SECTION 8 FES No: 32Sample Location: 32Soil Description: Orange Clayey SandSoil Classification: SC LL 33 PI 15

GRAIN SIZE DISTRIBUTION



% Gravel

0

% Sand

71.8

% -200

28.2

D60

0.19

D30

0.08

D10

CC

CU

SAMPLE LABORATORY TEST REPORTS
FAULKNER ENGINEERING SERVICES, INC.

Project No.: <u>05-010</u>		Date: <u>9/12/05</u>	
Project: <u>SOUTHEAST COUNTY LANDFILL SECTION 8</u>		FES No: <u>33</u>	
Sample Location: <u>33</u>			
Soil Description: <u>Orange Clayey Sand</u>			
Soil Classification: <u>SC</u>	LL <u>34</u>	PI <u>15</u>	
Organic Content: <u>0.7</u> %			

GRAIN SIZE DISTRIBUTION

% Gravel 0	% Sand 68.9	%-200 31.1
D60 0.17	D30	D10 CC CU

SAMPLE LABORATORY TEST REPORTS
FAULKNER ENGINEERING SERVICES, INC.

Project No.: <u>05-010</u>		Date: <u>9/12/05</u>	
Project: <u>SOUTHEAST COUNTY LANDFILL SECTION 8</u>		FES No: <u>37</u>	
Sample Location: <u>37</u>			
Soil Description: <u>Brown to Orange Clayey Sand</u>			
Soil Classification: <u>SC</u>	LL <u>35</u>	PI <u>14</u>	
Organic Content: <u>0.6</u> %			

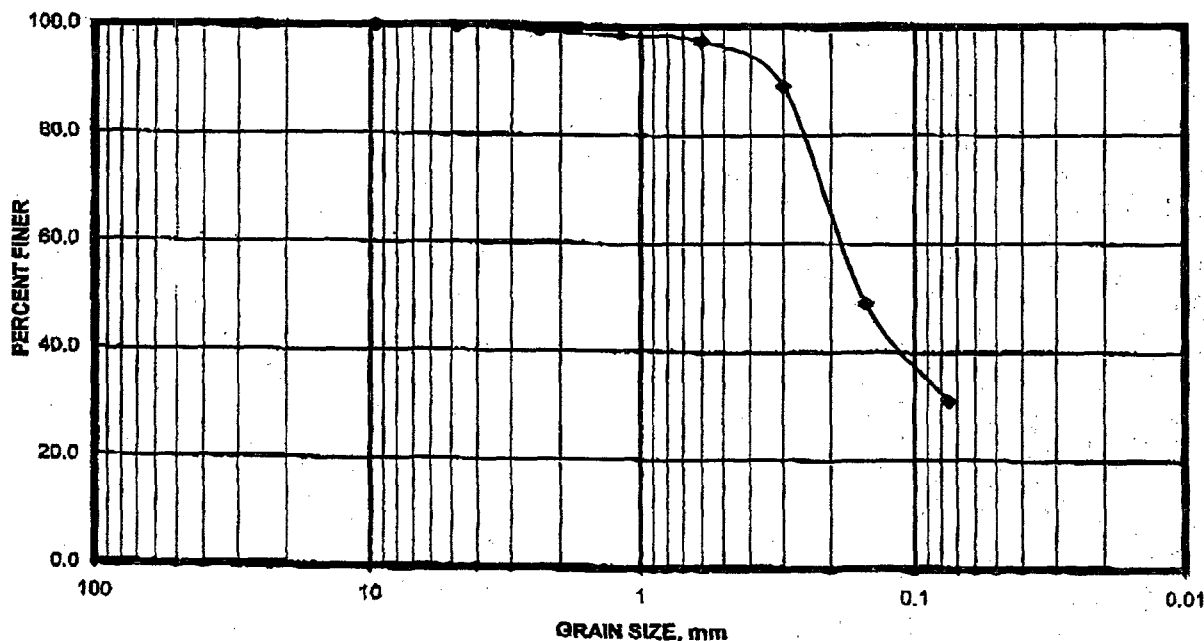
GRAIN SIZE DISTRIBUTION				
% Gravel	% Sand		%-200	
0	67.0		33.0	
D60	D30	D10	CC	CU
0.17				

SAMPLE LABORATORY TEST REPORTS

FAULKNER ENGINEERING SERVICES, INC.

Project No.: 05-010Date: 9/12/05Project: SOUTHEAST COUNTY LANDFILL SECTION 8 FES No: 39Sample Location: 39Soil Description: Orange Clayey SandSoil Classification: SC LL 34 PI 13Organic Content: 0.4 %

GRAIN SIZE DISTRIBUTION



% Gravel

0

% Sand

69.1

% -200

30.9

D60

D30

D10

CC

CU

0.19

SAMPLE LABORATORY TEST REPORTS
FAULKNER ENGINEERING SERVICES, INC.

Project No.: <u>05-010</u>		Date: <u>9/12/05</u>																			
Project: <u>SOUTHEAST COUNTY LANDFILL SECTION 8</u>		FES No: <u>43</u>																			
Sample Location: <u>43</u>																					
Soil Description: <u>Orange Clayey Sand</u>																					
Soil Classification: <u>SC</u>		LL <u>35</u>	PI <u>16</u>																		
Organic Content: <u>0.8</u> %																					
GRAIN SIZE DISTRIBUTION																					
<table border="1" style="margin: 10px auto; border-collapse: collapse;"><caption>Grain Size Distribution Data Points (Estimated from Graph)</caption><thead><tr><th>Grain Size (mm)</th><th>Percent Finer (%)</th></tr></thead><tbody><tr><td>100</td><td>100.0</td></tr><tr><td>10</td><td>100.0</td></tr><tr><td>4.75</td><td>98.0</td></tr><tr><td>2.0</td><td>95.0</td></tr><tr><td>0.85</td><td>85.0</td></tr><tr><td>0.425</td><td>55.0</td></tr><tr><td>0.25</td><td>40.0</td></tr><tr><td>0.075</td><td>35.8</td></tr></tbody></table>				Grain Size (mm)	Percent Finer (%)	100	100.0	10	100.0	4.75	98.0	2.0	95.0	0.85	85.0	0.425	55.0	0.25	40.0	0.075	35.8
Grain Size (mm)	Percent Finer (%)																				
100	100.0																				
10	100.0																				
4.75	98.0																				
2.0	95.0																				
0.85	85.0																				
0.425	55.0																				
0.25	40.0																				
0.075	35.8																				
% Gravel <u>0</u>		% Sand <u>64.2</u>	%-200 <u>35.8</u>																		
D60 <u>0.17</u>	D30	D10	CC																		
			CU																		

Faulkner Engineering Services, Inc.

12904 Dupont Circle, Tampa, Florida 33626
813-818-8307 Office
813-818-8381 Fax
www.faulknereng.com

Southeast County Landfill, Section 8

Hillsborough County, Florida

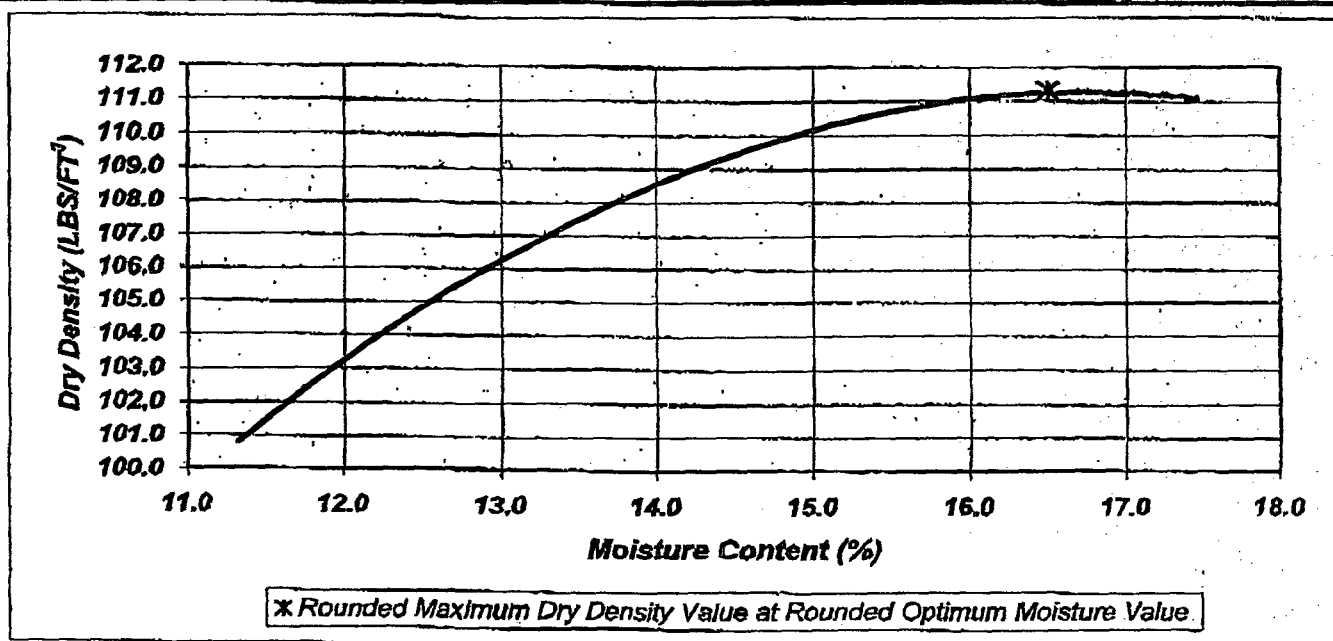
Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date: August 31, 2005

Project Number: 05-013

MOISTURE-DENSITY (PROCTOR) RELATIONSHIP

Report Number: P2



Maximum Dry Density: **111.3** LBS/FT³ per Method: ASTM D698
Optimum Moisture Content: **16.5** % [Standard Proctor]

Sample Description: Orange Clayey Sand
Sample Location: Subbase Sample No. 6

Sampled By: Jason Brenneman
Sample Date: August 29, 2005

Respectfully Submitted,
Faulkner Engineering Services, Inc.

John R. Gregos, Jr.
John R. Gregos, Jr., P.E.
Florida Registration No. 58628

Faulkner Engineering Services, Inc.12904 Dupont Circle, Tampa, Florida 33626
813-818-8307 Office
813-818-8381 Fax
www.faulknereng.com**Southeast County Landfill, Section 8**

Hillsborough County, Florida

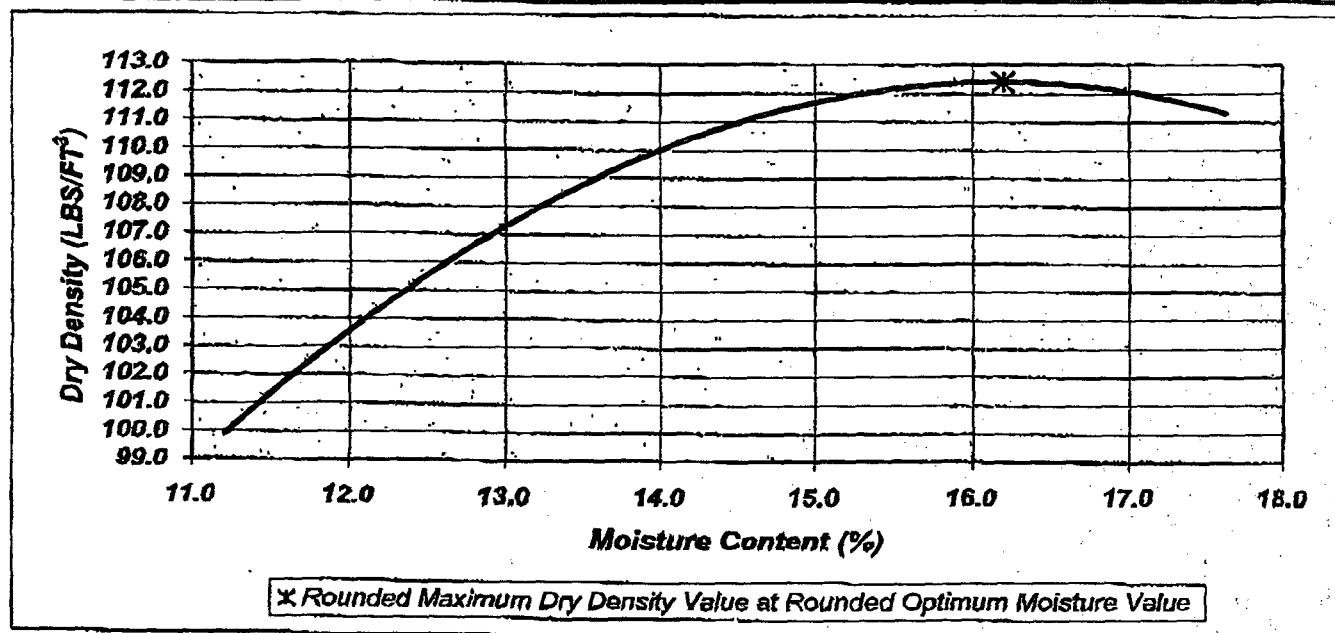
Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date: August 31, 2005

Project Number: 05-013

MOISTURE-DENSITY (PROCTOR) RELATIONSHIP

Report Number: P3

Maximum Dry Density: **112.4** LBS/FT³ per Method: ASTM D698Optimum Moisture Content: **16.2** % [Standard Proctor]

Sample Description: Orange Clayey Sand

Sample Location: Subbase Sample No. 8

Sampled By: Jason Brenneman

Sample Date: August 29, 2005

Respectfully Submitted,
Faulkner Engineering Services, Inc.*John R. Gregos, Jr.* 9/19/05John R. Gregos, Jr., P.E.
Florida Registration No. 58628

Faulkner Engineering Services, Inc.12904 Dupont Circle, Tampa, Florida 33628
813-818-8307 Office
813-818-8381 Fax
www.faulknereng.com**Southeast County Landfill, Section 8**

Hillsborough County, Florida

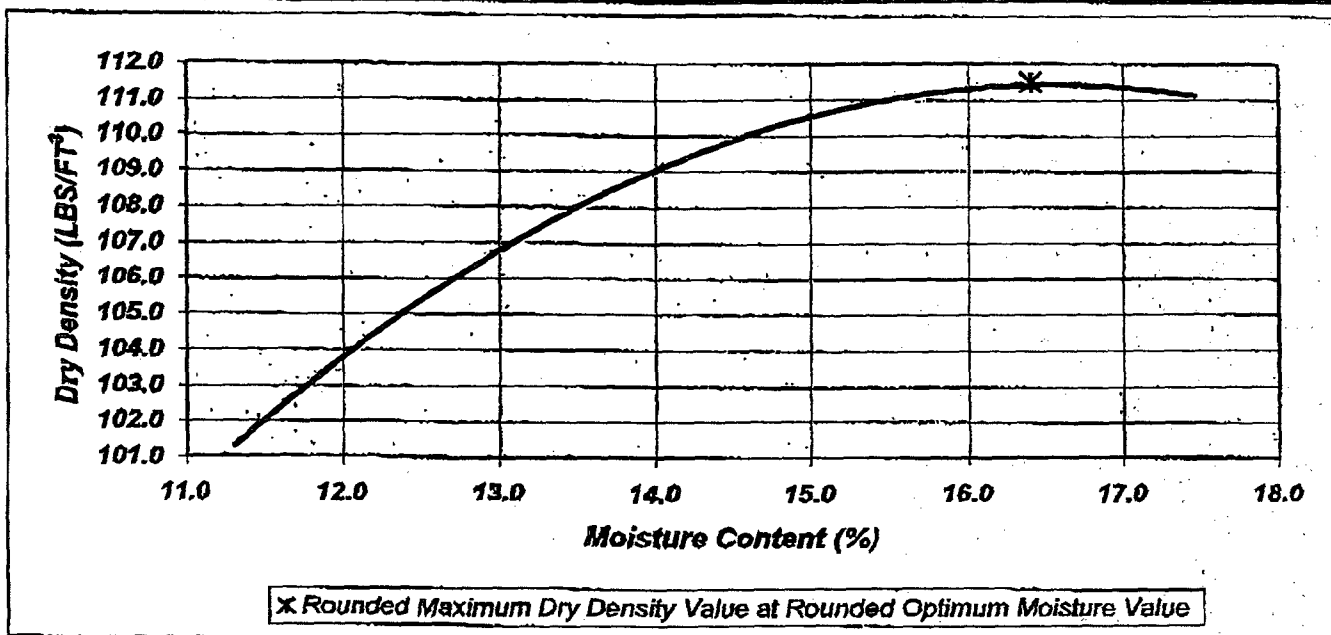
Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date: August 31, 2005

Project Number: 05-013

MOISTURE-DENSITY (PROCTOR) RELATIONSHIP

Report Number: P4



Maximum Dry Density: 111.5 LBS/FT³ per Method: ASTM D698
Optimum Moisture Content: 16.4 % [Standard Proctor]

Sample Description: Orange Clayey Sand

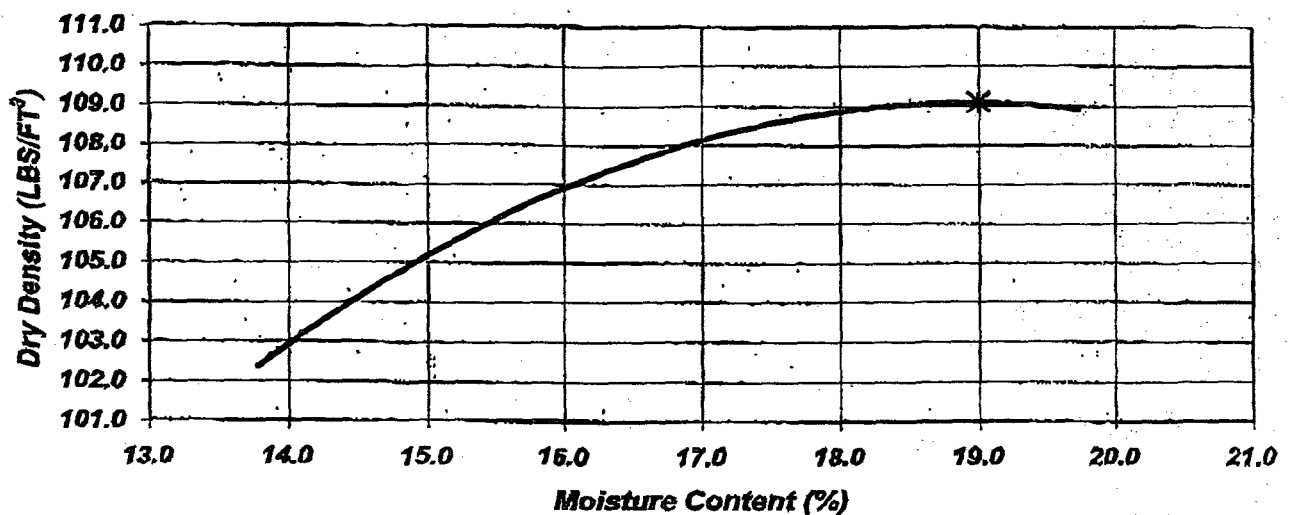
Sample Location: Subbase Sample No. 9

Sampled By: Jason Brenneman
Sample Date: August 29, 2005Respectfully Submitted,
Faulkner Engineering Services, Inc.*John R. Gregos, Jr.* 9/19/05John R. Gregos, Jr., P.E.
Florida Registration No. 58628

Faulkner Engineering Services, Inc.12904 Dupont Circle, Tampa, Florida 33626
813-818-8307 Office
813-818-8381 Fax
www.faulknereng.com**Southeast County Landfill, Section 8**
Hillsborough County, FloridaClient: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date: September 12, 2005

Project Number: 05-013

MOISTURE-DENSITY (PROCTOR) RELATIONSHIP
Report Number: P5

* Rounded Maximum Dry Density Value at Rounded Optimum Moisture Value

Maximum Dry Density: **109.1** LBS/FT³ per Method: ASTM D698
Optimum Moisture Content: **19.0** % [Standard Proctor]

Sample Description: Light Brown to Orange Clayey Sand

Sample Location: Stockpiled for Sub-base

Sampled By: Jason Brenneman
Sample Date: September 7, 2005Respectfully Submitted,
Faulkner Engineering Services, Inc.*J.R. Gregos, Jr.* 7/19/05John R. Gregos, Jr., P.E.
Florida Registration No. 58628

09/28/2005 WED 18:34 FAX 4076562128 ERC →→→ SCS

09/27/2005 19:33 8138188381

FAULKNER ENGINEERING

038/047

PAGE 04/13

*SOUTHEAST COUNTY LANDFILL EXPANSION, SECTION 8
FES Project No. 05-010*

September 28, 2005

APPENDIX D

SAMPLE FIELD TEST REPORTS

Faulkner Engineering Services, Inc.	12904 Dupont Circle, Tampa, Florida 33628 813-818-8307 Office 813-818-8381 Fax www.faulknereng.com
Southeast County Landfill, Section 8 Hillsborough County, Florida	

Client: Jerry L. Pinder ERC General Contracting Services, Inc. 890 Carter Road, Suite 170 Winter Garden, FL 34787	Report Date:	September 1, 2005
	Project Number:	05-010

REPORT OF FIELD DENSITY TEST
Report Number: SUBBASE 1

SUBBASE - Test Referenced from Subgrade **95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) Is Required**

Subbase Sample Number	Lift Tested	Landfill Subbase Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
1A	FG*	N	1251670	E	599420	P2	111.3	16.0	108.5	97%	Pass
2A	FG	N	1251730	E	599400	P2	111.3	17.1	107.4	96%	Pass
3A	FG	N	1251750	E	599495	P2	111.3	18.4	108.2	97%	Pass
5A	FG	N	1251900	E	599535	P2	111.3	18.4	105.7	95%	Pass
9A	FG	N	1251885	E	599450	P2	111.3	17.1	105.3	95%	Pass
10A	FG	N	1251930	E	599645	P2	111.3	16.4	108.5	97%	Pass
12A	FG	N	1251815	E	599590	P2	111.3	18.0	105.8	95%	Pass

*FG = Final Grade

Respectfully Submitted,
 Faulkner Engineering Services, Inc.

John R. Gregos, Jr. 9/27/05

John R. Gregos, Jr., P.E.
 Florida Registration No. 58628

Faulkner Engineering Services, Inc.

12904 Dupont Circle, Tampa, Florida 33628
813-818-8307 Office
813-818-8381 Fax
www.faulknereng.com

Southeast County Landfill, Section 8
Hillsborough County, Florida

Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
880 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date:

September 6, 2005

Project Number:

05-010

REPORT OF FIELD DENSITY TEST
Report Number: SUBBASE 2

SUBBASE - Test Referenced from Subgrade

95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required

Subbase Sample Number	LIR Tested	Landfill Subbase Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
14A	FG*	N	1251840	E	590445	P2	111.3	15.6	108.9	98%	Pass
16A	FG	N	1251805	E	599380	P4	111.5	14.6	107.9	97%	Pass
18A	FG	N	1251745	E	599325	P4	111.5	18.2	106.1	95%	Pass
21A	FG	N	1252130	E	599315	P4	111.5	18.4	105.8	95%	Pass
22	FG	N	1252000	E	599430	P4	111.5	18.8	105.4	95%	Pass
26	FG	N	1251935	E	599285	P4	111.5	19.2	106.0	95%	Pass
27	FG	N	1251870	E	599315	P4	111.5	17.2	106.1	95%	Pass
29	FG	N	1251860	E	599190	P2	111.3	19.2	105.5	95%	Pass

*FG = Final Grade

Respectfully Submitted,
Faulkner Engineering Services, Inc.

John R. Gregos, Jr. 9/29/05

John R. Gregos, Jr., P.E.
Florida Registration No. 58628

Faulkner Engineering Services, Inc.	12904 DuPont Circle, Tampa, Florida 33628 813-818-8307 Office 813-818-8381 Fax www.faulknereng.com
Southeast County Landfill, Section 8 Hillsborough County, Florida	

Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date:

September 7, 2005

Project Number:

05-010

REPORT OF FIELD DENSITY TEST

Report Number: SUBBASE 3

SUBBASE - Test Referenced from Subgrade

95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required

Subbase Sample Number	LIR Tested	Landfill Subbase Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
30A	FG*	N	1251666	E	599550	P2	111.3	18.2	105.8	95%	Pass
32A	FG	N	1251605	E	599485	P2	111.3	18.8	105.4	95%	Pass

*FG = Final Grade

Respectfully Submitted,
Faulkner Engineering Services, Inc.

John R. Gregos, Jr. 9/21/05

John R. Gregos, Jr., P.E.
Florida Registration No. 58628

Faulkner Engineering Services, Inc.

12904 DuPont Circle, Tampa, Florida 33626

813-818-8307 Office

813-818-8381 Fax

www.faulknereng.com

Southeast County Landfill, Section 8

Hillsborough County, Florida

Client: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Report Date:

September 12, 2005

Project Number:

05-010

REPORT OF FIELD DENSITY TEST

Report Number: SUBBASE 4

SUBBASE - Test Referenced from Subgrade

95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required

Subbase Sample Number	Lift Tested	Landfill Subbase Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
33	FG*	N	1251878	E	599112	P2	111.3	17.3	108.5	97%	Pass
34	FG	N	1251812	E	599135	P5	109.1	17.1	106.2	97%	Pass
35	FG	N	1251790	E	599235	P5	109.1	17.4	105.3	97%	Pass
39	FG	N	1252055	E	599090	P5	109.1	20.0	103.4	95%	Pass
43	FG	N	1251890	E	599035	P5	109.1	20.8	103.6	95%	Pass

*FG = Final Grade

Respectfully Submitted,
Faulkner Engineering Services, Inc.

John R. Gregos, Jr. 9/22/05

John R. Gregos, Jr., P.E.
Florida Registration No. 58628

Faulkner Engineering Services, Inc.	12904 Dupont Circle, Tampa, Florida 33626 813-818-8307 Office 813-818-8381 Fax www.faulknereng.com
Southeast County Landfill, Section 8 Hillsborough County, Florida	

Client: Jerry L. Pinder ERC General Contracting Services, Inc. 890 Carter Road, Suite 170 Winter Garden, FL 34787	Report Date: September 20, 2005 Project Number: 05-010	
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REPORT OF FIELD DENSITY TEST
Report Number: SUBBASE 5

SUBBASE - Test Referenced from Subgrade **95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required**

Subbase Sample Number	Lift Tested	Landfill Subbase Test Location				Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
						Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
45	FG*	N	1251580	E	599435	P4	111.5	17.2	109.6	98%	Pass
46	FG	N	1251665	E	599285	P4	111.5	16.8	108.7	97%	Pass

*FG = Final Grade

Respectfully Submitted,
 Faulkner Engineering Services, Inc.

John R. Gregos, Jr. 9/27/05
 John R. Gregos, Jr., P.E.
 Florida Registration No. 58628

Faulkner Engineering Services, Inc.	12904 Dupont Circle, Tampa, Florida 33626
	813-818-8307 Office 813-818-8381 Fax www.faulknereng.com
Southeast County Landfill, Section 8	
Hillsborough County, Florida	

Client: Jerry L. Pinder ERC General Contracting Services, Inc. 890 Carter Road, Suite 170 Winter Garden, FL 34787	Report Date: September 27, 2005
	Project Number: 05-010

REPORT OF FIELD DENSITY TEST
Report Number: SUBBASE 6

SUBBASE - Test Referenced from Subgrade **95% of the Standard Proctor Maximum Dry Density Value (ASTM D698) is Required**

Subbase Sample Number	Lift Tested	Landfill Subbase Test Location	Proctor Information		Field Compaction Test		Percent of Maximum Dry Density Value (%)	Test Status?
			Report	Maximum Dry Density Value (LBS/FT ³)	Moisture Content (%)	Dry Density Result (LBS/FT ³)		
47	FG*	N 1251742 E 589080	P4	111.5	18.8	105.9	95%	Pass

*FG = Final Grade

Respectfully Submitted,
 Faulkner Engineering Services, Inc.

John R. Gregos, Jr.
 9/29/05

John R. Gregos, Jr., P.E.
 Florida Registration No. 58628

Faulkner Engineering Services, Inc.	12904 Dupont Circle, Tampa, Florida 33626	
	813-818-8307 Office 813-818-8381 Fax www.faulknereng.com	
Southeast County Landfill, Section 8		
Hillsborough County, Florida		

Client: Jerry L. Pinder
 ERC General Contracting Services, Inc.
 890 Carter Road, Suite 170
 Winter Garden, FL 34787

Report Date: September 27, 2005

Project Number: 05-010

REPORT OF THICKNESS CHECKS

SUBBASE

Base Thickness Check Number	Base Thickness Check Location				Measured Base Thickness (in)	Required Base Thickness (in)
1A	N	1251670	E	599420	> Than 6.0	6
2A	N	1251730	E	599400	6.0	6
3A	N	1251750	E	599495	> Than 6.0	6
4A	N	1251615	E	599500	> Than 6.0	6
5A	N	1251900	E	599535	> Than 6.0	6
6A	N	1251985	E	599630	> Than 6.0	6
7A	N	1251980	E	599552	> Than 6.0	6
8A	N	1251972	E	599445	> Than 6.0	6
9A	N	1251885	E	599450	> Than 6.0	6
10A	N	1251930	E	599645	> Than 6.0	6
11A	N	1251880	E	599643	> Than 6.0	6
12A	N	1251815	E	599590	> Than 6.0	6
13A	N	1251730	E	599550	> Than 6.0	6
14A	N	1251840	E	599445	> Than 6.0	6
15A	N	1251875	E	599355	> Than 6.0	6
16A	N	1251805	E	599380	> Than 6.0	6
17A	N	1251750	E	599388	> Than 6.0	6

REPORT OF THICKNESS CHECKS

SUBBASE

Base Thickness Check Number	Base Thickness Check Location				Measured Base Thickness (in)	Required Base Thickness (in)
18A	N	1251745	E	599325	> Than 6.0	6
19A	N	1251750	E	599255	> Than 6.0	6
20A	N	1251710	E	599345	> Than 6.0	6
21A	N	1252130	E	599315	> Than 6.0	6
22	N	1252000	E	599430	> Than 6.0	6
23	N	1252085	E	599395	> Than 6.0	6
24	N	1252025	E	599345	> Than 6.0	6
25	N	1252035	E	599240	> Than 6.0	6
26	N	1251935	E	599285	> Than 6.0	6
27	N	1251870	E	599315	> Than 6.0	6
28	N	1251865	E	599220	6.0	6
29	N	1251980	E	599190	> Than 6.0	6
30	N	1251865	E	599550	> Than 6.0	6
31	N	1251690	E	599470	> Than 6.0	6
32	N	1251605	E	599485	> Than 6.0	6
33	N	1251878	E	599112	> Than 6.0	6
34	N	1251812	E	599135	6.0	6
35	N	1251790	E	599235	> Than 6.0	6
36	N	1251775	E	599090	> Than 6.0	6
37	N	1252100	E	599235	> Than 6.0	6
38	N	1252060	E	599180	> Than 6.0	6
39	N	1252055	E	599090	> Than 6.0	6
40	N	1251985	E	599080	> Than 6.0	6
41	N	1251990	E	599175	> Than 6.0	6
42	N	1251920	E	599105	> Than 6.0	6
43	N	1251890	E	599035	> Than 6.0	6

REPORT OF THICKNESS CHECKS

SUBBASE

Base Thickness Check Number	Base Thickness Check Location				Measured Base Thickness (in)	Required Base Thickness (in)
44	N	1251900	E	598990	> Than 6.0	6
45	N	1251530	E	598435	> Than 6.0	6
46	N	1251665	E	599265	> Than 6.0	6
47	N	1251742	E	599080	> Than 6.0	6

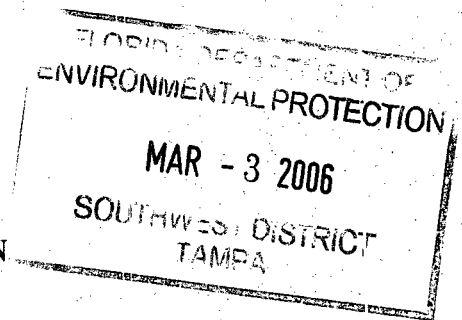
Respectfully Submitted,
 Faulkner Engineering Services, Inc.

John R. Gregos, Jr. 9/27/05

John R. Gregos, Jr., P.E.
 Florida Registration No. 58628

SECTION 6

GEOSYNTHETICS INSTALLATION



SCS Engineers' CQA Representative was on site full-time through September 30, 2005 to observe construction activities during the geomembrane liner system installation, in accordance with Florida Department of Environmental Protection (FDEP) rules. This section compiles the daily activities related to construction of the geomembrane liner system of the Southeast County, Landfill Capacity Expansion - Section 8 through September 30, 2005. CQA services for liner system installation completed after September 30, 2005 were provided by Jones Edmunds and Associates (JEA).

6.1 REQUIREMENTS AND SPECIFICATIONS

As shown on the construction drawings, the double geomembrane liner system was comprised of (from the bottom up): a secondary 60-mil textured high density polyethylene (HDPE) liner, a secondary triplanar geocomposite serving as a leak detection layer; a primary 60-mil textured HDPE liner, and primary triplanar geocomposite. The geomembrane and geocomposite manufacturer was GSI and Tenax, respectively. The geomembrane and geocomposite installer was GSI.

6.2 INSTALLATION SUMMARY

GSI began installation of the liner system on September 26, 2005. October 13, 2005 is ERC's target date for completion of geosynthetic materials installation.

The CQA Representative observed and documented weather, construction and installation techniques, nondestructive geomembrane testing, and geomembrane repairs through September 30, 2005. Materials conformance testing was conducted to verify compliance with project specifications. The CQA Representative recorded construction activities in daily field reports, and observed and documented the following:

- Subbase Acceptance
- Trial Welds
- Geomembrane Placement
- Geomembrane Seaming
- Geomembrane Non-Destructive Testing
- Geomembrane Repairs

6.2.1 Daily Field Reports

During the geomembrane installation, activities were recorded, specifically regarding the geosynthetic installation, on Daily Field Reports that are contained in Attachment 8-2 of Volume 2. The reports were signed and dated at the end of each day by the SCS CQA monitor.

The reports also contained general information such as weather conditions, modifications to the plans, and potential conflicts pertinent to the installation.

6.2.2 Proposed Panel Layout Drawings

The proposed geocomposite panel layout and HDPE liner layout are located in Attachment 6-1.

6.2.3 SCS' Daily Panel Placement

SCS' Daily Panel Placements Logs are located in Attachment 6-2.

6.3 GEOCOMPOSITE TESTING

6.3.1 Manufacturer Quality Control

The plans call for a geocomposite, which is a three-layer material comprised of an inner core of tri-planar high density polyethylene (HDPE) geonet between an upper and lower layer of geotextile. The textile is thermally fused to the geonet. Tenax, the geocomposite manufacturer, performed testing on the material to verify compliance with the contract specifications prior to approval by SCS. Tenax performed MQC tests on the geocomposite prior to delivery. The MQC tests were conducted in accordance with the manufacturer's quality control program. One test per every 100,000 square feet of geocomposite produced was performed. The quality control certificates, which contain the recorded results for each roll of geocomposite tests, are included in Attachment 6-3.

Table 6-1 presents the results of the MQC testing compared with the project specifications. The tests indicate that the geocomposite and components met or exceeded the project specifications.

TABLE 6-1. COMPARISON OF GEOCOMPOSITE PROPERTIES

Parameter	Specification	Range of MQC Test Results ¹
Geonet		
Polymer Density, g/cm ³	0.940	0.943-0.957
Thickness, mils	300	311.7-369.6
Tensile Strength, lbs/ft	1200	1219-1944
Carbon Black, percent	2-3	2-2.67
Geotextile		
Fabric Weight, oz/yd ²	6	6.2-6.7
Puncture Resistance, lbs (minimum)	56	91.8-113
Grab Tensile, lbs	157	218.1-281.7
Permittivity, sec ⁻¹	0.5	1.19-1.65
Geocomposite		
Peel Strength, lbs/in (average)	1.0	1.1-5.94
Hydraulic Transmissivity, m ² /sec (minimum)	3.7 x 10 ⁻³	8.87 x 10 ⁻³

Notes:

1. Range of values.

6.3.2 Conformance Testing

The geocomposite was visually examined by the CQA Representative as it was placed. Roll numbers were verified as conforming to rolls tested by Tenax under Manufacturer's Quality Control. The results of the conformance testing for the geocomposite are presented in Table 6-2 and laboratory results are included in Attachment 6.4. The conformance tests were conducted by TRI on material representative of the geocomposite used in this project. The test results further verify that the geocomposite met the project specifications.

**TABLE 6-2. COMPARISON OF GEOCOMPOSITE PROPERTIES
IN CONFORMANCE TESTING**

Parameter	Specification	Range of MQC Test Results ¹
Geonet		
Polymer Density, g/cm ³	0.940	0.951-0.957
Thickness, mils	300	406.33
Geotextile		
Puncture Resistance, lbs (minimum)	56	100-185
Permittivity, sec ⁻¹	0.5	1.0-3.7
Geocomposite		
Peel Strength, lbs/in (average)	1.0	1.0-3.7
Hydraulic Transmissivity, m ² /sec (minimum)	3.7×10^{-3}	4.4×10^{-3} - 8.70×10^{-3}

Notes:

1. Range of values.

6.4 SUBFACE ACCEPTANCE

Prior to deploying the geomembrane, the SCS CQA Representative, and GSI visually inspected the subbase to be sure it was smooth and free of rocks, sharp stones, sticks, roots, sharp objects, and debris. A Subbase Surface Acceptance form signed by the SCS CQA Representative and GSI Site Manager described the area on which geomembrane was to be deployed. Subbase Acceptance forms are included in Attachment 6-5.

6.5 GEOMEMBRANE TESTING

6.5.1 Manufacturer Quality Control

GSE performed testing on the geomembrane material to verify compliance with the contract specifications prior to approval by SCS. GSE MQC tests on the geomembrane prior to delivery. The MQC tests were conducted in accordance with the manufacturer's quality control program. One test per every 50,000 square feet of geomembrane produced was performed. The quality control certificates, which contain the results for geomembrane tests, are included

in Attachment 6-5. In addition, the results of MQC tests for geomembrane resins and welding rod are included in Attachment 6-6.

Table 6-3 presents the results of the MQC testing compared with the project specifications of the materials. The tests indicate that the geomembrane met or exceeded the project specifications.

TABLE 6-3. COMPARISON OF GEOMEMBRANE PROPERTIES

Parameter	Specification	Range of MQC Test Results ¹
Thickness, mils (average)	60±5%	59-61
Carbon Content, %	2.0-3.0	2.5-2.7
Carbon Black Dispersion	10 views, 1 or 2	9-10
Density, g/cm ³	>0.940	0.943-0.947
Tensile Strength at Break, (lb/in width)	90	MD 172-210 TD 170-193

Notes:

1. Range of values.
2. MD - Machine Direction.
3. TD - Transverse Direction.

6.5.2 Conformance Testing

The geomembrane was visually examined by the SCS CQA Representative as it was placed. Roll numbers were verified as conforming to rolls tested by GSE under Manufacturer's Quality Control. The results of the conformance testing for the geomembrane are presented in Table 6-4 and laboratory results are included in Attachment 6-7. The conformance tests were conducted by TRI on material representative of the geomembrane used in this project. The test results further verify that the geomembrane met the project specifications.

**TABLE 6-4. COMPARISON OF GEOMEMBRANE PROPERTIES
IN CONFORMANCE TESTING**

Parameter	Specification	Range of MQC Test Results ¹
Thickness, mils (average)	60±5%	60-62
Carbon Content, %	2.0-3.0	2.49-2.68
Carbon Black Dispersion	10 views, 1 or 2	Met Spec
Density, g/cm ³	>0.940	0.945-0.948
Tensile Strength at Break, (lb/in width)	90	MD 183-208 TD 159-196

- Notes: 1. Range of values.
 2. MD - Machine Direction.
 3. TD - Transverse Direction.

6.6 GEOSYNTHETIC LINER CONSTRUCTION

6.6.1 Panel Placement

Geomembrane panels were placed one at a time and temporarily secured along the edges with sandbags to prevent uplift by the wind. Adjacent panels were deployed and adjusted prior to seaming. Upon deployment, individual panels were assigned sequential panel numbers. Panel numbers, with the corresponding manufacturer's geomembrane roll number, were marked on the panels. These numbers were recorded by the CQA Representative and GSE's Quality Control Technician. SCS' Geomembrane and Geocomposite Placement Logs are included in Attachment 6-8. Also recorded on the placement logs are length, width, thickness, and orientation of the panels along with the date the panels were deployed. A space for comments about the panels may include a weather description, a shape description of a panel that is not rectangular, or a more detailed description of location.

6.6.2 Trial Welds

As required by the contract specifications, the equipment used to fusion and extrusion weld the geomembrane seams each day were pre-heated and tested prior to use on the liner system. Each seaming crew was required to produce trial welds on a segment of excess geomembrane, approximately 3 feet long. The seaming crew adjusted equipment temperatures to compensate for varying weather and seaming conditions.

The trial welds were tested for compliance with the project specifications at the site. Results of the field trial weld tests are contained in Attachment 6-9.

6.6.3 Non-Destructive Seam Tests

A non-destructive test was conducted on the entire length of each seam. As required by the contract specifications, air pressure testing was required for all double seam hot wedge welds. The testing apparatus needed to be capable of generating a minimum pressure of 25 pounds per square inch (psi). As required by the contract specifications, vacuum box pressure testing was required for all extrusion welds except for those welds inaccessible to the vacuum box, such as geomembrane boots. The vacuum box apparatus needed to be capable of sustaining a vacuum pressure of 5 psi (gauge) for 10 seconds while placed on a seam.

Non-destructive test logs were completed by the CQA Representative. The logs include seam number, an identification of the installer's technician performing the test, the pressure at the beginning and the end of the test, time and duration and pass/fail designation. Other comments on the logs may include a more detailed description of the seam. SCS non-destructive test logs are included in Attachment 6-10.

6.6.4 Seam and Panel Repair

All seams and non-seam areas of the geomembrane was inspected by the CQA/CQC for defects, holes, blisters, undispersed raw materials, and any sign of contamination by foreign matter.

Small holes were repaired by extrusion welding. If the hole was greater than ¼-inch, the hole was patched. Repairs were observed and documented by the CQA Representative on the Geomembrane Repair Log. Included on the repair log was the repair date, repair number, size, location, type of repair, and identification of the technicians who performed and tested the repair, along with additional comments. Geomembrane Repair Logs are presented in Attachment 6-11.

6.6.5 Destructive Tests

As required in the specifications, a destructive test is performed for each 500 linear feet of geomembrane seam completed.

TRI performed shear tests to measure strength, and peel tests to measure adhesion of the seam. Destructive Sample test results from TRI are included in Attachment 6-12.

6.6.6 Direct Shear Test

For slope stability the critical friction angle between the various geosynthetic materials was computed in the Operations Permit. The interface with the lowest interface friction angle is the 60-mil smooth geomembrane and the non-woven geotextile.

To confirm the project materials would meet this criteria, the Contractor conducted an interface direct shear tests, in accordance with ASTM D 5397. To simulate field conditions, the normal loads covered the range of stresses during final buildout of the Section 8 and the interface was tested in a saturated condition. As shown in Attachment 6-13 in this section, the test resulted in an interface friction angle greater than 21 degrees.

6.7 CONSTRUCTION PHOTOGRAPHS

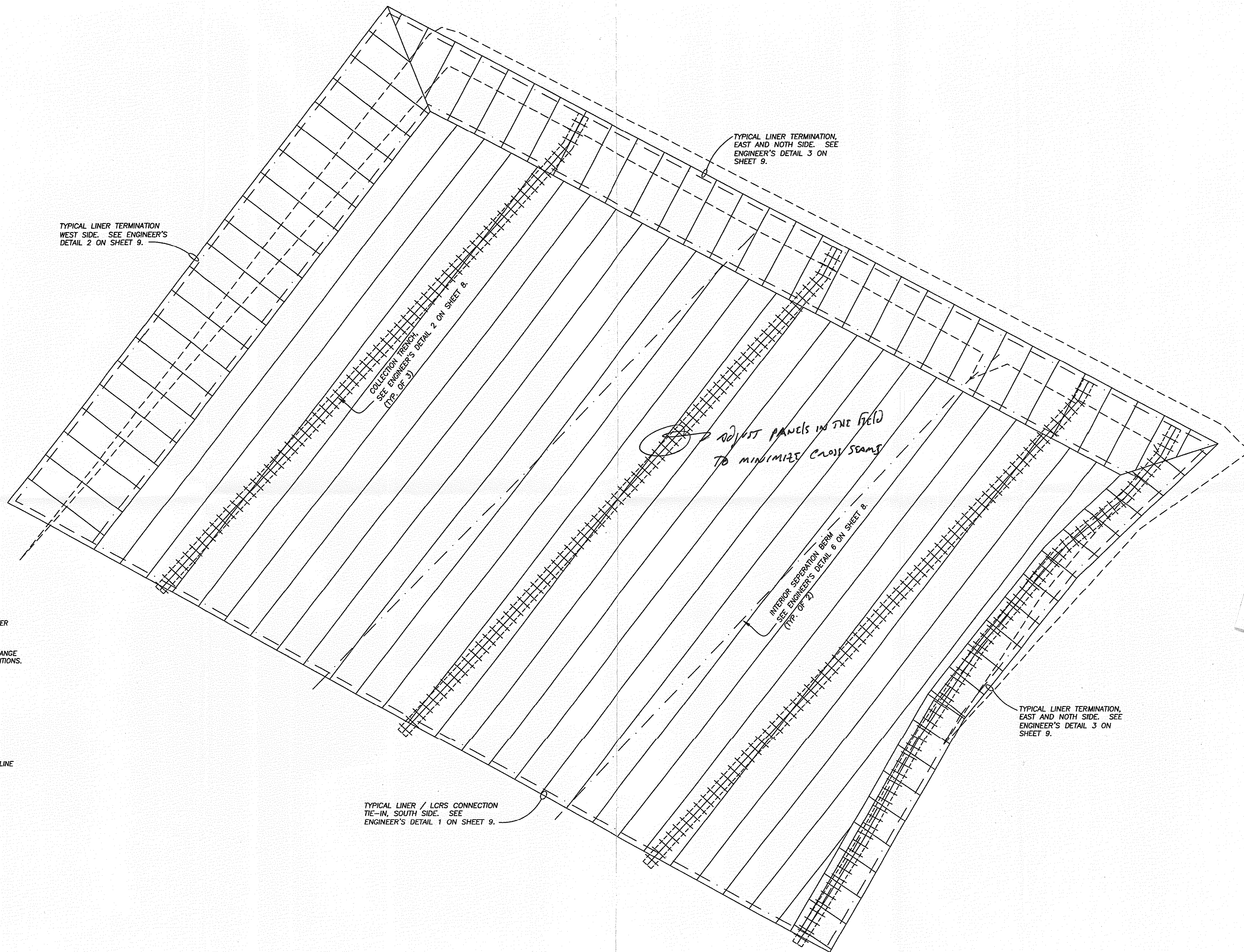
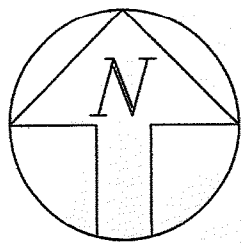
Representative photographs of construction activities are presented in Attachment 8.

ATTACHMENT 6-1

ERC GEOCOMPOSITE PROPOSED PANEL LAYOUT

AND

HDPE LINER PROPOSED PANEL LAYOUT



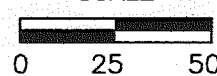
NOTES:

1. 60 MIL TEXTURED HDPE TO BE FURNISHED IN 22 FOOT WIDE MASTER ROLLS.
2. PANEL LAYOUT FOR SCHEMATIC PURPOSES ONLY. LAYOUT MAY CHANGE DUE TO VARIATIONS IN FIELD CONDITIONS.

LEGEND

- CELL OUTLINE
- PROPOSED PANEL OUTLINE
- CONTOUR LINE
- RIDGE
- [Hatched Box] COLLECTION TRENCH

SCALE



FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION
MAR - 3 2006
SOUTHWEST DISTRICT
TAMPA

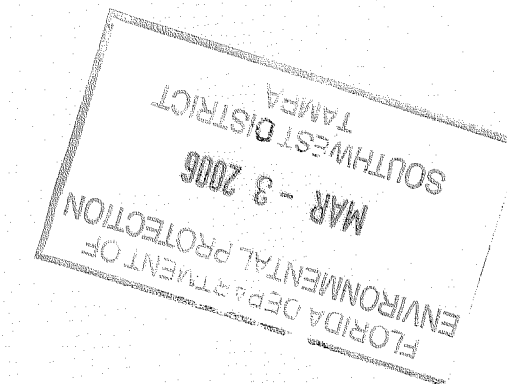
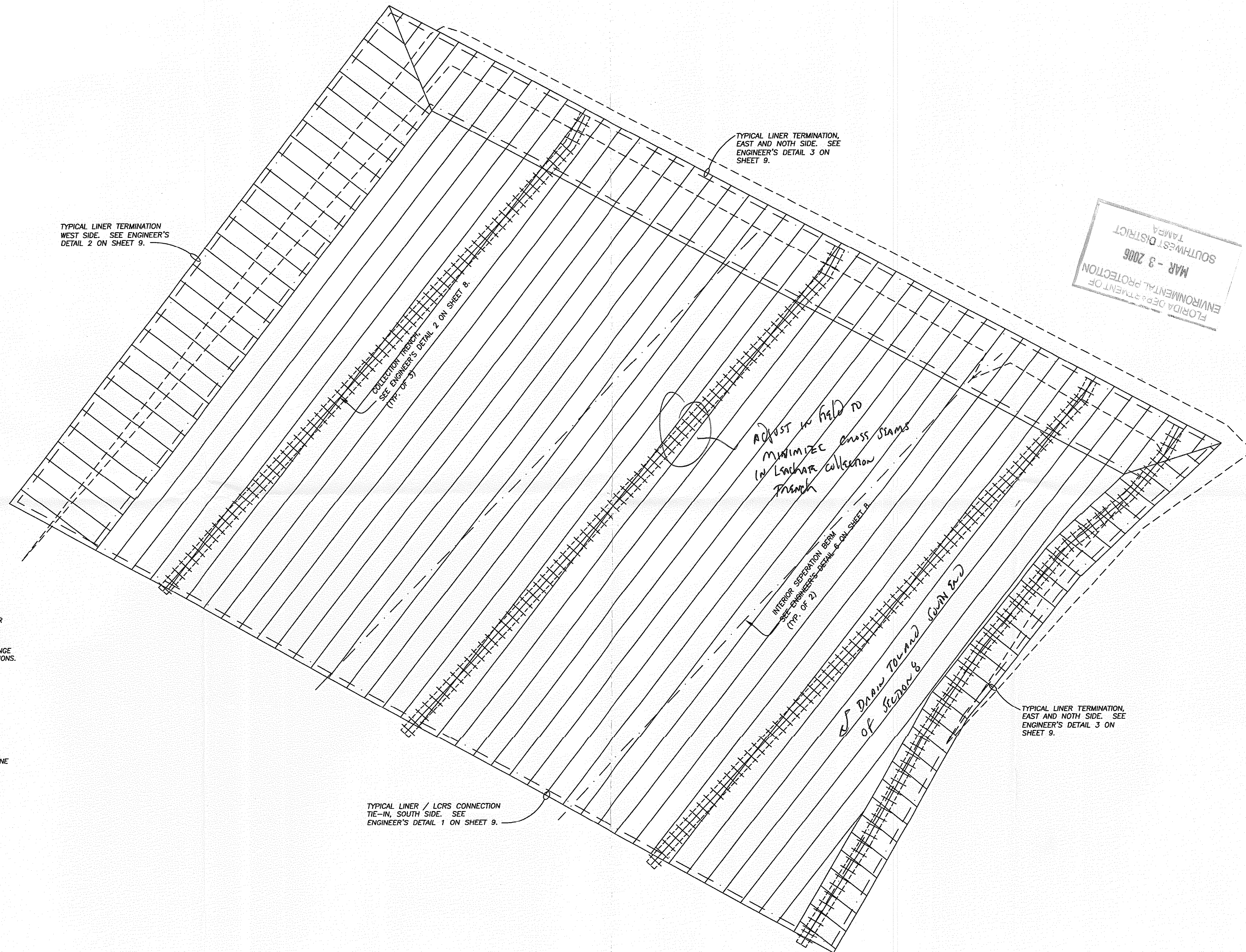
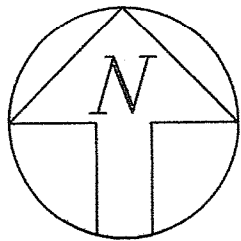
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CHKD BY:	DATE:								L040245
SCALE: 1" = 50'-0"									DRAWING #
JOB #: 24068	EST #: L040245	NO.	1	PROPOSED PANEL LAYOUT	12/30/04	EW	BY	GEO-SYNTHETICS, INC.	PL-1
				REVISION DESCRIPTION	DATE				



GEO-SYNTHETICS, INC.
W239 N428 PEWAUKEE ROAD
WAUKESHA, WI 53188
262-524-7979

S.E. HILLSBOROUGH LF
TAMPA, FL

60 MIL TEXTURED HDPE
PROPOSED PANEL LAYOUT



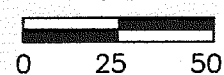
NOTES:

1. 60 MIL TEXTURED HPDE TO BE FURNISHED IN 15 FOOT WIDE MASTER ROLLS.
2. PANEL LAYOUT FOR SCHEMATIC PURPOSES ONLY. LAYOUT MAY CHANGE DUE TO VARIATIONS IN FIELD CONDITIONS.

LEGEND

- CELL OUTLINE
- PROPOSED PANEL OUTLINE
- ... CONTOUR LINE
- - - RIDGE
- [Hatched Box] COLLECTION TRENCH

SCALE



DRAWN BY: ESW DATE: 01/03/05

CHKD BY: DATE:

SCALE: 1" = 50'-0"

JOB #: 24068 EST #: L040245

NO.	REVISION	DESCRIPTION	DATE	BY
1		PROPOSED PANEL LAYOUT	01/05/05	EW



GEO-SYNTHETICS, INC.
W239 N428 PEWAUKEE ROAD
WAUKESHA, WI 53188
262-524-7979

S.E. HILLSBOROUGH LF
TAMPA, FL

GEOCOMPOSITE
PROPOSED PANEL LAYOUT

FILENAME
L040245
DRAWING #
PL-2

ATTACHMENT 6-2

SCS DAILY PANEL PLACEMENT LOGS

Deployment Date 9-26-05

Daily Panel Placement

Project Name: South HENSLER SECTION 8

Job # 09200020.5 Supt:

Material: 60 MIL TEXTURE

Primary ☐ Secondary ☒

Pond #

Cell #

Pad #

Other:

Panel # 51 Roll # 9932 anchor + 5' Initial SF _____ Lineal Feet Trench _____ Final SF 10714	Panel # 52 Roll # 9045 anchor + 5' Initial SF _____ Lineal Feet Trench _____ Final SF 10747	Panel # 53 Roll # 9042 anchor + 5' Initial SF _____ Lineal Feet Trench _____ Final SF 843.5
Panel # 54 Roll # 9042 anchor + 5' Initial SF _____ Lineal Feet Trench _____ Final SF 489.5	Panel # 55 Roll # 40 anchor + 5' Initial SF _____ Lineal Feet Trench _____ Final SF 102.25	Panel # 56 Roll # anchor + 5' Initial SF _____ Lineal Feet Trench _____ Final SF 1221
Panel # 57 Roll # anchor + 5' Initial SF _____ Lineal Feet Trench _____ Final SF 170	Panel # 58 Roll # anchor + 5' Initial SF _____ Lineal Feet Trench _____ Final SF 764.5	Total Initial SF This Page _____ SF Total Final SF This Page _____ SF Anchor Trench Total Linear Feet In Trench _____ LF X _____ Depth and Width Allowed in Trench _____ LF = Total SF in Trench _____ SF Total Pay Area This Page 25057.75 SF Total Previous Pages _____ SF Total Pay Area to Date 25052 SF

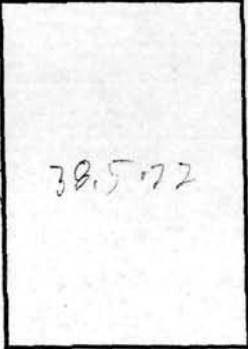
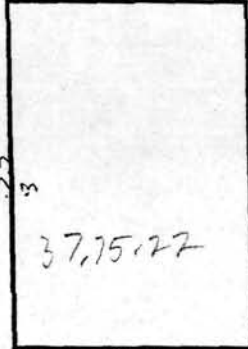
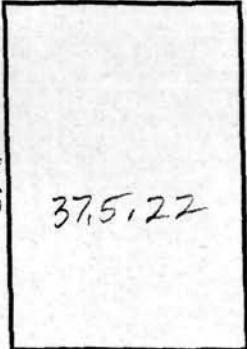
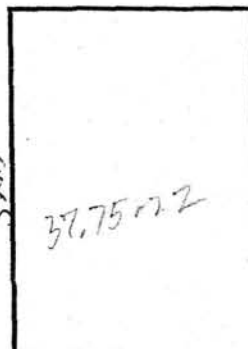
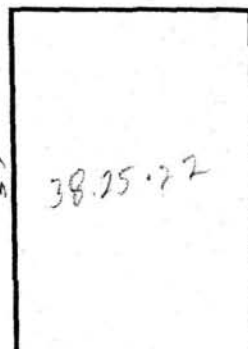
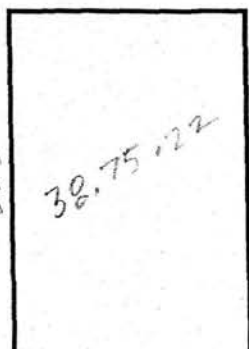
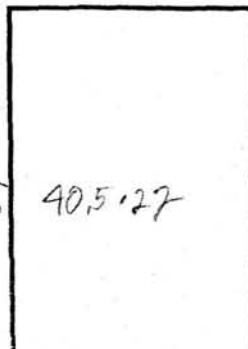
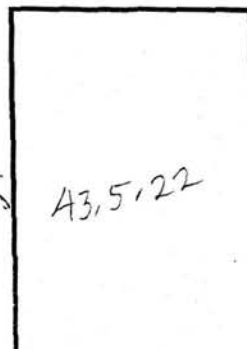
Deployment Date 9-26-05

Daily Panel Placement

Project Name: SOUTH EAST 1 E. SECTION 8

Job # 09200020.55 Supt:

Material: 60 MIL TEXTURE Primary ☒ , Secondary ☒ Pond # Cell # Pad # Other:

Panel # <u>9</u>	Roll # <u> </u>	Panel # <u>10</u>	Roll # <u> </u>	Panel # <u>11</u>	Roll # <u> </u>
<u>Anchor + 5'</u>		<u>Anchor + 5'</u>		<u>Anchor + 5'</u>	
					
Initial SF <u> </u> Lineal Feet Trench <u> </u>		Initial SF <u> </u> Lineal Feet Trench <u> </u>		Initial SF <u> </u> Lineal Feet Trench <u> </u>	
Final SF <u>847</u>		Final SF <u>830.5</u>		Final SF <u>825</u>	
Panel # <u>12</u>	Roll # <u> </u>	Panel # <u>13</u>	Roll # <u> </u>	Panel # <u>14</u>	Roll # <u> </u>
<u>Anchor + 5'</u>		<u>Anchor + 5'</u>		<u>Anchor + 5'</u>	
					
Initial SF <u> </u> Lineal Feet Trench <u> </u>		Initial SF <u> </u> Lineal Feet Trench <u> </u>		Initial SF <u> </u> Lineal Feet Trench <u> </u>	
Final SF <u>830.5</u>		Final SF <u>841.5</u>		Final SF <u>852.5</u>	
Panel # <u>15</u>	Roll # <u> </u>	Panel # <u>16</u>	Roll # <u> </u>	Total Initial SF This Page SF Total Final SF This Page SF Anchor Trench Total Linear Feet In Trench LF X Depth and Width Allowed in Trench LF = Total SF in Trench SF Total Pay Area This Page <u>6875</u> SF Total Previous Pages <u>25052</u> SF Total Pay Area to Date <u>31927</u> SF	
<u>Anchor + 5'</u>		<u>Anchor + 5'</u>			
					
Initial SF <u> </u> Lineal Feet Trench <u> </u>		Initial SF <u> </u> Lineal Feet Trench <u> </u>			
Final SF <u>891</u>		Final SF <u>957</u>			

Deployment Date 9-26-05

Project Name: Southwest 1 E. SECTION 8

Job # 097000203 Supt:

Material: 60 MIL TEXTURE Primary: Secondary: ☒ Pond # Cell # Pad # Other:

Panel #	Roll #	Panel #	Roll #	Panel #	Roll #
17		18		19	
Anchor + 5'		Anchor + 5'		Anchor + 5'	
Initial SF		Initial SF		Initial SF	
Final SF <u>1028.5</u>		Final SF <u>1105.5</u>		Final SF <u>1188</u>	
20		21		22	
Anchor + 5'		Anchor + 5'		Anchor + 5'	
Initial SF		Initial SF		Initial SF	
Final SF <u>1276</u>		Final SF <u>1375</u>		Final SF <u>1485</u>	
23		24			
Anchor + 5'		Anchor + 5'			
Initial SF		Initial SF			
Final SF <u>1606</u>		Final SF <u>1716</u>			
				Total Initial SF This Page	
				SF	
				Total Final SF This Page	
				SF	
				Anchor Trench	
				Total Linear Feet In Trench	
				X	
				Depth and Width Allowed in Trench	
				= Total SF in Trench	
				SF	
				Total Pay Area This Page	
				<u>10780</u>	
				Total Previous Pages	
				<u>319</u>	
				Total Pay Area to Date	
				<u>4</u>	

Deployment Date 9-26-05

Daily Panel Placement

Project Name: South HENSL F. SECTION 8

Job # 0920002035 Supt:

Material: 60 MIL TEXTURE Primary ☐ Secondary ☒ Pond # Cell # Pad # Other:

Panel #	Roll #	Panel #	Roll #	Panel #	Roll #
25		26		27	
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF 1815		Final SF 1854		Final SF 18725	
28		29		30	
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF 10681		Final SF 10714		Final SF 10758	
31		32			
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench		
Final SF 10747		Final SF 286			
				Total Initial SF This Page SF	
				Total Final SF This Page SF	
				Anchor Trench	
				Total Linear Feet In Trench LF	
				X	
				Depth and Width Allowed in Trench LF	
				= Total SF in Trench SF	
				Total Pay Area This Page 57580 SF	
				Total Previous Pages 42,707 SF	
				Total Pay Area to Date 100,287 SF	

Daily Panel Placement

Material: 60 MIL TEXTURE Primary ☐ Secondary ☒ Pond # Cell # Pad # Other:

Panel #	Roll #	Panel #	Roll #	Panel #	Roll #
33		34			
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF		Final SF		Final SF	
Panel #	Roll #	Panel #	Roll #	Panel #	Roll #
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF		Final SF		Final SF	
Panel #	Roll #	Panel #	Roll #	Panel #	Roll #
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF		Final SF		Final SF	
Panel #	Roll #	Panel #	Roll #	Total Initial SF This Page SF	
				Total Final SF This Page SF	
				Anchor Trench	
				Total Linear Feet In Trench LF	
				X	
				Depth and Width Allowed in Trench LF	
				= Total SF in Trench SF	
				Total Pay Area This Page SF	
				Total Previous Pages SF	
				Total Pay Area to Date SF	
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench		
Final SF		Final SF			

Deployment Date 12-27-05

Project Name: SOUTHEAST I.E. SECTION 8 Job # 0970002055 Supt:

Material: 60 MIL TEXTURE Primary ☒ Secondary ☐ Pond # Cell # Pad # Other:

Panel # <u>35</u> Roll # <u> </u> <i>anchor + 5'</i> Initial SF <u> </u> Lineal Feet Trench <u> </u> Final SF <u>10780</u>	Panel # <u>36</u> Roll # <u> </u> <i>anchor + 5'</i> Initial SF <u> </u> Lineal Feet Trench <u> </u> Final SF <u>10780</u>	Panel # <u>37</u> Roll # <u> </u> <i>anchor + 5'</i> Initial SF <u> </u> Lineal Feet Trench <u> </u> Final SF <u>10703</u>
Panel # <u>38</u> Roll # <u> </u> <i>anchor + 5'</i> Initial SF <u> </u> Lineal Feet Trench <u> </u> Final SF <u>10725</u>	Panel # <u>39</u> Roll # <u> </u> <i>anchor + 5'</i> Initial SF <u> </u> Lineal Feet Trench <u> </u> Final SF <u>10714</u>	Panel # <u>40</u> Roll # <u> </u> <i>anchor + 5'</i> Initial SF <u> </u> Lineal Feet Trench <u> </u> Final SF <u>10681</u>
Panel # <u>41</u> Roll # <u> </u> <i>anchor + 5'</i> Initial SF <u> </u> Lineal Feet Trench <u> </u> Final SF <u>10659</u>	Panel # <u>42</u> Roll # <u> </u> <i>anchor + 5'</i> Initial SF <u> </u> Lineal Feet Trench <u> </u> Final SF <u>10637</u>	Total Initial SF This Page <u> </u> SF Total Final SF This Page <u> </u> SF Anchor Trench Total Linear Feet In Trench <u> </u> LF X Depth and Width Allowed in Trench <u> </u> LF = Total SF in Trench <u> </u> SF Total Pay Area This Page <u>85,679</u> SF Total Previous Pages <u>111,252</u> SF Total Pay Area to Date <u>196,931</u> SF

Deployment Date 9-27-05

Daily Panel Placement

Project Name: SOUTHEAST I.F. SECTION 8 Job # 0920002055 Supt:

Material: 60 MIL TEXTURE Primary ☒ Secondary ☐ Pond # Cell # Pad # Other:

Panel # <u>43</u> Roll # <u> </u> 944 476 453.72 478 Initial SF Lineal Feet Trench Final SF <u>10626</u> 	Panel # <u>44</u> Roll # <u> </u> 542 345 478 543 Initial SF Lineal Feet Trench Final SF 	Panel # <u>45</u> Roll # <u> </u> 544 Initial SF Lineal Feet Trench Final SF
Panel # <u>46</u> Roll # <u> </u> 22 Initial SF Lineal Feet Trench Final SF 	Panel # <u> </u> Roll # <u> </u> Initial SF Lineal Feet Trench Final SF 	Panel # <u> </u> Roll # <u> </u> Initial SF Lineal Feet Trench Final SF
Panel # <u> </u> Roll # <u> </u> Initial SF Lineal Feet Trench Final SF 	Panel # <u> </u> Roll # <u> </u> Initial SF Lineal Feet Trench Final SF 	Total Initial SF This Page SF Total Final SF This Page SF Anchor Trench Total Linear Feet In Trench LF X Depth and Width Allowed in Trench LF = Total SF in Trench SF Total Pay Area This Page SF Total Previous Pages SF Total Pay Area to Date SF

ATTACHMENT 6-3

MQA GEOCOMPOSITE TESTING REPORT

SUMMARY SHEETS

Batch Number 1
Textile Lot # 40056; Net Lot # 43045

	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION	Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum	
	6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³	
Geocomposite	4504007																5.48	4.69	6.49	
Geonet	4300557 4300558												369.6 325.4	0.943	2.38	1944				
Top Geotextile	4008166 4008168 4008169	6.4 6.6	245.8 245	127.2 141.8	207.7 209	62.1 68.6	100.2 99	81.8 76.7	98.1 87.3	77 77										
Bottom Geotextile	4008156 4008157 4008160	6.6 6.3 6.5	235.5 234 240.2	118.9 120.3 124.1	196.6 188.4 207.4	56.9 56.8 60.2	96.8 101.7	70.7 67.5	69.1 71.9	77 79	1.27	95.1	0.107							
Geocomposite	4504008																			
Geonet	4300557 4300558												369.6 325.4	0.943	2.38	1944				
Top Geotextile	4008166 4008168 4008169	6.4 6.6	245.8 245	127.2 141.8	207.7 209	62.1 68.6	100.2 99	81.8 76.7	98.1 87.3	77 77										
Bottom Geotextile	4008156 4008157 4008160	6.6 6.3 6.5	235.5 234 240.2	118.9 120.3 124.1	196.6 188.4 207.4	56.9 56.8 60.2	96.8 101.7	70.7 67.5	69.1 71.9	77 79	1.27	95.1	0.107							
Geocomposite	4504009																			
Geonet	4300557 4300558												369.6 325.4	0.943	2.38	1944				
Top Geotextile	4008166 4008168 4008169	6.4 6.6	245.8 245	127.2 141.8	207.7 209	62.1 68.6	100.2 99	81.8 76.7	98.1 87.3	77 77										
Bottom Geotextile	4008156 4008157 4008160	6.6 6.3 6.5	235.5 234 240.2	118.9 120.3 124.1	196.6 188.4 207.4	56.9 56.8 60.2	96.8 101.7	70.7 67.5	69.1 71.9	77 79	1.27	95.1	0.107							
Geocomposite	4504010																			
Geonet	4300557 4300558												369.6 325.4	0.943	2.38	1944				
Top Geotextile	4008166 4008168 4008169	6.4 6.6	245.8 245	127.2 141.8	207.7 209	62.1 68.6	100.2 99	81.8 76.7	98.1 87.3	77 77										
Bottom Geotextile	4008156 4008157	6.6 6.3	235.5 234	118.9 120.3	196.6 188.4	56.9 56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							

Batch Number 1

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
Geocomposite	4504011																			
Geonet	4300557 4300558													369.6 325.4	0.943	2.38	1944			
Top Geotextile	4008166 4008168 4008169	6.4 6.6	245.8 245	127.2 141.8	207.7 209	62.1 68.6	100.2 99	81.8 76.7	98.1 87.3	77 77										
Bottom Geotextile	4008156 4008157 4008160	6.6 6.3 6.5	235.5 234 240.2	118.9 120.3 124.1	196.6 188.4 207.4	56.9 56.8 60.2	96.8 70.7 101.7	70.7 69.1 67.5		77 77 79	1.27	95.1	0.107							
Geocomposite	4504012																			
Geonet	4300557 4300558													369.6 325.4	0.943	2.38	1944			
Top Geotextile	4008166 4008168 4008169	6.4 6.6	245.8 245	127.2 141.8	207.7 209	62.1 68.6	100.2 99	81.8 76.7	98.1 87.3	77 77										
Bottom Geotextile	4008156 4008157 4008160	6.6 6.3 6.5	235.5 234 240.2	118.9 120.3 124.1	196.6 188.4 207.4	56.9 56.8 60.2	96.8 70.7 101.7	70.7 69.1 67.5		77 77 79	1.27	95.1	0.107							
Geocomposite	4504013																			
Geonet	4300557 4300558 4300559													369.6 325.4 325.2	0.943 0.943	2.38 2.41	1944 1296.9			
Top Geotextile	4008163 4008165 4008166	6.6 6.4	220 245.8	132.5 127.2	210.3 207.7	61.9 62.1	99.9 100.2	67.1 81.8	70.9 98.1	79 77										
Bottom Geotextile	4008163 4008166 4008169	6.6 6.4 6.6	220 245.8 245	132.5 127.2 141.8	210.3 207.7 209	61.9 62.1 68.6	99.9 100.2 99	67.1 81.8 76.7	70.9 98.1 87.3	79 77 77										
Geocomposite	4504014																			
Geonet	4300557 4300558 4300559													369.6 325.4 325.2	0.943 0.943	2.38 2.41	1944 1296.9			
Top Geotextile	4008163 4008165 4008166	6.6 6.4	220 245.8	132.5 127.2	210.3 207.7	61.9 62.1	99.9 100.2	67.1 81.8	70.9 98.1	79 77										
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										

Batch Number 1

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests					Geocomposite Tests		
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Bottom Geotextile	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
Geocomposite	4504015																			
Geonet	4300557													369.6	0.943	2.38	1944			
	4300558													325.4						
	4300559													325.2	0.943	2.41	1296.9			
Top Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008165																			
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
Bottom Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
Geocomposite	4504016																			
Geonet	4300557													369.6	0.943	2.38	1944			
	4300558													325.4						
	4300559													325.2	0.943	2.41	1296.9			
Top Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008165																			
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
Bottom Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
Geocomposite	4504017																			
Geonet	4300557													369.6	0.943	2.38	1944			
	4300558													325.4						
	4300559													325.2	0.943	2.41	1296.9			
Top Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008165																			
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
Bottom Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
Geocomposite	4504018																			
Geonet	4300557													369.6	0.943	2.38	1944			
	4300558													325.4						
	4300559													325.2	0.943	2.41	1296.9			
Top Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008165																			
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										

Batch Number 1
Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Bottom Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
Geocomposite	4504019																			
Geonet	4300557													369.6	0.943	2.38	1944			
	4300558													325.4						
	4300559													325.2	0.943	2.41	1296.9			
Top Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008165																			
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
Bottom Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
Geocomposite	4504020																			
Geonet	4300557													369.6	0.943	2.38	1944			
	4300558													325.4						
	4300559													325.2	0.943	2.41	1296.9			
Top Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008165																			
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
Bottom Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
Geocomposite	4504021																			
Geonet	4300558													325.4						
	4300559													325.2	0.943	2.41	1296.9			
	4300561													322.7	0.954	2.49	1410.3			
Top Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008165																			
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
Bottom Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
Geocomposite	4504022																			
Geonet	4300558													325.4						
	4300559													325.2	0.943	2.41	1296.9			
	4300561													322.7	0.954	2.49	1410.3			
Top Geotextile	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008159																			

Batch Number 1
Textile Lot # 40056; Net Lot # 43045

		Geotextile Tests												Geonet Tests				Geocomposite Tests		
Roll Number	Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec	
		MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs												
SPECIFICATION	Min.	Min.		Min.		Minimum			Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum		
	6	157		157		56			0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³		
Bottom Geotextile	4008160	6.5	240.2	124.1	2007.4	60.2	101.7	67.5	71.9	79										
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
	4008153	6.4	218.1	118.5	195.2	62.5	95.1	78.6	74.7	77										
	4008155	6.6	221.2	121	203.5	57.3	97.6	68	69.1	79	1.42	105.7	0.114							
Geocomposite	4504023																			
Geonet	4300558											325.4								
	4300559											325.2	0.943	2.41	1296.9					
	4300561											322.7	0.954	2.49	1410.3					
Top Geotextile	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008159																			
	4008160	6.5	240.2	124.1	2007.4	60.2	101.7	67.5	71.9	79										
Bottom Geotextile	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
	4008153	6.4	218.1	118.5	195.2	62.5	95.1	78.6	74.7	77										
	4008155	6.6	221.2	121	203.5	57.3	97.6	68	69.1	79	1.42	105.7	0.114							
Geocomposite	4504024																			
Geonet	4300558											325.4								
	4300559											325.2	0.943	2.41	1296.9					
	4300561											322.7	0.954	2.49	1410.3					
Top Geotextile	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008159																			
	4008160	6.5	240.2	124.1	2007.4	60.2	101.7	67.5	71.9	79										
Bottom Geotextile	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
	4008153	6.4	218.1	118.5	195.2	62.5	95.1	78.6	74.7	77										
	4008155	6.6	221.2	121	203.5	57.3	97.6	68	69.1	79	1.42	105.7	0.114							
Geocomposite	4504025																			
Geonet	4300558											325.4								
	4300559											325.2	0.943	2.41	1296.9					
	4300561											322.7	0.954	2.49	1410.3					
Top Geotextile	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008159																			
	4008160	6.5	240.2	124.1	2007.4	60.2	101.7	67.5	71.9	79										
Bottom Geotextile	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
	4008153	6.4	218.1	118.5	195.2	62.5	95.1	78.6	74.7	77										
	4008155	6.6	221.2	121	203.5	57.3	97.6	68	69.1	79	1.42	105.7	0.114							
Geocomposite	4504026																			
Geonet	4300558											325.4								
	4300559											325.2	0.943	2.41	1296.9					
	4300561											322.7	0.954	2.49	1410.3					
	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							

Batch Number 1

Textile Lot # 40056; Net Lot # 43045

Roll Number		Geotextile Tests											Geonet Tests				Geocomposite Tests																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
		Grab Tensile/Elongation				Puncture Resistance	Trap Tear		Thickness	Permittivity	Water Flow	AOS	Thickness	Density	Carbon Black	Tensil	Top Peel Adhesion	Bottom Peel Adhesion	Transmissivity																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
		MD Tensile	MD Elong	CD Tensile	CD Elong		lbs	lbs												lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs

Batch Number 1
Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Geotextile Tests										Geonet Tests				Geocomposite Tests				
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Top Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008164																			
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
Bottom Geotextile	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008158																			
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
Geocomposite	4504031																			
Geonet	4300559													325.2	0.943	2.41	1296.9			
	4300560																			
	4300561													322.7	0.954	2.49	1410.3			
Top Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008164																			
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
Bottom Geotextile	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008158																			
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
Geocomposite	4504032																			
Geonet	4300559													325.2	0.943	2.41	1296.9			
	4300560																			
	4300561													322.7	0.954	2.49	1410.3			
Top Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008164																			
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
Bottom Geotextile	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008158																			
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
Geocomposite	4504033																			
Geonet	4300559													325.2	0.943	2.41	1296.9			
	4300560																			
	4300561													322.7	0.954	2.49	1410.3			
Top Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008164																			
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
Bottom Geotextile	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008158																			
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
Geocomposite	4504034																			
Geonet	4300559													325.2	0.943	2.41	1296.9			
	4300560																			

Batch Number 1

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Geotextile Tests											Geonet Tests					Geocomposite Tests		
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Top Geotextile	4300561													322.7	0.954	2.49	1410.3			
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008164																			
Bottom Geotextile	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008158																			
Geocomposite	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4504035																			
	4300559													325.2	0.943	2.41	1296.9			
Top Geotextile	4300560													322.7	0.954	2.49	1410.3			
	4300561																			
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
Bottom Geotextile	4008164																			
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
Geocomposite	4008158																			
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4504036																			
Top Geotextile	4300559													325.2	0.943	2.41	1296.9			
	4300560													322.7	0.954	2.49	1410.3			
	4300561																			
Bottom Geotextile	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008164																			
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
Geocomposite	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008158																			
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
Top Geotextile	4504037																			
	4300559													325.2	0.943	2.41	1296.9			
	4300561													322.7	0.954	2.49	1410.3			
Bottom Geotextile	4300563													325.3	0.944	2.39	1400			
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008164																			
Geocomposite	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008158																			
Top Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4504038																			
	4300559													325.2	0.943	2.41	1296.9			

Batch Number 1

Textile Lot # 40056; Net Lot # 43045

	Roll Number	Weight oz/yd	Geotextile Tests											Geonet Tests				Geocomposite Tests		
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Geonet	4300561 4300563													322.7 325.3	0.954 0.944	2.49 2.39	1410.3 1400			
Top Geotextile	4008163 4008164	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
Bottom Geotextile	4008157 4008158	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
Geocomposite	4504039																			
Geonet	4300559 4300561 4300563													325.2 322.7 325.3	0.943 0.954 0.944	2.41 2.49 2.39	1296.9 1410.3 1400			
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
Top Geotextile	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
	4008151																			
Bottom Geotextile	4008153	6.4	218.1	118.5	195.2	62.5	95.1	78.6	74.7	77										
Geocomposite	4504040																			
Geonet	4300559 4300561 4300563													325.2 322.7 325.3	0.943 0.954 0.944	2.41 2.49 2.39	1296.9 1410.3 1400			
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
Top Geotextile	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
	4008151																			
Bottom Geotextile	4008153	6.4	218.1	118.5	195.2	62.5	95.1	78.6	74.7	77										
Geocomposite	4504041																			
Geonet	4300561 4300562 4300563													322.7 325.3	0.954 0.944	2.49 2.39	1410.3 1400			
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
Top Geotextile	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
	4008151																			
Bottom Geotextile	4008153	6.4	218.1	118.5	195.2	62.5	95.1	78.6	74.7	77										
Geocomposite	4504042																			

Batch Number 1

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Geotextile Tests											Geonet Tests					Geocomposite Tests		
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6.	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Geonet	4300561													322.7	0.954	2.49	1410.3			
	4300562																			
	4300563													325.3	0.944	2.39	1400			
Top Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
Bottom Geotextile	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
	4008151																			
	4008153	6.4	218.1	118.5	195.2	62.5	95.1	78.6	74.7	77										
Geocomposite	4504043																			
Geonet	4300561													322.7	0.954	2.49	1410.3			
	4300562																			
	4300563													325.3	0.944	2.39	1400			
Top Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
Bottom Geotextile	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
	4008151																			
	4008153	6.4	218.1	118.5	195.2	62.5	95.1	78.6	74.7	77										
Geocomposite	4504044																			
Geonet	4300561													322.7	0.954	2.49	1410.3			
	4300562																			
	4300563													325.3	0.944	2.39	1400			
Top Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
Bottom Geotextile	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
	4008151																			
	4008153	6.4	218.1	118.5	195.2	62.5	95.1	78.6	74.7	77										

Batch Number 2

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Geocomposite	4504045																	3.68	1.28	6.75
Geonet	4300561													322.7	0.954	2.49	1410.3			
	4300562																			
	4300563													325.3	0.944	2.39	1400			
Top Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
Bottom Geotextile	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
	4008151																			
	4008153	6.4	218.1	118.5	195.2	62.5	95.1	78.6	74.7	77										
Geocomposite	4504046																			
Geonet	4300561													322.7	0.954	2.49	1410.3			
	4300563													325.3	0.944	2.39	1400			
	4300564													325.5						
Top Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
Bottom Geotextile	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
	4008151																			
	4008153	6.4	218.1	118.5	195.2	62.5	95.1	78.6	74.7	77										
Geocomposite	4504047																			
Geonet	4300561													322.7	0.954	2.49	1410.3			
	4300563													325.3	0.944	2.39	1400			
	4300564													325.5						
Top Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
Bottom Geotextile	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
	4008151																			
	4008153	6.4	218.1	118.5	195.2	62.5	95.1	78.6	74.7	77										
Geocomposite	4504049																			
Geonet	4300561													322.7	0.954	2.49	1410.3			
	4300563													325.3	0.944	2.39	1400			
	4300564													325.5						
Top Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008162																			
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
Bottom Geotextile	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008148																			

Batch Number 2

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Geotextile Tests										Geonet Tests					Geocomposite Tests			
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504050																			
Geonet	4300561													322.7	0.954	2.49	1410.3			
	4300563													325.3	0.944	2.39	1400			
	4300564													325.5						
Top Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008162																			
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
Bottom Geotextile	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008148																			
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504051																			
Geonet	4300561													322.7	0.954	2.49	1410.3			
	4300563													325.3	0.944	2.39	1400			
	4300564													325.5						
Top Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008162																			
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
Bottom Geotextile	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008148																			
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504052																			
Geonet	4300561													322.7	0.954	2.49	1410.3			
	4300563													325.3	0.944	2.39	1400			
	4300564													325.5						
Top Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008162																			
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
Bottom Geotextile	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008148																			
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504053																			
Geonet	4300561													322.7	0.954	2.49	1410.3			
	4300563													325.3	0.944	2.39	1400			
	4300564													325.5						
Top Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008162																			
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
Bottom Geotextile	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008148																			
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										

Batch Number 2
Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests								Geonet Tests				Geocomposite Tests					
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Avg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Bottom Geotextile	4008148 4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504054																			
Geonet	4300563 4300564 4300565													325.3 325.5 326.1	0.944 0.952	2.39 2.27	1400			
Top Geotextile	4008160 4008162 4008163	6.5 6.6	240.2 220	124.1 132.5	207.4 210.3	60.2 61.9	101.7 99.9	67.5 67.1	71.9 70.9	79 79										
Bottom Geotextile	4008147 4008148 4008150	6.4 6.2	235 249.4	117.4 118.3	202.8 214.9	57.9 55.5	94.8 113	71.7 75.4	74.3 72.2	77 75	1.48	111.2	0.105							
Geocomposite	4504055																			
Geonet	4300563 4300564 4300565													325.3 325.5 326.1	0.944 0.952	2.39 2.27	1400			
Top Geotextile	4008160 4008162 4008163	6.5 6.6	240.2 220	124.1 132.5	207.4 210.3	60.2 61.9	101.7 99.9	67.5 67.1	71.9 70.9	79 79										
Bottom Geotextile	4008147 4008148 4008150	6.4 6.2	235 249.4	117.4 118.3	202.8 214.9	57.9 55.5	94.8 113	71.7 75.4	74.3 72.2	77 75	1.48	111.2	0.105							
Geocomposite	4504056																			
Geonet	4300563 4300564 4300565													325.3 325.5 326.1	0.944 0.952	2.39 2.27	1400			
Top Geotextile	4008160 4008162 4008163	6.5 6.6	240.2 220	124.1 132.5	207.4 210.3	60.2 61.9	101.7 99.9	67.5 67.1	71.9 70.9	79 79										
Bottom Geotextile	4008147 4008148 4008150	6.4 6.2	235 249.4	117.4 118.3	202.8 214.9	57.9 55.5	94.8 113	71.7 75.4	74.3 72.2	77 75	1.48	111.2	0.105							
Geocomposite	4504057																			
Geonet	4300563 4300564 4300565													325.3 325.5 326.1	0.944 0.952	2.39 2.27	1400			
Top Geotextile	4008277 4008279 4008280	6.6 6.3	260.5 255.8	128.8 125.4	219.6 218.8	63 61	99.9 91.8	88.2 111.6	73.2 108.8	82 73										

Batch Number 2

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Geotextile Tests											Geonet Tests				Geocomposite Tests			
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Bottom Geotextile	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008149																			
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504058																			
Geonet	4300563													325.3	0.944	2.39	1400			
	4300564													325.5						
	4300565													326.1	0.952	2.27	1507.5			
Top Geotextile	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										
	4008279																			
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
Bottom Geotextile	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008149																			
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504059																			
Geonet	4300563													325.3	0.944	2.39	1400			
	4300564													325.5						
	4300565													326.1	0.952	2.27	1507.5			
Top Geotextile	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										
	4008279																			
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
Bottom Geotextile	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008149																			
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504060																			
Geonet	4300563													325.3	0.944	2.39	1400			
	4300564													325.5						
	4300565													326.1	0.952	2.27	1507.5			
Top Geotextile	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										
	4008279																			
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
Bottom Geotextile	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008149																			
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504061																			
Geonet	4300563													325.3	0.944	2.39	1400			
	4300564													325.5						
	4300565													326.1	0.952	2.27	1507.5			
Top Geotextile	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										
	4008279																			

Batch Number 2

Textile Lot # 40056; Net Lot # 43045

	Roll Number	Geotextile Tests										Geonet Tests					Geocomposite Tests			
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Avg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
Bottom Geotextile	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008149																			
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504062																			
Geonet	4300564													325.5						
	4300565													326.1	0.952	2.27	1507.5			
	4300568													322.3	0.945	2.14	1536			
Top Geotextile	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										
	4008279																			
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
Bottom Geotextile	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008149																			
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504063																			
Geonet	4300564													325.5						
	4300565													326.1	0.952	2.27	1507.5			
	4300568													322.3	0.945	2.14	1536			
Top Geotextile	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										
	4008279																			
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
Bottom Geotextile	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008149																			
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504064																			
Geonet	4300564													325.5						
	4300565													326.1	0.952	2.27	1507.5			
	4300568													322.3	0.945	2.14	1536			
Top Geotextile	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										
	4008279																			
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
Bottom Geotextile	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008149																			
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504065																			
Geonet	4300564													325.5						
	4300565													326.1	0.952	2.27	1507.5			
	4300568													322.3	0.945	2.14	1536			
	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										

Batch Number 2

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Geotextile Tests										Geonet Tests				Geocomposite Tests				
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Top Geotextile	4008279																			
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
Bottom Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008161																			
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
Geocomposite	4504066																			
Geonet	4300564													325.5						
	4300565													326.1	0.952	2.27	1507.5			
	4300568													322.3	0.945	2.14	1536			
Top Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
Bottom Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008161																			
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
Geocomposite	4504067																			
Geonet	4300564													325.5						
	4300565													326.1	0.952	2.27	1507.5			
	4300568													322.3	0.945	2.14	1536			
Top Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
Bottom Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008161																			
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
Geocomposite	4504068																			
Geonet	4300564													325.5						
	4300565													326.1	0.952	2.27	1507.5			
	4300568													322.3	0.945	2.14	1536			
Top Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
Bottom Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008161																			
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
Geocomposite	4504070																			
Geonet	4300565													326.1	0.952	2.27	1507.5			
	4300568													322.3	0.945	2.14	1536			
	4300570													314.5	0.957	2.26	1534.5			

Batch Number 2

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Geotextile Tests												Geonet Tests				Geocomposite Tests		
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %														
			MD lbs	MD %	CD lbs	CD %														
Min.	Min.	Min.	Min.	Minimum				Minimum	Max.	Minimum	Min.	Range	Min.	Avg	Avg	Minimum				
6	157		157		56				0.5	0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³			
Top Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
Bottom Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008161																			
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
Geocomposite	4504071																			
Geonet	4300565													326.1	0.952	2.27	1507.5			
	4300568													322.3	0.945	2.14	1536			
	4300570													314.5	0.957	2.26	1534.5			
Top Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
Bottom Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008161																			
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
Geocomposite	4504072																			
Geonet	4300565													326.1	0.952	2.27	1507.5			
	4300568													322.3	0.945	2.14	1536			
	4300570													314.5	0.957	2.26	1534.5			
Top Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
Bottom Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008161																			
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
Geocomposite	4504073																			
Geonet	4300565													326.1	0.952	2.27	1507.5			
	4300568													322.3	0.945	2.14	1536			
	4300570													314.5	0.957	2.26	1534.5			
Top Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
Bottom Geotextile	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008161																			
	4008163	6.6	220	132.5	210.3	61.9	99.9	67.1	70.9	79										
Geocomposite	4504074																			
Geonet	4300565													326.1	0.952	2.27	1507.5			
	4300568													322.3	0.945	2.14	1536			

Batch Number 2
Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
	4300570	6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75				314.5	0.957	2.26	1534.5			
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
	4008289	6.3	255.2	121.3	212.6	59.2														
Bottom Geotextile	4008289	6.3	255.2	121.3	212.6	59.2														
	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80										
	4008292	6.4	254.7	121.9	230.6	63.2														
Geocomposite	4504075																			
Geonet	4300565													326.1	0.952	2.27	1507.5			
	4300568													322.3	0.945	2.14	1536			
	4300570													314.5	0.957	2.26	1534.5			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
	4008289	6.3	255.2	121.3	212.6	59.2														
Bottom Geotextile	4008289	6.3	255.2	121.3	212.6	59.2														
	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80										
	4008292	6.4	254.7	121.9	230.6	63.2														
Geocomposite	4504076																			
Geonet	4300565													326.1	0.952	2.27	1507.5			
	4300568													322.3	0.945	2.14	1536			
	4300570													314.5	0.957	2.26	1534.5			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
	4008289	6.3	255.2	121.3	212.6	59.2														
Bottom Geotextile	4008289	6.3	255.2	121.3	212.6	59.2														
	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80										
	4008292	6.4	254.7	121.9	230.6	63.2														
Geocomposite	4504077																			
Geonet	4300565													326.1	0.952	2.27	1507.5			
	4300568													322.3	0.945	2.14	1536			
	4300570													314.5	0.957	2.26	1534.5			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
	4008289	6.3	255.2	121.3	212.6	59.2														
Bottom Geotextile	4008289	6.3	255.2	121.3	212.6	59.2														
	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80										
	4008292	6.4	254.7	121.9	230.6	63.2														
Geocomposite	4504078																			
	4300568													322.3	0.945	2.14	1536			

Batch Number 2

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Avg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Geonet	4300569 4300570													314.5	0.957	2.26	1534.5			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75	1.63	121.9	0.128							
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82										
	4008289	6.3	255.2	121.3	212.6	59.2														
Bottom Geotextile	4008289	6.3	255.2	121.3	212.6	59.2	99.3	87.8	75.3	80										
	4008291	6.4	245.3	111.5	212.1	59.6														
	4008292	6.4	254.7	121.9	230.6	63.2														
Geocomposite	4504079																			
Geonet	4300568													322.3	0.945	2.14	1536			
	4300569																			
	4300570													314.5	0.957	2.26	1534.5			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75	1.63	121.9	0.128							
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82										
	4008289	6.3	255.2	121.3	212.6	59.2														
Bottom Geotextile	4008289	6.3	255.2	121.3	212.6	59.2	99.3	87.8	75.3	80										
	4008291	6.4	245.3	111.5	212.1	59.6														
	4008292	6.4	254.7	121.9	230.6	63.2														
Geocomposite	4504080																			
Geonet	4300568													322.3	0.945	2.14	1536			
	4300569																			
	4300570													314.5	0.957	2.26	1534.5			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75	1.63	121.9	0.128							
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82										
	4008289	6.3	255.2	121.3	212.6	59.2														
Bottom Geotextile	4008289	6.3	255.2	121.3	212.6	59.2	99.3	87.8	75.3	80										
	4008291	6.4	245.3	111.5	212.1	59.6														
	4008292	6.4	254.7	121.9	230.6	63.2														
Geocomposite	4504081																			
Geonet	4300568													322.3	0.945	2.14	1536			
	4300569																			
	4300570													314.5	0.957	2.26	1534.5			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75	1.63	121.9	0.128							
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82										
	4008289	6.3	255.2	121.3	212.6	59.2														
Bottom Geotextile	4008289	6.3	255.2	121.3	212.6	59.2	99.3	87.8	75.3	80										
	4008291	6.4	245.3	111.5	212.1	59.6														
	4008292	6.4	254.7	121.9	230.6	63.2														
Geocomposite	4504082																			

Batch Number 2
Textile Lot # 40056; Net Lot # 43045

	Roll Number	Geotextile Tests											Geonet Tests				Geocomposite Tests			
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
			Min.	Min.	Min.	Min.		Minimum	Minimum											
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Geonet	4300568													322.3	0.945	2.14	1536			
	4300569																			
	4300570													314.5	0.957	2.26	1534.5			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
	4008289	6.3	255.2	121.3	212.6	59.2														
Bottom Geotextile	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Geocomposite	4504083																			
Geonet	4300568													322.3	0.945	2.14	1536			
	4300569																			
	4300570													314.5	0.957	2.26	1534.5			
Top Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008285																			
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Bottom Geotextile	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Geocomposite	4504084																			
Geonet	4300568													322.3	0.945	2.14	1536			
	4300569																			
	4300570													314.5	0.957	2.26	1534.5			
Top Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008285																			
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Bottom Geotextile	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										

Batch Number 3

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests											Geonet Tests				Geocomposite Tests		
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
			Min.	Min.	Min.	Min.		Minimum												
		6	157		157		56				0.5		0.212	300	0.94	2.3	1200	1.0	1.0	3.7 × 10 ⁻³
Geocomposite	4504085																	1.6	1.47	6.99
Geonet	4300568													322.3	0.945	2.14	1536			
	4300569																			
	4300570													314.5	0.957	2.26	1534.5			
Top Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008285																			
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Bottom Geotextile	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008283	6.2	257.4	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Geocomposite	4504086																			
Geonet	4300568													322.3	0.945	2.14	1536			
	4300570													314.5	0.957	2.26	1534.5			
	4300572													324.5	0.952	2.37	1451.1			
Top Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008285																			
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Bottom Geotextile	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008283	6.2	257.4	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Geocomposite	4504087																			
Geonet	4300568													322.3	0.945	2.14	1536			
	4300570													314.5	0.957	2.26	1534.5			
	4300572													324.5	0.952	2.37	1451.1			
Top Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008285																			
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Bottom Geotextile	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008283	6.2	257.4	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Geocomposite	4504088																			
Geonet	4300568													322.3	0.945	2.14	1536			
	4300570													314.5	0.957	2.26	1534.5			
	4300572													324.5	0.952	2.37	1451.1			
Top Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008285																			
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Bottom Geotextile	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008283	6.2	257.4	127.4	206.3	63.9	92.6	120.3	101.1	76										

Batch Number 3

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
			Min.	Min.	Min.	Min.		Minimum	Minimum											
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Geocomposite	4504089																			
Geonet	4300568													322.3	0.945	2.14	1536			
	4300570													314.5	0.957	2.26	1534.5			
	4300572													324.5	0.952	2.37	1451.1			
Top Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008285																			
Bottom Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008283	6.2	257.4	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Geocomposite	4504090																			
Geonet	4300568													322.3	0.945	2.14	1536			
	4300570													314.5	0.957	2.26	1534.5			
	4300572													324.5	0.952	2.37	1451.1			
Top Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008285																			
Bottom Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008283	6.2	257.4	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Geocomposite	4504091																			
Geonet	4300568													322.3	0.945	2.14	1536			
	4300570													314.5	0.957	2.26	1534.5			
	4300572													324.5	0.952	2.37	1451.1			
Top Geotextile	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008163	6.6	220	132.5	210.3	61.9	9.9	67.1	70.9	79										
Bottom Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008282	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
Geocomposite	4504092																			
Geonet	4300568													322.3	0.945	2.14	1536			
	4300570													314.5	0.957	2.26	1534.5			
	4300572													324.5	0.952	2.37	1451.1			
Top Geotextile	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008163	6.6	220	132.5	210.3	61.9	9.9	67.1	70.9	79										
	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										

Batch Number 3

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests					Geocomposite Tests		
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Avg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Bottom Geotextile	4008282	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
Geocomposite	4504093																			
Geonet	4300568													322.3	0.945	2.14	1536			
	4300570													314.5	0.957	2.26	1534.5			
	4300572													324.5	0.952	2.37	1451.1			
Top Geotextile	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008163	6.6	220	132.5	210.3	61.9	9.9	67.1	70.9	79										
Bottom Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008282	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
Geocomposite	4504094																			
Geonet	4300570													314.5	0.957	2.26	1534.5			
	4300571																			
	4300572													324.5	0.952	2.37	1451.1			
Top Geotextile	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008163	6.6	220	132.5	210.3	61.9	9.9	67.1	70.9	79										
Bottom Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008282	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
Geocomposite	4504095																			
Geonet	4300570													314.5	0.957	2.26	1534.5			
	4300571																			
	4300572													324.5	0.952	2.37	1451.1			
Top Geotextile	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008163	6.6	220	132.5	210.3	61.9	9.9	67.1	70.9	79										
Bottom Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008282	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
Geocomposite	4504096																			
Geonet	4300570													314.5	0.957	2.26	1534.5			
	4300571																			
	4300572													324.5	0.952	2.37	1451.1			
Top Geotextile	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008163	6.6	220	132.5	210.3	61.9	9.9	67.1	70.9	79										

Batch Number 3

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests					Geocomposite Tests		
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Bottom Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008282	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
Geocomposite	4504097																			
Geonet	4300570													314.5	0.957	2.26	1534.5			
	4300571																			
	4300572													324.5	0.952	2.37	1451.1			
Top Geotextile	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008163	6.6	220	132.5	210.3	61.9	9.9	67.1	70.9	79										
Bottom Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008282	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
Geocomposite	4504098																			
Geonet	4300570													314.5	0.957	2.26	1534.5			
	4300571																			
	4300572													324.5	0.952	2.37	1451.1			
Top Geotextile	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008163	6.6	220	132.5	210.3	61.9	9.9	67.1	70.9	79										
Bottom Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008282	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
Geocomposite	4504099																			
Geonet	4300570													314.5	0.957	2.26	1534.5			
	4300571																			
	4300572													324.5	0.952	2.37	1451.1			
Top Geotextile	4008157	6.3	234	120.3	188.4	56.8	96.8	70.7	69.1	77	1.27	95.1	0.107							
	4008160	6.5	240.2	124.1	207.4	60.2	101.7	67.5	71.9	79										
	4008163	6.6	220	132.5	210.3	61.9	9.9	67.1	70.9	79										
Bottom Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008284																			
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Geocomposite	4504100																			
Geonet	4300570													314.5	0.957	2.26	1534.5			
	4300571																			
	4300572													324.5	0.952	2.37	1451.1			
Top Geotextile	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008281																			

Batch Number 3

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests						Geocomposite Tests		
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec	
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs												
			Min.	Min.	Min.	Min.		Minimum	Minimum												Max.
		6	157		157		56				0.5		0.212	300	0.94	2.3	1200	1.0	1.0	3.7 x 10 ⁻³	
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76											
Bottom Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76											
	4008284																				
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75											
Geocomposite	4504101																				
Geonet	4300570													314.5	0.957	2.26	1534.5				
	4300571																				
	4300572													324.5	0.952	2.37	1451.1				
Top Geotextile	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73											
	4008281																				
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76											
Bottom Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76											
	4008284																				
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75											
Geocomposite	4504102																				
Geonet	4300570													314.5	0.957	2.26	1534.5				
	4300572													324.5	0.952	2.37	1451.1				
	4300574													324.2	0.953	2.43	1377.8				
Top Geotextile	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73											
	4008281																				
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76											
Bottom Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76											
	4008284																				
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75											
Geocomposite	4504103																				
Geonet	4300570													314.5	0.957	2.26	1534.5				
	4300572													324.5	0.952	2.37	1451.1				
	4300574													324.2	0.953	2.43	1377.8				
Top Geotextile	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73											
	4008281																				
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76											
Bottom Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76											
	4008284																				
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75											
Geocomposite	4504104																				
Geonet	4300570													314.5	0.957	2.26	1534.5				
	4300572													324.5	0.952	2.37	1451.1				
	4300574													324.2	0.953	2.43	1377.8				
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73											

Batch Number 3

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Geotextile Tests										Geonet Tests					Geocomposite Tests			
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Top Geotextile	4008281																			
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
Bottom Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008284																			
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Geocomposite	4504105																			
Geonet	4300570													314.5	0.957	2.26	1534.5			
	4300572													324.5	0.952	2.37	1451.1			
	4300574													324.2	0.953	2.43	1377.8			
Top Geotextile	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008281																			
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
Bottom Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008284																			
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Geocomposite	4504106																			
Geonet	4300570													314.5	0.957	2.26	1534.5			
	4300572													324.5	0.952	2.37	1451.1			
	4300574													324.2	0.953	2.43	1377.8			
Top Geotextile	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008281																			
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
Bottom Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008284																			
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Geocomposite	4504107																			
Geonet	4300570													314.5	0.957	2.26	1534.5			
	4300572													324.5	0.952	2.37	1451.1			
	4300574													324.2	0.953	2.43	1377.8			
Top Geotextile	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008281																			
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
Bottom Geotextile	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
	4008284																			
	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
Geocomposite	4504108																			
Geonet	4300570													314.5	0.957	2.26	1534.5			
	4300572													324.5	0.952	2.37	1451.1			
	4300574													324.2	0.953	2.43	1377.8			

Batch Number 3

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Avg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Top Geotextile	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008281																			
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
Bottom Geotextile	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
	4008289	6.3	255.2	121.3	212.6	59.2														
	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80										
Geocomposite	4504109																			
Geonet	4300570													314.5	0.957	2.26	1534.5			
	4300572													324.5	0.952	2.37	1451.1			
	4300574													324.2	0.953	2.43	1377.8			
Top Geotextile	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008281																			
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
Bottom Geotextile	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
	4008289	6.3	255.2	121.3	212.6	59.2														
	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80										
Geocomposite	4504110																			
Geonet	4300572													324.5	0.952	2.37	1451.1			
	4300573																			
	4300574													324.2	0.953	2.43	1377.8			
Top Geotextile	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
Bottom Geotextile	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
	4008289	6.3	255.2	121.3	212.6	59.2														
	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80										
Geocomposite	4504111																			
Geonet	4300572													324.5	0.952	2.37	1451.1			
	4300573																			
	4300574													324.2	0.953	2.43	1377.8			
Top Geotextile	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
Bottom Geotextile	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
	4008289	6.3	255.2	121.3	212.6	59.2														
	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80										
Geocomposite	4504112																			
Geonet	4300572													324.5	0.952	2.37	1451.1			
	4300573																			

Batch Number 3

Textile Lot # 40056; Net Lot # 43045

	Roll Number	Weight oz/yd	Geotextile Tests											Geonet Tests				Geocomposite Tests		
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION	Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Avg	Avg	Minimum	
	6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7x10 ⁻³	
	4300574												324.2	0.953	2.43	1377.8				
Top Geotextile	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
Bottom Geotextile	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
	4008289	6.3	255.2	121.3	212.6	59.2														
	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80										
Geocomposite	4504113																			
Geonet	4300572												324.5	0.952	2.37	1451.1				
	4300573																			
	4300574												324.2	0.953	2.43	1377.8				
Top Geotextile	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
Bottom Geotextile	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
	4008289	6.3	255.2	121.3	212.6	59.2														
	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80										
Geocomposite	4504114																			
Geonet	4300572												324.5	0.952	2.37	1451.1				
	4300573																			
	4300574												324.2	0.953	2.43	1377.8				
Top Geotextile	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
Bottom Geotextile	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
	4008289	6.3	255.2	121.3	212.6	59.2														
	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80										
Geocomposite	4504115																			
Geonet	4300572												324.5	0.952	2.37	1451.1				
	4300573																			
	4300574												324.2	0.953	2.43	1377.8				
Top Geotextile	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
Bottom Geotextile	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
	4008289	6.3	255.2	121.3	212.6	59.2														
	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80										
Geocomposite	4504116																			
	4300572												324.5	0.952	2.37	1451.1				

Batch Number 3

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Geonet	4300573																			
	4300574													324.2	0.953	2.43	1377.8			
Top Geotextile	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73										
	4008283	6.2	257.8	127.4	206.3	63.9	92.6	120.3	101.1	76										
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008142																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504117																			
Geonet	4300572													324.5	0.952	2.37	1451.1			
	4300573																			
	4300574													324.2	0.953	2.43	1377.8			
Top Geotextile	4008289	6.3	255.2	121.3	212.6	59.2														
	4008290																			
	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80										
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008142																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504118																			
Geonet	4300572													324.5	0.952	2.37	1451.1			
	4500574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
Top Geotextile	4008289	6.3	255.2	121.3	212.6	59.2														
	4008290																			
	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80										
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008142																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504119																			
Geonet	4300572													324.5	0.952	2.37	1451.1			
	4500574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
Top Geotextile	4008289	6.3	255.2	121.3	212.6	59.2														
	4008290																			
	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80										
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008142																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504120																			

Batch Number 3

Textile Lot # 40056; Net Lot # 43045

		Roll Number	Geotextile Tests											Geonet Tests					Geocomposite Tests		
			Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
				MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum	
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³	
Geonet	4300572													324.5	0.952	2.37	1451.1				
	4500574													324.2	0.953	2.43	1377.8				
	4300576													329.5	0.957	2.57	1411.4				
Top Geotextile	4008289	6.3	255.2	121.3	212.6	59.2															
	4008290																				
	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80											
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80											
	4008142																				
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77											
Geocomposite	4504122																				
Geonet	4300572													324.5	0.952	2.37	1451.1				
	4500574													324.2	0.953	2.43	1377.8				
	4300576													329.5	0.957	2.57	1411.4				
Top Geotextile	4008289	6.3	255.2	121.3	212.6	59.2															
	4008290																				
	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80											
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80											
	4008142																				
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77											
Geocomposite	4504123																				
Geonet	4300572													324.5	0.952	2.37	1451.1				
	4500574													324.2	0.953	2.43	1377.8				
	4300576													329.5	0.957	2.57	1411.4				
Top Geotextile	4008289	6.3	255.2	121.3	212.6	59.2															
	4008290																				
	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80											
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80											
	4008142																				
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77											

Batch Number 4

Textile Lot # 40056; Net Lot # 43045

Roll Number	Geotextile Tests												Geonet Tests				Geocomposite Tests		
	Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
		MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION	Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
	6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Geocomposite	4504124																2.5	1.1	5.52
Geonet	4300572												324.5	0.952	2.37	1451.1			
	4300574												324.2	0.953	2.43	1377.8			
	4300576												329.5	0.957	2.57	1411.4			
Top Geotextile	4008289	6.3	255.2	121.3	212.6	59.2													
	4008290																		
Bottom Geotextile	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80									
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80									
	4008142																		
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77									
Geocomposite	4504125																		
Geonet	4300572												324.5	0.952	2.37	1451.1			
	4300574												324.2	0.953	2.43	1377.8			
	4300576												329.5	0.957	2.57	1411.4			
Top Geotextile	4008289	6.3	255.2	121.3	212.6	59.2													
	4008290																		
Bottom Geotextile	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80									
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78									
	4008130																		
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80									
Geocomposite	4504126																		
Geonet	4300574												324.2	0.953	2.43	1377.8			
	4300575																		
	4300576												329.5	0.957	2.57	1411.4			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75									
	4008287																		
Bottom Geotextile	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128						
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78									
	4008130																		
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80									
Geocomposite	4504127																		
Geonet	4300574												324.2	0.953	2.43	1377.8			
	4300575																		
	4300576												329.5	0.957	2.57	1411.4			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75									
	4008287																		
Bottom Geotextile	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128						
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78									
	4008130																		

Batch Number 4

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests					Geocomposite Tests		
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Geocomposite	4504128																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300575																			
	4300576													329.5	0.957	2.57	1411.4			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008287																			
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
Bottom Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008130																			
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Geocomposite	4504129																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300575																			
	4300576													329.5	0.957	2.57	1411.4			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008287																			
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
Bottom Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008130																			
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Geocomposite	4504130																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300575																			
	4300576													329.5	0.957	2.57	1411.4			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008287																			
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
Bottom Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008130																			
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Geocomposite	4504131																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300575																			
	4300576													329.5	0.957	2.57	1411.4			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008287																			
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
Bottom Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008130																			
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										

Batch Number 4

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Bottom Geotextile	4008130 4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Geocomposite	4504132																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300575																			
	4300576													329.5	0.957	2.57	1411.4			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008287																			
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
Bottom Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008130																			
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Geocomposite	4504133																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300575																			
	4300576													329.5	0.957	2.57	1411.4			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008287																			
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
Bottom Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008130																			
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Geocomposite	4504134																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
Top Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008140																			
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008143																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504135																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
Top Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008140																			
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										

Batch Number 4

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Avg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008143																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504136																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
Top Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008140																			
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008143																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504137																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
Top Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008140																			
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008143																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504138																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
Top Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008140																			
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008143																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504139																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
Top Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008140																			

Batch Number 4

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests					Geocomposite Tests		
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008143																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504140																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
Top Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008140																			
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008143																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504141																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
Top Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008140																			
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008143																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504142																			
Geonet	4500579																			
Top Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008140																			
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
Bottom Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504143																			
Geonet	4500579																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										

Batch Number 4

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION		Roll Number	Geotextile Tests											Geonet Tests				Geocomposite Tests			
			Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
				MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Avg	Avg	Minimum	
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³	
Top Geotextile	4008146																				
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105								
Bottom Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77											
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105								
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75											
Geocomposite	4504144																				
Geonet	4500579																				
Top Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77											
	4008146																				
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105								
Bottom Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77											
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105								
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75											
Geocomposite	4504145																				
Geonet	4500579																				
Top Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77											
	4008146																				
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105								
Bottom Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77											
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105								
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75											
Geocomposite	4504146																				
Geonet	4500579																				
Top Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77											
	4008146																				
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105								
Bottom Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77											
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105								
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75											
Geocomposite	4504147																				
Geonet	4500579																				

Batch Number 4

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests											Geonet Tests				Geocomposite Tests		
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Top Geotextile	4008144 4008146 4008147	6.5 6.4	228.8 235	118.3 117.4	195.1 202.8	57.5 57.9	104.4 94.8	70.4 71.7	66.9 74.3	77 77										
Bottom Geotextile	4008144 4008147 4008150	6.5 6.4 6.2	228.8 235 249.4	118.3 117.4 118.3	195.1 202.8 214.9	57.5 57.9 55.5	104.4 94.8 113	70.4 71.7 75.4	66.9 74.3 72.2	77 77 75		1.48	111.2	0.105						
Geocomposite	4504148																			
Geonet	4500579																			
Top Geotextile	4008144 4008146 4008147	6.5 6.4	228.8 235	118.3 117.4	195.1 202.8	57.5 57.9	104.4 94.8	70.4 71.7	66.9 74.3	77 77		1.48	111.2	0.105						
Bottom Geotextile	4008144 4008147 4008150	6.5 6.4 6.2	228.8 235 249.4	118.3 117.4 118.3	195.1 202.8 214.9	57.5 57.9 55.5	104.4 94.8 113	70.4 71.7 75.4	66.9 74.3 72.2	77 77 75		1.48	111.2	0.105						
Geocomposite	4504149																			
Geonet	4500579																			
Top Geotextile	4008144 4008146 4008147	6.5 6.4	228.8 235	118.3 117.4	195.1 202.8	57.5 57.9	104.4 94.8	70.4 71.7	66.9 74.3	77 77		1.48	111.2	0.105						
Bottom Geotextile	4008144 4008147 4008150	6.5 6.4 6.2	228.8 235 249.4	118.3 117.4 118.3	195.1 202.8 214.9	57.5 57.9 55.5	104.4 94.8 113	70.4 71.7 75.4	66.9 74.3 72.2	77 77 75		1.48	111.2	0.105						
Geocomposite	4504150																			
Geonet	4300576 4300578 4300579													329.5 311.7 334.7	0.957 0.945 0.953	2.57 2.4 2.67	1411.4 1378.5 1534.5			
Top Geotextile	4008144 4008146 4008147	6.5 6.4	228.8 235	118.3 117.4	195.1 202.8	57.5 57.9	104.4 94.8	70.4 71.7	66.9 74.3	77 77		1.48	111.2	0.105						
Bottom Geotextile	4008138 4008141 4008144	6.6 6.6 6.5	238.1 219.8 228.8	126.6 133.6 118.3	203.1 197.8 195.1	60.8 58 57.5	100.6 96.2 104.4	66.8 78.4 70.4	66.6 68.8 66.9	79 80 77										
Geocomposite	4504151																			
Geonet	4300576 4300578													329.5 311.7	0.957 0.945	2.57 2.4	1411.4 1378.5			

Batch Number 4

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
	4300579													334.7	0.953	2.67	1534.5			
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008133																			
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Bottom Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504152																			
Geonet	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
	4300579													334.7	0.953	2.67	1534.5			
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008133																			
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Bottom Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504153																			
Geonet	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
	4300579													334.7	0.953	2.67	1534.5			
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008133																			
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Bottom Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504154																			
Geonet	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
	4300579													334.7	0.953	2.67	1534.5			
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008133																			
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Bottom Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504155																			
	4300576													329.5	0.957	2.57	1411.4			

Batch Number 4

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Avg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2.3	1200	1.0	1.0	3.7 x 10 ⁻³
Geonet	4300578													311.7	0.945	2.4	1378.5			
	4300579													334.7	0.953	2.67	1534.5			
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008133																			
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Bottom Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504156																			
Geonet	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
	4300579													334.7	0.953	2.67	1534.5			
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008133																			
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Bottom Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504157																			
Geonet	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
	4300579													334.7	0.953	2.67	1534.5			
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008133																			
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Bottom Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504159																			
Geonet	4300579													334.7	0.953	2.67	1534.5			
	4300580																			
	4300581													334.3	0.952	2.27	1662			
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008133																			
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Bottom Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504160																			

Batch Number 4
Textile Lot # 40056; Net Lot # 43045

		Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
				Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
				MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³	
Geonet	4300579													334.7	0.953	2.67	1534.5				
	4300580																				
	4300581													334.3	0.952	2.27	1662				
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78											
	4008133																				
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80											
Bottom Geotextile	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77											
	4008167																				
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77											
Geocomposite	4504161																				
Geonet	4300576													329.5	0.957	2.57	1411.4				
	4300577																				
	4300578													311.7	0.945	2.4	1378.5				
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78											
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80											
	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79											
Bottom Geotextile	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77											
	4008167																				
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77											
Geocomposite	4504162																				
Geonet	4300576													329.5	0.957	2.57	1411.4				
	4300577																				
	4300578													311.7	0.945	2.4	1378.5				
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78											
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80											
	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79											
Bottom Geotextile	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77											
	4008167																				
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77											

Batch Number 5

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Avg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Geocomposite	4504163																	2.5	1.1	8.72
Geonet	4300572													324.5	0.952	2.37	1451.1			
	4300574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
Top Geotextile	4008289	6.3	255.2	121.3	212.6	59.2														
	4008290																			
Bottom Geotextile	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80										
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008142																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504164																			
Geonet	4300572													324.5	0.952	2.37	1451.1			
	4300574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
Top Geotextile	4008289	6.3	255.2	121.3	212.6	59.2														
	4008290																			
Bottom Geotextile	4008291	6.4	245.3	111.5	212.1	59.6	99.3	87.8	75.3	80										
	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80	1.65	123.6	0.108							
	4008130																			
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
Geocomposite	4504165																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300575																			
	4300576													329.5	0.957	2.57	1411.4			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008287																			
Bottom Geotextile	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80										
	4008130																			
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
Geocomposite	4504166																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300575																			
	4300576													329.5	0.957	2.57	1411.4			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008287																			
Bottom Geotextile	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80										
	4008130																			

Batch Number 5

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests								Geonet Tests				Geocomposite Tests					
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
Geocomposite	4504167																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300575																			
	4300576													329.5	0.957	2.57	1411.4			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008287																			
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
Bottom Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80										
	4008130																			
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
Geocomposite	4504068																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300575																			
	4300576													329.5	0.957	2.57	1411.4			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008287																			
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
Bottom Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80										
	4008130																			
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
Geocomposite	4504169																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300575																			
	4300576													329.5	0.957	2.57	1411.4			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008287																			
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
Bottom Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80										
	4008130																			
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
Geocomposite	4504170																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300575																			
	4300576													329.5	0.957	2.57	1411.4			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008287																			
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80										

Batch Number 5
Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Geotextile Tests											Geonet Tests				Geocomposite Tests			
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Bottom Geotextile	4008130																			
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
Geocomposite	4504171																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300575																			
	4300576													329.5	0.957	2.57	1411.4			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008287																			
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
Bottom Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80										
	4008130																			
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
Geocomposite	4504172																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300575																			
	4300576													329.5	0.957	2.57	1411.4			
Top Geotextile	4008286	6.3	258.4	139.7	213.5	63.8	97.6	100.1	88.2	75										
	4008287																			
	4008288	6.5	254.3	127.4	211.1	60.9	98.6	90.8	70.8	82	1.63	121.9	0.128							
Bottom Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80										
	4008130																			
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
Geocomposite	4504173																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
Top Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008140																			
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008143																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504174																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
Top Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008140																			
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										

Batch Number 5

Textile Lot # 40056; Net Lot # 43045

	Roll Number	Geotextile Tests										Geonet Tests				Geocomposite Tests				
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008143																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504175																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
Top Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008140																			
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008143																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504176																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
Top Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008140																			
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008143																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504177																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
Top Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008140																			
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008143																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504178																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
Top Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008140																			

Batch Number 5
Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Geotextile Tests										Geonet Tests					Geocomposite Tests			
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008143																			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504179																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
Top Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008140																			
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504180																			
Geonet	4300574													324.2	0.953	2.43	1377.8			
	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
Top Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008140																			
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504181																			
Geonet	4300578													311.7	0.945	2.4	1378.5			
	4500579													334.7	0.953	2.67	1534.5			
	4300581													334.3	0.952	2.27	1662			
Top Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008140																			
Bottom Geotextile	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
Geocomposite	4504182																			
Geonet	4300578													311.7	0.945	2.4	1378.5			
	4500579													334.7	0.953	2.67	1534.5			
	4300581													334.3	0.952	2.27	1662			
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										

Batch Number 5
Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests											Geonet Tests				Geocomposite Tests		
			Grab Tensile/Elongation				Puncture Resistance	Trap Tear		Thickness	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS	Thickness	Density	Carbon Black	Tensil	Top Peel Adhesion	Bottom Peel Adhesion	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Avg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Top Geotextile	4008146																			
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
Bottom Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504183																			
Geonet	4300578													311.7	0.945	2.4	1378.5			
	4500579													334.7	0.953	2.67	1534.5			
	4300581													334.3	0.952	2.27	1662			
Top Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
	4008146																			
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
Bottom Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504184																			
Geonet	4300578													311.7	0.945	2.4	1378.5			
	4500579													334.7	0.953	2.67	1534.5			
	4300581													334.3	0.952	2.27	1662			
Top Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
	4008146																			
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
Bottom Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504185																			
Geonet	4300578													311.7	0.945	2.4	1378.5			
	4500579													334.7	0.953	2.67	1534.5			
	4300581													334.3	0.952	2.27	1662			
Top Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
	4008146																			
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
Bottom Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504186																			
Geonet	4300578													311.7	0.945	2.4	1378.5			
	4500579													334.7	0.953	2.67	1534.5			
	4300581													334.3	0.952	2.27	1662			

Batch Number 5
Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Geotextile Tests												Geonet Tests				Geocomposite Tests		
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2.3	1200	1.0	1.0	3.7 x 10 ⁻³
Top Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
	4008146																			
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
Bottom Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504187																			
Geonet	4300578													311.7	0.945	2.4	1378.5			
	4500579													334.7	0.953	2.67	1534.5			
	4300581													334.3	0.952	2.27	1662			
Top Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
	4008146																			
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
Bottom Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504188																			
Geonet	4300578													311.7	0.945	2.4	1378.5			
	4500579													334.7	0.953	2.67	1534.5			
	4300581													334.3	0.952	2.27	1662			
Top Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
	4008146																			
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
Bottom Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
Geocomposite	4504189																			
Geonet	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
	4300579													334.7	0.953	2.67	1534.5			
Top Geotextile	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
	4008146																			
	4008147	6.4	235	117.4	202.8	57.9	94.8	71.7	74.3	77	1.48	111.2	0.105							
Bottom Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504190																			
Geonet	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			

Batch Number 5
Textile Lot # 40056; Net Lot # 43045

SPECIFICATION		Roll Number	Weight oz/yd	Geotextile Tests						Geonet Tests						Geocomposite Tests					
				Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
				MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum	
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³	
Top Geotextile	4300579													334.7	0.953	2.67	1534.5				
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78											
	4008133																				
Bottom Geotextile	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80											
	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79											
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80											
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77											
Geocomposite	4504191																				
Geonet	4300576													329.5	0.957	2.57	1411.4				
	4300578													311.7	0.945	2.4	1378.5				
	4300579													334.7	0.953	2.67	1534.5				
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78											
	4008133																				
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80											
Bottom Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79											
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80											
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77											
Geocomposite	4504192																				
Geonet	4300576													329.5	0.957	2.57	1411.4				
	4300578													311.7	0.945	2.4	1378.5				
	4300579													334.7	0.953	2.67	1534.5				
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78											
	4008133																				
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80											
Bottom Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79											
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80											
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77											
Geocomposite	4504193																				
Geonet	4300576													329.5	0.957	2.57	1411.4				
	4300578													311.7	0.945	2.4	1378.5				
	4300579													334.7	0.953	2.67	1534.5				
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78											
	4008133																				
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80											
Bottom Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79											
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80											
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77											
Geocomposite	4504196																				
	4300576													329.5	0.957	2.57	1411.4				

Batch Number 5
Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Geotextile Tests											Geonet Tests				Geocomposite Tests			
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Avg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Geonet	4300578													311.7	0.945	2.4	1378.5			
	4300579													334.7	0.953	2.67	1534.5			
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008133																			
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Bottom Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504197																			
Geonet	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
	4300579													334.7	0.953	2.67	1534.5			
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008133																			
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Bottom Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504198																			
Geonet	4300576													329.5	0.957	2.57	1411.4			
	4300578													311.7	0.945	2.4	1378.5			
	4300579													334.7	0.953	2.67	1534.5			
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008133																			
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Bottom Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504199																			
Geonet	4300579													334.7	0.953	2.67	1534.5			
	4300580																			
	4300581													334.3	0.952	2.27	1662			
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008133																			
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Bottom Geotextile	4008138	6.6	238.1	126.6	203.1	60.8	100.6	66.8	66.6	79										
	4008141	6.6	219.8	133.6	197.8	58	96.2	78.4	68.8	80										
	4008144	6.5	228.8	118.3	195.1	57.5	104.4	70.4	66.9	77										
Geocomposite	4504200																			

Batch Number 5

Textile Lot # 40056; Net Lot # 43045

		Roll Number	Geotextile Tests											Geonet Tests				Geocomposite Tests			
			Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
				MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum	
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7x10 ⁻³	
Geonet	4300579													334.7	0.953	2.67	1534.5				
	4300580 4300581													334.3	0.952	2.27	1662				
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78											
	4008133 4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80											
Bottom Geotextile	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77											
	4008167 4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77											
Geocomposite	4504201																				
Geonet	4300576													329.5	0.957	2.57	1411.4				
	4300577 4300578													311.7	0.945	2.4	1378.5				
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78											
	4008135 4008138	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80											
Bottom Geotextile	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77											
	4008167 4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77											
Geocomposite	4504202																				
Geonet	4300576													329.5	0.957	2.57	1411.4				
	4300577 4300578													311.7	0.945	2.4	1378.5				
Top Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78											
	4008135 4008138	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80											
Bottom Geotextile	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77											
	4008167 4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77											

Batch Number 6
Textile Lot # 40056; Net Lot # 43045

	Roll Number	Geotextile Tests											Geonet Tests				Geocomposite Tests			
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Geocomposite	4504203																	5.94	4.13	8.87
Geonet	4300586													341.3	0.943	2	1486.5			
	4300587 4300589													344.7	0.952	2.34	1468			
Top Geotextile	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
	4008152 4008153	6.4	218.1	118.5	195.2	62.5	95.1	78.6	74.7	77										
Bottom Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80	1.65	123.6	0.108							
	4008132 4008135	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
		6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Geocomposite	4504204																			
Geonet	4300584													343.3	0.945	2	1437.6			
	4300585 4300586													341.3	0.943	2	1486.5			
Top Geotextile	4008150	6.2	249.4	118.3	214.9	55.5	113	75.4	72.2	75										
	4008152 4008153	6.4	218.1	118.5	195.2	62.5	95.1	78.6	74.7	77										
Bottom Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80	1.65	123.6	0.108							
	4008132 4008135	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
		6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Geocomposite	4504205																			
Geonet	4300584													343.3	0.945	2	1437.6			
	4300585 4300586													341.3	0.943	2	1486.5			
Top Geotextile	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008213 4008216	6.4 6.3	280 280	119.3 119.3	230.4 230.4	57.9 57.9	110.4 114.6	83.2 84.9	70.5 77.8	78 75	1.49	111.5	0.099							
Bottom Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80	1.65	123.6	0.108							
	4008132 4008135	6.5 6.6	247 237.1	132.6 125.8	218.3 208.4	61.4 61.5	102.4 103.4	67.1 65	69.2 67.7	78 80										
Geocomposite	4504206																			
Geonet	4300584													343.3	0.945	2	1437.6			
	4300585 4300586													341.3	0.943	2	1486.5			
Top Geotextile	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008213 4008216	6.4 6.3	280 280	119.3 119.3	230.4 230.4	57.9 57.9	110.4 114.6	83.2 84.9	70.5 77.8	78 75	1.49	111.5	0.099							
Bottom Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80	1.65	123.6	0.108							
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										

Batch Number 6
Textile Lot # 40056; Net Lot # 43045

	Roll Number	Geotextile Tests												Geonet Tests				Geocomposite Tests		
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80			0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Geocomposite	4504207																			
Geonet	4300584													343.3	0.945	2	1437.6			
	4300585																			
	4300586													341.3	0.943	2	1486.5			
Top Geotextile	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75										
Bottom Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80	1.65	123.6	0.108							
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Geocomposite	4504208																			
Geonet	4300584													343.3	0.945	2	1437.6			
	4300585																			
	4300586													341.3	0.943	2	1486.5			
Top Geotextile	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75										
Bottom Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80	1.65	123.6	0.108							
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Geocomposite	4504209																			
Geonet	4300584													343.3	0.945	2	1437.6			
	4300585																			
	4300586													341.3	0.943	2	1486.5			
Top Geotextile	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75										
Bottom Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80	1.65	123.6	0.108							
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Geocomposite	4504210																			
Geonet	4300584													343.3	0.945	2	1437.6			
	4300585																			
	4300586													341.3	0.943	2	1486.5			
Top Geotextile	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75										
	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80	1.65	123.6	0.108							

Batch Number 6
Textile Lot # 40056; Net Lot # 43045

	Roll Number	Weight oz/yd	Geotextile Tests								Geonet Tests				Geocomposite Tests					
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION	Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum	
	6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³	
Bottom Geotextile	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Geocomposite	4504211																			
Geonet	4300584												343.3	0.945	2	1437.6				
	4300585																			
	4300586												341.3	0.943	2	1486.5				
Top Geotextile	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75										
Bottom Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80	1.65	123.6	0.108							
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
	4008135	6.6	237.1	125.8	208.4	61.5	103.4	65	67.7	80										
Geocomposite	4504212																			
Geonet	4300584												343.3	0.945	2	1437.6				
	4300586												341.3	0.943	2	1486.5				
	4300589												344.7	0.952	2.34	1468				
Top Geotextile	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75										
Bottom Geotextile	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
Geocomposite	4504213																			
Geonet	4300574												324.2	0.953	2.43	1377.8				
	4300576												329.5	0.957	2.57	1411.4				
	4300578												311.7	0.945	2.4	1378.5				
Top Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80	1.65	123.6	0.108							
	4008131																			
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
Bottom Geotextile	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
Geocomposite	4504214																			
Geonet	4300586												341.3	0.943	2	1486.5				
	4300588																			
	4300589												344.7	0.952	2.34	1468				
Top Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80	1.65	123.6	0.108							
	4008131																			
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										

Batch Number 6

Textile Lot # 40056; Net Lot # 43045

	Roll Number	Geotextile Tests												Geonet Tests				Geocomposite Tests		
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Bottom Geotextile	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
Geocomposite	4504215																			
Geonet	4300586													341.3	0.943	2	1486.5			
	4300588																			
	4300589													344.7	0.952	2.34	1468			
Top Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80	1.65	123.6	0.108							
	4008131																			
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
Bottom Geotextile	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
Geocomposite	4504216																			
Geonet	4300586													341.3	0.943	2	1486.5			
	4300588																			
	4300589													344.7	0.952	2.34	1468			
Top Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80	1.65	123.6	0.108							
	4008131																			
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
Bottom Geotextile	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
Geocomposite	4504217																			
Geonet	4300586													341.3	0.943	2	1486.5			
	4300588																			
	4300589													344.7	0.952	2.34	1468			
Top Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80	1.65	123.6	0.108							
	4008131																			
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
Bottom Geotextile	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
Geocomposite	4504218																			
Geonet	4300586													341.3	0.943	2	1486.5			
	4300588																			
	4300589													344.7	0.952	2.34	1468			
Top Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80	1.65	123.6	0.108							
	4008131																			

Batch Number 6
Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Avg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
Bottom Geotextile	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
Geocomposite	4504219																			
Geonet	4300586													341.3	0.943	2	1486.5			
	4300588																			
	4300589													344.7	0.952	2.34	1468			
Top Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80	1.65	123.6	0.108							
	4008131																			
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
Bottom Geotextile	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
Geocomposite	4504220																			
Geonet	4300586													341.3	0.943	2	1486.5			
	4300589													344.7	0.952	2.34	1468			
	4300591													324.8	0.943	2.17	1499.55			
Top Geotextile	4008129	6.7	259.7	119.4	206.7	56.5	101	81.9	75.5	80	1.65	123.6	0.108							
	4008131																			
	4008132	6.5	247	132.6	218.3	61.4	102.4	67.1	69.2	78										
Bottom Geotextile	4008230	6.3	277.7	126.3	230.3	57.8	105.1	85.9	81.3	75	1.19	88.8	0.129							
	4008231	6.4																		
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										
Geocomposite	4504222																			
Geonet	4300586													341.3	0.943	2	1486.5			
	4300589													344.7	0.952	2.34	1468			
	4300591													324.8	0.943	2.17	1499.55			
Top Geotextile	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008211																			
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
Bottom Geotextile	4008230	6.3	277.7	126.3	230.3	57.8	105.1	85.9	81.3	75	1.19	88.8	0.129							
	4008231	6.4																		
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										
Geocomposite	4504223																			
Geonet	4300589													344.7	0.952	2.34	1468			
	4500590																			
	4300591													324.8	0.943	2.17	1499.55			
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										

Batch Number 6
Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests					Geocomposite Tests		
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Top Geotextile	4008211																			
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
Bottom Geotextile	4008230	6.3	277.7	126.3	230.3	57.8	105.1	85.9	81.3	75	1.19	88.8	0.129							
	4008231	6.4																		
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										
Geocomposite	4504224																			
Geonet	4300589													344.7	0.952	2.34	1468			
	4500590																			
	4300591													324.8	0.943	2.17	1499.55			
Top Geotextile	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008211																			
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
Bottom Geotextile	4008230	6.3	277.7	126.3	230.3	57.8	105.1	85.9	81.3	75	1.19	88.8	0.129							
	4008231	6.4																		
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										
Geocomposite	4504225																			
Geonet	4300589													344.7	0.952	2.34	1468			
	4500590																			
	4300591													324.8	0.943	2.17	1499.55			
Top Geotextile	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008211																			
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
Bottom Geotextile	4008230	6.3	277.7	126.3	230.3	57.8	105.1	85.9	81.3	75	1.19	88.8	0.129							
	4008231	6.4																		
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										
Geocomposite	4504226																			
Geonet	4300589													344.7	0.952	2.34	1468			
	4500590																			
	4300591													324.8	0.943	2.17	1499.55			
Top Geotextile	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
	4008211																			
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
Bottom Geotextile	4008230	6.3	277.7	126.3	230.3	57.8	105.1	85.9	81.3	75	1.19	88.8	0.129							
	4008231	6.4																		
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										
Geocomposite	4504227																			
Geonet	4300589													344.7	0.952	2.34	1468			
	4500590																			
	4300591													324.8	0.943	2.17	1499.55			

Batch Number 6

Textile Lot # 40056; Net Lot # 43045

		Roll Number	Geotextile Tests										Geonet Tests				Geocomposite Tests				
			Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
				MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³	
Top Geotextile	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78											
	4008211																				
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099								
Bottom Geotextile	4008230	6.3	277.7	126.3	230.3	57.8	105.1	85.9	81.3	75	1.19	88.8	0.129								
	4008231	6.4																			
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80											
Geocomposite	4504228																				
Geonet	4300589													344.7	0.952	2.34	1468				
	4500590																				
	4300591													324.8	0.943	2.17	1499.55				
Top Geotextile	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78											
	4008211																				
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099								
Bottom Geotextile	4008230	6.3	277.7	126.3	230.3	57.8	105.1	85.9	81.3	75	1.19	88.8	0.129								
	4008231	6.4																			
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80											
Geocomposite	4504229																				
Geonet	4300589													344.7	0.952	2.34	1468				
	4500590																				
	4300591													324.8	0.943	2.17	1499.55				
Top Geotextile	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78											
	4008211																				
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099								
Bottom Geotextile	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76											
	4008209																				
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78											
Geocomposite	4504230																				
Geonet	4300589													344.7	0.952	2.34	1468				
	4500590																				
	4300591													324.8	0.943	2.17	1499.55				
Top Geotextile	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78											
	4008211																				
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099								
Bottom Geotextile	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76											
	4008209																				
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78											
Geocomposite	4504231																				
Geonet	4300589													344.7	0.952	2.34	1468				
	4300591													324.8	0.943	2.17	1499.55				

Batch Number 6
Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Geotextile Tests											Geonet Tests					Geocomposite Tests		
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
	4300593													322.6	0.953	2.38	1228.05			
Top Geotextile	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008208																			
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
Bottom Geotextile	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008209																			
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
Geocomposite	4504232																			
Geonet	4300589													344.7	0.952	2.34	1468			
	4300591													324.8	0.943	2.17	1499.55			
	4300593													322.6	0.953	2.38	1228.05			
Top Geotextile	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008208																			
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
Bottom Geotextile	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008209																			
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
Geocomposite	4504233																			
Geonet	4300589													344.7	0.952	2.34	1468			
	4300591													324.8	0.943	2.17	1499.55			
	4300593													322.6	0.953	2.38	1228.05			
Top Geotextile	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008208																			
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
Bottom Geotextile	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008209																			
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
Geocomposite	4504234																			
Geonet	4300589													344.7	0.952	2.34	1468			
	4300591													324.8	0.943	2.17	1499.55			
	4300593													322.6	0.953	2.38	1228.05			
Top Geotextile	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008208																			
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
Bottom Geotextile	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008209																			
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
Geocomposite	4504235																			
	4300589													344.7	0.952	2.34	1468			

Batch Number 6

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests											Geonet Tests				Geocomposite Tests		
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Geonet	4300591 4300593													324.8 322.6	0.943 0.953	2.17 2.38	1499.55 1228.05			
Top Geotextile	4008207 4008208 4008210	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Bottom Geotextile	4008207 4008209 4008210	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Geocomposite	4504236																			
Geonet	4300589 4300591 4300593													344.7 324.8 322.6	0.952 0.943 0.953	2.34 2.17 2.38	1468 1499.55 1228.05			
Top Geotextile	4008207 4008208 4008210	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Bottom Geotextile	4008207 4008209 4008210	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Geocomposite	4504237																			
Geonet	4300591 4300592 4300593													324.8 322.6	0.943 0.953	2.17 2.38	1499.55 1228.05			
Top Geotextile	4008207 4008208 4008210	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Bottom Geotextile	4008233 4008234 4008236	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										
Geocomposite	4504238																			
Geonet	4300591 4300592 4300593													324.8 322.6	0.943 0.953	2.17 2.38	1499.55 1228.05			
Top Geotextile	4008204 4008207 4008210	6.3 6.4 6.7	245.1 242 243.9	113.9 115.3 119.4	232.5 220.9 223.9	51.2 54.3 52.5	102.5 107.8 101.3	76.3 68.9 79.7	79.1 80.2 79.1	76 76 78										
Bottom Geotextile	4008233 4008234 4008236	6.6 6.6	281.7 248	124.3 131.3	226.3 231.9	59.6 64	107.7 104.7	88.3 79.5	83.5 75.2	80 79										
Geocomposite	4504239																			

Batch Number 6
Textile Lot # 40056; Net Lot # 43045

Roll Number	Geotextile Tests											Geonet Tests					Geocomposite Tests		
	Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
		MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION	Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
	6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Geonet	4300591												324.8	0.943	2.17	1499.55			
	4300592																		
	4300593												322.6	0.953	2.38	1228.05			
Top Geotextile	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76									
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76									
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78									
Bottom Geotextile	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80									
	4008234																		
	4008236	6.6	248	131.3	231.9	64	104.7	79.5	75.2	79									
Geocomposite	4504240																		
Geonet	4300591												324.8	0.943	2.17	1499.55			
	4300592																		
	4300593												322.6	0.953	2.38	1228.05			
Top Geotextile	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76									
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76									
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78									
Bottom Geotextile	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80									
	4008234																		
	4008236	6.6	248	131.3	231.9	64	104.7	79.5	75.2	79									
Geocomposite	4504241																		
Geonet	4300591												324.8	0.943	2.17	1499.55			
	4300592																		
	4300593												322.6	0.953	2.38	1228.05			
Top Geotextile	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76									
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76									
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78									
Bottom Geotextile	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80									
	4008234																		
	4008236	6.6	248	131.3	231.9	64	104.7	79.5	75.2	79									

Batch Number 7

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Geocomposite	4504242																	2.64	3.21	6.69
Geonet	4300591													324.8	0.943	2.17	1499.55			
	4300592																			
	4300593													322.6	0.953	2.38	1228.05			
Top Geotextile	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
Bottom Geotextile	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										
	4008234																			
	4008236	6.6	248	131.3	231.9	64	104.7	79.5	75.2	79										
Geocomposite	4504243																			
Geonet	4300591													324.8	0.943	2.17	1499.55			
	4300592																			
	4300593													322.6	0.953	2.38	1228.05			
Top Geotextile	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
Bottom Geotextile	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										
	4008234																			
	4008236	6.6	248	131.3	231.9	64	104.7	79.5	75.2	79										
Geocomposite	4504244																			
Geonet	4300591													324.8	0.943	2.17	1499.55			
	4300592																			
	4300593													322.6	0.953	2.38	1228.05			
Top Geotextile	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
Bottom Geotextile	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										
	4008234																			
	4008236	6.6	248	131.3	231.9	64	104.7	79.5	75.2	79										
Geocomposite	4504247																			
Geonet	4300591													324.8	0.943	2.17	1499.55			
	4300593													322.6	0.953	2.38	1228.05			
	4300595													321.3	0.946	2.17	1239			
Top Geotextile	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
	4008210	6.7	243.9	119.4	223.9	52.5	101.3	79.7	79.1	78										
Bottom Geotextile	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										
	4008235																			

Batch Number 7

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
	4008236	6.6	248	131.3	231.9	64	104.7	79.5	75.2	79			0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Geocomposite	4504248																			
Geonet	4300591													324.8	0.943	2.17	1499.55			
	4300593													322.6	0.953	2.38	1228.05			
	4300595													321.3	0.946	2.17	1239			
Top Geotextile	4008231	6.4																		
	4008232																			
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										
Bottom Geotextile	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										
	4008235																			
	4008236	6.6	248	131.3	231.9	64	104.7	79.5	75.2	79										
Geocomposite	4504249																			
Geonet	4300591													324.8	0.943	2.17	1499.55			
	4300593													322.6	0.953	2.38	1228.05			
	4300595													321.3	0.946	2.17	1239			
Top Geotextile	4008231	6.4																		
	4008232																			
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										
Bottom Geotextile	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										
	4008235																			
	4008236	6.6	248	131.3	231.9	64	104.7	79.5	75.2	79										
Geocomposite	4504250																			
Geonet	4300591													324.8	0.943	2.17	1499.55			
	4300593													322.6	0.953	2.38	1228.05			
	4300595													321.3	0.946	2.17	1239			
Top Geotextile	4008231	6.4																		
	4008232																			
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										
Bottom Geotextile	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										
	4008235																			
	4008236	6.6	248	131.3	231.9	64	104.7	79.5	75.2	79										
Geocomposite	4504251																			
Geonet	4300591													324.8	0.943	2.17	1499.55			
	4300593													322.6	0.953	2.38	1228.05			
	4300595													321.3	0.946	2.17	1239			
Top Geotextile	4008231	6.4																		
	4008232																			
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	88.3	83.5	80										

Batch Number 7

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests					Geocomposite Tests		
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Bottom Geotextile	4008235 4008236	6.6	248	131.3	231.9	64	104.7	79.5	75.2	79										
Geocomposite	4504252																			
Geonet	4300591 4300593 4300595													324.8 322.6 321.3	0.943 0.953 0.946	2.17 2.38 2.17	1499.55 1228.05 1239			
Top Geotextile	4008231 4008232 4008233	6.4 6.6																		
Bottom Geotextile	4008233 4008235 4008236	6.6 6.6	281.7 248	124.3 131.3	226.3 231.9	59.6 64	107.7 104.7	88.3 79.5	83.5 75.2	80 79										
Geocomposite	4504253																			
Geonet	4300593 4300595 4300597													322.6 321.3 324.5	0.953 0.946 0.947	2.38 2.17 2.33	1228.05 1239 1219.65			
Top Geotextile	4008231 4008232 4008233	6.4 6.6																		
Bottom Geotextile	4008233 4008235 4008236	6.6 6.6	281.7 248	124.3 131.3	226.3 231.9	59.6 64	107.7 104.7	88.3 79.5	83.5 75.2	80 79										
Geocomposite	4504254																			
Geonet	4300593 4300595 4300597													322.6 321.3 324.5	0.953 0.946 0.947	2.38 2.17 2.33	1228.05 1239 1219.65			
Top Geotextile	4008231 4008232 4008233	6.4 6.6																		
Bottom Geotextile	4008203 4008204 4008207	6.5 6.3 6.4																		
Geocomposite	4504255																			
Geonet	4300593 4300595 4300597													322.6 321.3 324.5	0.953 0.946 0.947	2.38 2.17 2.33	1228.05 1239 1219.65			
Top Geotextile	4008231 4008232 4008233	6.4 6.6																		

Batch Number 7
Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Bottom Geotextile	4008203	6.5																		
	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Geocomposite	4504256																			
Geonet	4300593													322.6	0.953	2.38	1228.05			
	4300595													321.3	0.946	2.17	1239			
	4300597													324.5	0.947	2.33	1219.65			
Top Geotextile	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008202																			
	4008203	6.5																		
Bottom Geotextile	4008203	6.5																		
	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Geocomposite	4504257																			
Geonet	4300593													322.6	0.953	2.38	1228.05			
	4300595													321.3	0.946	2.17	1239			
	4300597													324.5	0.947	2.33	1219.65			
Top Geotextile	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008202																			
	4008203	6.5																		
Bottom Geotextile	4008203	6.5																		
	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Geocomposite	4504258																			
Geonet	4300593													322.6	0.953	2.38	1228.05			
	4300595													321.3	0.946	2.17	1239			
	4300597													324.5	0.947	2.33	1219.65			
Top Geotextile	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008202																			
	4008203	6.5																		
Bottom Geotextile	4008203	6.5																		
	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Geocomposite	4504259																			
Geonet	4300593													322.6	0.953	2.38	1228.05			
	4300595													321.3	0.946	2.17	1239			
	4300597													324.5	0.947	2.33	1219.65			
Top Geotextile	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008202																			

Batch Number 7

Textile Lot # 40056; Net Lot # 43045

Roll Number	Geotextile Tests											Geonet Tests				Geocomposite Tests			
	Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
		MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION	Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
	6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
4008203	6.5																		
Bottom Geotextile 4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Geocomposite 4504260																			
Geonet 4300593													322.6	0.953	2.38	1228.05			
4300595													321.3	0.946	2.17	1239			
4300597													324.5	0.947	2.33	1219.65			
Top Geotextile 4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
4008202																			
4008203	6.5																		
Bottom Geotextile 4008203	6.5																		
4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Geocomposite 4504261																			
Geonet 4300593													322.6	0.953	2.38	1228.05			
4300594																			
4300595													321.3	0.946	2.17	1239			
Top Geotextile 4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
4008202																			
4008203	6.5																		
Bottom Geotextile 4008203	6.5																		
4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Geocomposite 4504262																			
Geonet 4300593													322.6	0.953	2.38	1228.05			
4300594																			
4300595													321.3	0.946	2.17	1239			
Top Geotextile 4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
4008202																			
4008203	6.5																		
Bottom Geotextile 4008203	6.5																		
4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Geocomposite 4504263																			
Geonet 4500596																			
4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							

Batch Number 7
Textile Lot # 40056; Net Lot # 43045

Roll Number		Geotextile Tests										Geonet Tests				Geocomposite Tests				
		Grab Tensile/Elongation				Puncture Resistance	Trap Tear		Thickness	Permittivity	Water Flow	AOS	Thickness	Density	Carbon Black	Tensil	Top Peel Adhesion	Bottom Peel Adhesion	Transmissivity	
		MD Tensile	MD Elong	CD Tensile	CD Elong		MD	CD												lbs
SPECIFICATION		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Top Geotextile	4008202																			
	4008203	6.5																		
Bottom Geotextile	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
	4008205																			
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Geocomposite	4504264																			
Geonet	4500596																			
Top Geotextile	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008202																			
	4008203	6.5																		
Bottom Geotextile	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
	4008205																			
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Geocomposite	4504265																			
Geonet	4500596																			
Top Geotextile	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
	4008189																			
	4008190	6.5	245.6	118.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147							
Bottom Geotextile	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
	4008205																			
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Geocomposite	4504266																			
Geonet	4500596																			
Top Geotextile	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
	4008189																			
	4008190	6.5	245.6	118.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147							
Bottom Geotextile	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
	4008205																			
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Geocomposite	4504267																			
Geonet	4500596																			

Batch Number 7
Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests					Geocomposite Tests		
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Avg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Top Geotextile	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
	4008189																			
	4008190	6.5	245.6	118.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147							
Bottom Geotextile	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
	4008205																			
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Geocomposite	4504268																			
Geonet	4500596																			
Top Geotextile	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
	4008189																			
	4008190	6.5	245.6	118.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147							
Bottom Geotextile	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
	4008205																			
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Geocomposite	4504269																			
Geonet	4500597																			
Top Geotextile	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
	4008189																			
	4008190	6.5	245.6	118.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147							
Bottom Geotextile	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
	4008205																			
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Geocomposite	4504270																			
Geonet	4500597																			
Top Geotextile	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
	4008189																			
	4008190	6.5	245.6	118.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147							
Bottom Geotextile	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
	4008205																			
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Geocomposite	4504271																			
Geonet	4500597																			

Batch Number 7

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Top Geotextile	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
	4008189																			
	4008190	6.5	245.6	118.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147							
Bottom Geotextile	4008200	6.7																		
	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008203	6.5																		
Geocomposite	4504272																			
Geonet	4500597																			
Top Geotextile	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
	4008189																			
	4008190	6.5	245.6	118.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147							
Bottom Geotextile	4008200	6.7																		
	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008203	6.5																		
Geocomposite	4504273																			
Geonet	4500597																			
Top Geotextile	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008203	6.5																		
	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
Bottom Geotextile	4008200	6.7																		
	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008203	6.5																		
Geocomposite	4504274																			
Geonet	4500597																			
Top Geotextile	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008203	6.5																		
	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
Bottom Geotextile	4008200	6.7																		
	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008203	6.5																		
Geocomposite	4504275																			

Batch Number 7

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests						Geonet Tests				Geocomposite Tests							
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Geonet	4500597																			
Top Geotextile	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008203	6.5																		
	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
Bottom Geotextile	4008200	6.7																		
	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008203	6.5																		
Geocomposite	4504276																			
Geonet	4500597																			
Top Geotextile	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008203	6.5																		
	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
Bottom Geotextile	4008200	6.7																		
	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008203	6.5																		
Geocomposite	4504277																			
Geonet	4500597																			
Top Geotextile	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008203	6.5																		
	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
Bottom Geotextile	4008200	6.7																		
	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008203	6.5																		
Geocomposite	4504278																			
Geonet	4300599													324.4	0.945	2.18	1280.7			
	4300600													330.3	0.946	2.55	1259			
	4300601													319						
Top Geotextile	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008203	6.5																		
	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
Bottom Geotextile	4008200	6.7																		
	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008203	6.5																		
Geocomposite	4504279																			

Batch Number 7
Textile Lot # 40056; Net Lot # 43045

		Roll Number	Geotextile Tests											Geonet Tests				Geocomposite Tests			
			Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
				MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum	
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³	
Geonet	4300599													324.4	0.945	2.18	1280.7				
	4300600													330.3	0.946	2.55	1259				
	4300601													319							
Top Geotextile	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103								
	4008203	6.5																			
	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76											
Bottom Geotextile	4008200	6.7																			
	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103								
	4008203	6.5																			
Geocomposite	4504280																				
Geonet	4300599													324.4	0.945	2.18	1280.7				
	4300600													330.3	0.946	2.55	1259				
	4300601													319							
Top Geotextile	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103								
	4008203	6.5																			
	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76											
Bottom Geotextile	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099								
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75											
	4008218	6.5	236.7	125.4	209.1	60.3	99.8	88.2	73.4	79	1.37	102.2	0.136								
Geocomposite	4504281																				
Geonet	4300599													324.4	0.945	2.18	1280.7				
	4300600													330.3	0.946	2.55	1259				
	4300601													319							
Top Geotextile	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103								
	4008203	6.5																			
	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76											
Bottom Geotextile	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099								
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75											
	4008218	6.5	236.7	125.4	209.1	60.3	99.8	88.2	73.4	79	1.37	102.2	0.136								

Batch Number 8

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
Geocomposite	4504282	6	157		157		56				0.5		0.212	300	0.94	2-3	1200	3.66	2.89	5.59
Geonet	4300599													324.4	0.945	2.18	1280.7			
	4300600													330.3	0.946	2.55	1259			
	4300601													319						
Top Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
Bottom Geotextile	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75										
	4008218	6.5	236.7	125.4	209.1	60.3	99.8	88.2	73.4	79	1.37	102.2	0.136							
Geocomposite	4504283																			
Geonet	4300599													324.4	0.945	2.18	1280.7			
	4300600													330.3	0.946	2.55	1259			
	4300601													319						
Top Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
Bottom Geotextile	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75										
	4008218	6.5	236.7	125.4	209.1	60.3	99.8	88.2	73.4	79	1.37	102.2	0.136							
Geocomposite	4504284																			
Geonet	4300599													324.4	0.945	2.18	1280.7			
	4300600													330.3	0.946	2.55	1259			
	4300601													319						
Top Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
Bottom Geotextile	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75										
	4008218	6.5	236.7	125.4	209.1	60.3	99.8	88.2	73.4	79	1.37	102.2	0.136							
Geocomposite	4504285																			
Geonet	4300599													324.4	0.945	2.18	1280.7			
	4300600													330.3	0.946	2.55	1259			
	4300601													319						
Top Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
Bottom Geotextile	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75										

Batch Number 8
Textile Lot # 40056; Net Lot # 43045

	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION	Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum	
	6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³	
4008218	6.5	236.7	125.4	209.1	60.3	99.8	88.2	73.4	79	1.37	102.2	0.136								
Geocomposite	4504286																			
Geonet	4300600												330.3	0.946	2.55	1259				
	4300601												319							
	4300602												321.4	0.943	2.21	1310.9				
Top Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
Bottom Geotextile	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75										
	4008218	6.5	236.7	125.4	209.1	60.3	99.8	88.2	73.4	79	1.37	102.2	0.136							
Geocomposite	4504287																			
Geonet	4300600												330.3	0.946	2.55	1259				
	4300601												319							
	4300602												321.4	0.943	2.21	1310.9				
Top Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
Bottom Geotextile	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75										
	4008218	6.5	236.7	125.4	209.1	60.3	99.8	88.2	73.4	79	1.37	102.2	0.136							
Geocomposite	4504288																			
Geonet	4300600												330.3	0.946	2.55	1259				
	4300601												319							
	4300602												321.4	0.943	2.21	1310.9				
Top Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
Bottom Geotextile	4008231	6.4																		
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	86.3	83.5	80										
	4008236	6.5	248	131.3	231.9	64	104.7	79.5	75.2	79										
Geocomposite	4504289																			
Geonet	4300600												330.3	0.946	2.55	1259				
	4300601												319							
	4300602												321.4	0.943	2.21	1310.9				
Top Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008231	6.4																		

Batch Number 8

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests					Geocomposite Tests		
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Bottom Geotextile	4008233	6.6	281.7	124.3	226.3	59.6	107.7	86.3	83.5	80										
	4008236	6.5	248	131.3	231.9	64	104.7	79.5	75.2	79										
Geocomposite	4504290																			
Geonet	4300600													330.3	0.946	2.55	1259			
	4300601													319						
	4300602													321.4	0.943	2.21	1310.9			
Top Geotextile	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
	4008190	6.5	245.6	116.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147							
Bottom Geotextile	4008231	6.4																		
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	86.3	83.5	80										
	4008236	6.5	248	131.3	231.9	64	104.7	79.5	75.2	79										
Geocomposite	4504291																			
Geonet	4300600													330.3	0.946	2.55	1259			
	4300601													319						
	4300602													321.4	0.943	2.21	1310.9			
Top Geotextile	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
	4008190	6.5	245.6	116.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147							
Bottom Geotextile	4008231	6.4																		
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	86.3	83.5	80										
	4008236	6.5	248	131.3	231.9	64	104.7	79.5	75.2	79										
Geocomposite	4504292																			
Geonet	4300600													330.3	0.946	2.55	1259			
	4300601													319						
	4300602													321.4	0.943	2.21	1310.9			
Top Geotextile	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
	4008190	6.5	245.6	116.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147							
Bottom Geotextile	4008231	6.4																		
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	86.3	83.5	80										
	4008236	6.5	248	131.3	231.9	64	104.7	79.5	75.2	79										
Geocomposite	4504293																			
Geonet	4300600													330.3	0.946	2.55	1259			
	4300601													319						
	4300602													321.4	0.943	2.21	1310.9			
Top Geotextile	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
	4008190	6.5	245.6	116.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147							

Batch Number 8
Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Bottom Geotextile	4008231	6.4																		
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	86.3	83.5	80										
	4008236	6.5	248	131.3	231.9	64	104.7	79.5	75.2	79										
Geocomposite	4504294																			
Geonet	4300598													330.3		2.28				
	4300599													324.4	0.945	2.18	1280.7			
	4300600													330.3	0.946	2.55	1259			
Top Geotextile	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
	4008190	6.5	245.6	116.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147							
Bottom Geotextile	4008231	6.4																		
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	86.3	83.5	80										
	4008236	6.5	248	131.3	231.9	64	104.7	79.5	75.2	79										
Geocomposite	4504295																			
Geonet	4300598													330.3		2.28				
	4300599													324.4	0.945	2.18	1280.7			
	4300600													330.3	0.946	2.55	1259			
Top Geotextile	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
	4008190	6.5	245.6	116.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147							
Bottom Geotextile	4008231	6.4																		
	4008233	6.6	281.7	124.3	226.3	59.6	107.7	86.3	83.5	80										
	4008236	6.5	248	131.3	231.9	64	104.7	79.5	75.2	79										
Geocomposite	4504296																			
Geonet	4300602													321.4	0.943	2.21	1310.9			
	4300602													321.4	0.943	2.21	1310.9			
	4300605													333.7	0.952	2.44	1266.8			
Top Geotextile	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
	4008190	6.5	245.6	116.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147							
Bottom Geotextile	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
	4008214																			
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75										
Geocomposite	4504297																			
Geonet	4300602													321.4	0.943	2.21	1310.9			
	4300602													321.4	0.943	2.21	1310.9			
	4300605													333.7	0.952	2.44	1266.8			
Top Geotextile	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										

Batch Number 8

Textile Lot # 40056; Net Lot # 43045

		Geotextile Tests											Geonet Tests				Geocomposite Tests		
Roll Number	Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
		MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION	Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
	6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Bottom Geotextile	4008190	6.5	245.6	116.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147						
	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099						
	4008214																		
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75									
Geocomposite	4504298																		
Geonet	4300602												321.4	0.943	2.21	1310.9			
	4300602												321.4	0.943	2.21	1310.9			
	4300605												333.7	0.952	2.44	1266.8			
Top Geotextile	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103						
	4008202																		
	4008203	6.5																	
Bottom Geotextile	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099						
	4008214																		
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75									
Geocomposite	4504299																		
Geonet	4300602												321.4	0.943	2.21	1310.9			
	4300602												321.4	0.943	2.21	1310.9			
	4300605												333.7	0.952	2.44	1266.8			
Top Geotextile	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103						
	4008202																		
	4008203	6.5																	
Bottom Geotextile	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099						
	4008214																		
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75									
Geocomposite	4504300																		
Geonet	4300602												321.4	0.943	2.21	1310.9			
	4300602												321.4	0.943	2.21	1310.9			
	4300605												333.7	0.952	2.44	1266.8			
Top Geotextile	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103						
	4008202																		
	4008203	6.5																	
Bottom Geotextile	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099						
	4008214																		
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75									
Geocomposite	4504301																		
Geonet	4300602												321.4	0.943	2.21	1310.9			
	4300603																		
	4300605												333.7	0.952	2.44	1266.8			
	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103						

Batch Number 8

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Geotextile Tests											Geonet Tests					Geocomposite Tests		
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel	Bottom Peel	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs									Adhesion lbs/in	Adhesion lbs/in	
		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Avg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Top Geotextile	4008202																			
	4008203	6.5																		
Bottom Geotextile	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
	4008214																			
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75										
Geocomposite	4504302																			
Geonet	4300602													321.4	0.943	2.21	1310.9			
	4300603																			
	4300605													333.7	0.952	2.44	1266.8			
Top Geotextile	4008201	6.5	257.6	114.7	232.8	53	118	68.9	75.6	80	1.32	98.6	0.103							
	4008202																			
	4008203	6.5																		
Bottom Geotextile	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
	4008214																			
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75										
Geocomposite	4504303																			
Geonet	4300602													321.4	0.943	2.21	1310.9			
	4300603																			
	4300605													333.7	0.952	2.44	1266.8			
Top Geotextile	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
	4008189																			
	4008190	6.5	245.6	118.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147							
Bottom Geotextile	4008213	6.4	280	119.3	230.4	57.9	110.4	83.2	70.5	78	1.49	111.5	0.099							
	4008214																			
	4008216	6.3	280	119.3	230.4	57.9	114.6	84.9	77.8	75										
Geocomposite	4504304																			
Geonet	4300602													321.4	0.943	2.21	1310.9			
	4300603																			
	4300605													333.7	0.952	2.44	1266.8			
Top Geotextile	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
	4008189																			
	4008190	6.5	245.6	118.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147							
Bottom Geotextile	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504305																			
Geonet	4300602													321.4	0.943	2.21	1310.9			
	4300603																			
	4300605													333.7	0.952	2.44	1266.8			

Batch Number 8

Textile Lot # 40056; Net Lot # 43045

	Roll Number	Geotextile Tests											Geonet Tests				Geocomposite Tests			
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Top Geotextile	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
	4008189																			
	4008190	6.5	245.6	118.5	204.6	56.3	105.6	71.5	73.8	80	1.29	96.2	0.147							
Bottom Geotextile	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504306																			
Geonet	4300602													321.4	0.943	2.21	1310.9			
	4300603																			
	4300605													333.7	0.952	2.44	1266.8			
Top Geotextile	4008204	6.3	245.1	113.9	232.5	51.2	102.5	76.3	79.1	76										
	4008206																			
	4008207	6.4	242	115.3	220.9	54.3	107.8	68.9	80.2	76										
Bottom Geotextile	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504307																			
Geonet	4300602													321.4	0.943	2.21	1310.9			
	4300603																			
	4300605													333.7	0.952	2.44	1266.8			
Top Geotextile	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008167																			
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
Bottom Geotextile	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504308																			
Geonet	4300602													321.4	0.943	2.21	1310.9			
	4300603																			
	4300605													333.7	0.952	2.44	1266.8			
Top Geotextile	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008167																			
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
Bottom Geotextile	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504309																			
Geonet	4300602													321.4	0.943	2.21	1310.9			
	4500604																			

Batch Number 8

Textile Lot # 40056; Net Lot # 43045

	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
	4300605													333.7	0.952	2.44	1266.8			
Top Geotextile	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008167																			
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
Bottom Geotextile	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504310																			
Geonet	4300602													321.4	0.943	2.21	1310.9			
	4500604																			
	4300605													333.7	0.952	2.44	1266.8			
Top Geotextile	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008167																			
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
Bottom Geotextile	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504311																			
Geonet	4300602													321.4	0.943	2.21	1310.9			
	4500604																			
	4300605													333.7	0.952	2.44	1266.8			
Top Geotextile	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008167																			
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
Bottom Geotextile	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504312																			
Geonet	4300602													321.4	0.943	2.21	1310.9			
	4500604																			
	4300605													333.7	0.952	2.44	1266.8			
Top Geotextile	4008166	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008167																			
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
Bottom Geotextile	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504313																			
	4300602													321.4	0.943	2.21	1310.9			

Batch Number 8

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Avg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Geonet	4500604 4300605													333.7	0.952	2.44	1266.8			
Top Geotextile	4008166 4008167	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
Bottom Geotextile	4008185 4008186	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504314																			
Geonet	4300602 4500604													321.4	0.943	2.21	1310.9			
	4300605													333.7	0.952	2.44	1266.8			
Top Geotextile	4008166 4008167	6.4	245.8	127.2	207.7	62.1	100.2	81.8	98.1	77										
	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
Bottom Geotextile	4008185 4008186	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504315																			
Geonet	4300602 4500604													321.4	0.943	2.21	1310.9			
	4300605													333.7	0.952	2.44	1266.8			
Top Geotextile	4008179 4008181	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
Bottom Geotextile	4008185 4008186	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504316																			
Geonet	4300602 4500604													321.4	0.943	2.21	1310.9			
	4300605													333.7	0.952	2.44	1266.8			
Top Geotextile	4008179 4008181	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
Bottom Geotextile	4008185 4008186	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504317																			

Batch Number 8

Textile Lot # 40056; Net Lot # 43045

	Roll Number	Geotextile Tests											Geonet Tests				Geocomposite Tests			
		Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION		Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Acg	Avg	Minimum
		6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
Geonet	4300602													321.4	0.943	2.21	1310.9			
	4300605													333.7	0.952	2.44	1266.8			
	4300607													321.1	0.951	2.44	1329			
Top Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008181																			
	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
Bottom Geotextile	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008186																			
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504318																			
Geonet	4300602													321.4	0.943	2.21	1310.9			
	4300605													333.7	0.952	2.44	1266.8			
	4300607													321.1	0.951	2.44	1329			
Top Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008181																			
	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
Bottom Geotextile	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008186																			
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504319																			
Geonet	4300602													321.4	0.943	2.21	1310.9			
	4300605													333.7	0.952	2.44	1266.8			
	4300607													321.1	0.951	2.44	1329			
Top Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77										
	4008181																			
	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77										
Bottom Geotextile	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008186																			
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										

Batch Number 9
Textile Lot # 40056; Net Lot # 43045

Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests					Geocomposite Tests		
		Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
		MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION	Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Geocomposite	4504320																3.84	3.2	7.82
Geonet	4300602												321.4	0.943	2.21	1310.9			
	4300605												333.7	0.952	2.44	1266.8			
	4300607												321.1	0.951	2.44	1329			
Top Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77									
	4008181																		
	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77									
Bottom Geotextile	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74									
	4008186																		
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75									
Geocomposite	4504321																		
Geonet	4300602												321.4	0.943	2.21	1310.9			
	4300605												333.7	0.952	2.44	1266.8			
	4300607												321.1	0.951	2.44	1329			
Top Geotextile	4008274	6.4	248	123.5	205	59.3	97.9	83.7	75.2	80									
	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82									
	4008280	6.3	255.8	125.4	218.8	61	91.8	111.6	108.8	73									
Bottom Geotextile	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74									
	4008186																		
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75									
Geocomposite	4504322																		
Geonet	4300602												321.4	0.943	2.21	1310.9			
	4300605												333.7	0.952	2.44	1266.8			
	4300607												321.1	0.951	2.44	1329			
Top Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77									
	4008181																		
	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77									
Bottom Geotextile	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74									
	4008186																		
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75									
Geocomposite	4504323																		
Geonet	4300602												321.4	0.943	2.21	1310.9			
	4300605												333.7	0.952	2.44	1266.8			
	4300607												321.1	0.951	2.44	1329			
Top Geotextile	4008179	6.4	243.3	123.8	204.1	60.3	90	69.6	65.2	77									
	4008181																		
	4008182	6.4	238.9	118.4	199.6	60.3	96.1	67.3	63.7	77									
Bottom Geotextile	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74									
	4008186																		
	4008188																		

Batch Number 9
Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504324																			
Geonet	4300602													321.4	0.943	2.21	1310.9			
	4300605													333.7	0.952	2.44	1266.8			
	4300607													321.1	0.951	2.44	1329			
Top Geotextile	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
	4008172	6.3	246.8	143.5	211.1	70.8	94.4	78.6	93.1	74										
	4008174	6.3	238.5	136.8	196	64.7	89	63.5	65.5	76	1.65	123.8	0.125							
Bottom Geotextile	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008186																			
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504325																			
Geonet	4300605													333.7	0.952	2.44	1329			
	4300606																			
	4300607													321.1	0.951	2.44	1329			
Top Geotextile	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
	4008172	6.3	246.8	143.5	211.1	70.8	94.4	78.6	93.1	74										
	4008174	6.3	238.5	136.8	196	64.7	89	63.5	65.5	76	1.65	123.8	0.125							
Bottom Geotextile	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008186																			
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504326																			
Geonet	4300605													333.7	0.952	2.44	1329			
	4300606																			
	4300607													321.1	0.951	2.44	1329			
Top Geotextile	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
	4008172	6.3	246.8	143.5	211.1	70.8	94.4	78.6	93.1	74										
	4008174	6.3	238.5	136.8	196	64.7	89	63.5	65.5	76	1.65	123.8	0.125							
Bottom Geotextile	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										
	4008186																			
	4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504327																			
Geonet	4300605													333.7	0.952	2.44	1329			
	4300606																			
	4300607													321.1	0.951	2.44	1329			
Top Geotextile	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
	4008172	6.3	246.8	143.5	211.1	70.8	94.4	78.6	93.1	74										
	4008174	6.3	238.5	136.8	196	64.7	89	63.5	65.5	76	1.65	123.8	0.125							
	4008185	6.3	242.9	135.9	216.2	65.4	96.3	86.1	88.6	74										

Batch Number 9

Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests										Geonet Tests				Geocomposite Tests			
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Bottom Geotextile	4008186 4008188	6.4	250.9	119.1	205.6	59.7	94.5	83	84.6	75										
Geocomposite	4504328																			
Geonet	4300605 4300606 4300607													333.7 321.1	0.952 0.951	2.44 2.44	1329 1329			
Top Geotextile	4008169 4008172 4008174	6.6 6.3 6.3	245 246.8 238.5	141.8 143.5 136.8	209 211.1 196	68.6 70.8 64.7	99 94.4 89	76.7 78.6 63.5	87.3 93.1 65.5	77 74 76		1.65	123.8	0.125						
Bottom Geotextile	4008185 4008186 4008188	6.3 6.4	242.9 250.9	135.9 119.1	216.2 205.6	65.4 59.7	96.3 94.5	86.1 83	88.6 84.6	74 75										
Geocomposite	4504329																			
Geonet	4300605 4300606 4300607													333.7 321.1	0.952 0.951	2.44 2.44	1329 1329			
Top Geotextile	4008169 4008172 4008174	6.6 6.3 6.3	245 246.8 238.5	141.8 143.5 136.8	209 211.1 196	68.6 70.8 64.7	99 94.4 89	76.7 78.6 63.5	87.3 93.1 65.5	77 74 76		1.65	123.8	0.125						
Bottom Geotextile	4008185 4008186 4008188	6.3 6.4	242.9 250.9	135.9 119.1	216.2 205.6	65.4 59.7	96.3 94.5	86.1 83	88.6 84.6	74 75										
Geocomposite	4504330																			
Geonet	4300605 4300606 4300607													333.7 321.1	0.952 0.951	2.44 2.44	1329 1329			
Top Geotextile	4008169 4008172 4008174	6.6 6.3 6.3	245 246.8 238.5	141.8 143.5 136.8	209 211.1 196	68.6 70.8 64.7	99 94.4 89	76.7 78.6 63.5	87.3 93.1 65.5	77 74 76		1.65	123.8	0.125						
Bottom Geotextile	4008274 4008275 4008277	6.4 6.6	248 260.5	123.5 128.8	205 219.6	59.3 63	97.9 99.9	83.7 88.2	75.2 73.2	80 82										
Geocomposite	4504331																			
Geonet	4300605 4300606 4300607													333.7 321.1	0.952 0.951	2.44 2.44	1329 1329			
Top Geotextile	4008169 4008172 4008174	6.6 6.3 6.3	245 246.8 238.5	141.8 143.5 136.8	209 211.1 196	68.6 70.8 64.7	99 94.4 89	76.7 78.6 63.5	87.3 93.1 65.5	77 74 76		1.65	123.8	0.125						

Batch Number 9
Textile Lot # 40056; Net Lot # 43045

SPECIFICATION	Roll Number	Weight oz/yd	Geotextile Tests								Geonet Tests							Geocomposite Tests		
			Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft2	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
			MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
		Min. 6	Min. 157		Min. 157		Minimum 56				Minimum 0.5		Max. 0.212	Minimum 300	Min. 0.94	Range 2-3	Min. 1200	Acg 1.0	Avg 1.0	Minimum 3.7 x 10 ⁻³
Bottom Geotextile	4008274	6.4	248	123.5	205	59.3	97.9	83.7	75.2	80										
	4008275																			
	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										
Geocomposite	4504332																			
Geonet	4300605													333.7	0.952	2.44	1329			
	4300606																			
	4300607													321.1	0.951	2.44	1329			
Top Geotextile	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
	4008170																			
	4008172	6.3	246.8	143.5	211.1	70.8	94.4	78.6	93.1	74										
Bottom Geotextile	4008274	6.4	248	123.5	205	59.3	97.9	83.7	75.2	80										
	4008275																			
	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										
Geocomposite	4504333																			
Geonet	4300605													333.7	0.952	2.44	1266.8			
	4300607													321.1	0.951	2.44	1329			
Top Geotextile	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
	4008170																			
	4008172	6.3	246.8	143.5	211.1	70.8	94.4	78.6	93.1	74										
Bottom Geotextile	4008274	6.4	248	123.5	205	59.3	97.9	83.7	75.2	80										
	4008275																			
	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										
Geocomposite	4504334																			
Geonet	4300605													333.7	0.952	2.44	1266.8			
	4300607													321.1	0.951	2.44	1329			
Top Geotextile	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
	4008170																			
	4008172	6.3	246.8	143.5	211.1	70.8	94.4	78.6	93.1	74										
Bottom Geotextile	4008274	6.4	248	123.5	205	59.3	97.9	83.7	75.2	80										
	4008275																			
	4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										
Geocomposite	4504335																			
Geonet	4300605													333.7	0.952	2.44	1266.8			
	4300607													321.1	0.951	2.44	1329			
Top Geotextile	4008169	6.6	245	141.8	209	68.6	99	76.7	87.3	77										
	4008170																			

Batch Number 9

Textile Lot # 40056; Net Lot # 43045

Roll Number	Geotextile Tests											Geonet Tests					Geocomposite Tests		
	Weight oz/yd	Grab Tensile/Elongation				Puncture Resistance lbs	Trap Tear		Thickness mils	Permittivity sec ⁻¹	Water Flow gpm/ft ²	AOS mm	Thickness mils	Density g/cc	Carbon Black %	Tensil lb/ft	Top Peel Adhesion lbs/in	Bottom Peel Adhesion lbs/in	Transmissivity (10 ⁻³) m ² /sec
		MD Tensile lbs	MD Elong %	CD Tensile lbs	CD Elong %		MD lbs	CD lbs											
SPECIFICATION	Min.	Min.		Min.		Minimum				Minimum		Max.	Minimum	Min.	Range	Min.	Avg	Avg	Minimum
	6	157		157		56				0.5		0.212	300	0.94	2-3	1200	1.0	1.0	3.7 x 10 ⁻³
4008172	6.3	246.8	143.5	211.1	70.8	94.4	78.6	93.1	74										
4008274	6.4	248	123.5	205	59.3	97.9	83.7	75.2	80										
Bottom Geotextile 4008275																			
4008277	6.6	260.5	128.8	219.6	63	99.9	88.2	73.2	82										

TEST RESULTS

BATCH 1



200 Miller Sellers Drive
Evergreen, Alabama 36401

Office: 251-578-9003

Web Site: <http://www.tenaxus.com>

Fax: 251-578-6141

QUALITY CONTROL SUMMARY

Tenax Tendrain 770-2

Date: December 7, 2004

Batch 1

Project: Southeast Hillsboro LF, Corporate

Submitted to:
Mr. Tom Heasley
Geo-Synthetics, Inc
W239 N428 Pewaukee Road
Waukesha, WI 53188
Ph: 262-524-7979
Fx: 262-524-7961

**Performance in
Plastic TechnologySM**



200 Miller Sellers Drive
Evergreen, Alabama 36401

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200 Miller Sellers Drive
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SECTION ONE

SPECIFICATION



Corporation

ENDRAIN 770-2

Double-Sided Geocomposite

Southeast Co. LF, FL

The drainage geocomposite is comprised of a tri-axial geonet structure consisting of thick supporting ribs with diagonally placed top and bottom ribs and with a thermally bonded, non-woven high UV resistant Ultra Vera geotextile on both sides. The product is capable of providing high Transmissivity in a soil environment under high normal loads and will have properties conforming to the values and test methods listed below.

Property	Test Methods	Units	Value	Qualifier	Test Frequency
Resin					
• Density	ASTM D 1505	g/cm ³	0.94	MAV	lot
• Melt Flow Index	ASTM D 1238	g/10min	1.0	MAX	lot
Geonet Core¹					
Structure			Tri-axial		
• Tensile Strength – MD	ASTM D 4595	lb/ft (kN/m)	1200 (17.5)	MAV	50,000 sf
• Creep Reduction Factor ¹	GRI-GC8	-	1.2		
• Thickness ²	ASTM D 5199	mil (mm)	300 (7.6)	MAV	50,000 sf
• Carbon Black	ASTM D 4218	%	2-3	range	50,000 sf
Geotextile^{3,4}					
• U.V. Resistance (500 hrs)	ASTM G 154	%	95		Per formula
• Mass/Unit Area	ASTM D 5261	oz/yd ² (g/m ²)	6 (203)	MARV	100,000 sf
• Grab Tensile	ASTM D 4632	lbs (N)	157 (700)	MARV	100,000 sf
• Puncture Resistance	ASTM D 4833	lbs (N)	56 (250)	MARV	100,000 sf
• AOS	ASTM D 4751	US Std. Sieve (mm)	70 (0.212)	MaxARV	100,000 sf
• Permittivity	ASTM D 4491 Falling head	Sec ⁻¹	0.5	MARV	500,000 sf
Geocomposite					
• Peel Adhesion ⁵ – MD	F904 Modified	lb/in (g/in)	1.0 (454)	MAV	100,000 sf
Labeling	Product code, geotextile type, roll dimensions, finished product lot and roll number.				
Hydraulic Behavior of Geocomposite					
• Transmissivity ⁶ – MD			10,000 psf (480 kPa)		
Gradient / Load					
0.02	ASTM D 4716 GRI - GC8	m ² /sec	3.7*10 ⁻³	MAV	100,000 sf

Qualifiers: MARV = Minimum Average Roll Value (MARV) MAV = Minimum Average Value MAX = Maximum Value
MaxARV = Maximum average roll value AVE = Average value

NOTES:

- Creep Reduction Factor is based on 10,000 hour test duration, extrapolated to 30 years and using a compressive load of 25,000 psf.
- Thickness measured by manufacturer per ASTM D5199 with a 2.22 in. diameter presser foot and 2.9 psi pressure.
- Geotextile and geonet properties listed are prior to lamination.
- Top filter geotextile meets ASSHTO Standard Specification M 288-00 strength requirements of class 2 and the highest filter requirements.
- Peel Adhesion is tested by the manufacturer per modified ASTM F904, with a 2-inch wide (5 longitudinal ribs) by 10-inch long strip. The geotextile bonded to either side of the geonet is pulled apart at a peeling rate of 12 in/min., for at least 4 inches of peeling distance. The reported value for each laminated side is the average of the "peak" values from 5 tested samples. The 5 samples are cut evenly distributed along the roll width with a 1-foot margin from both edges of the roll.
- Geocomposite transmissivity measured by manufacturer per ASTM D4716 with testing boundary conditions as follows: steel plate / Ottawa sand / geocomposite / 60 mil HDPE geomembrane / steel plate, and sealing period of 100 hours according to GRI-GC8.



Engineered for Life

Sales/Technical Service
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www.tenaxus.com

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9/20/2004



200 Miller Sellers Drive
Evergreen, Alabama 36401

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SECTION TWO

GEONET REPORT AND MQC

Product Grade: TD7
 Color: Black
 Roll Dimensions: 13 x 1760 ft
 Lot Number: 43045

Tenax Mfg. AL LLC
QA/QC Lab
Net Product Report

Reviewed By: _____
 QA *[Signature]*
 Engineer _____

Geonet Roll	Date Tested	Thickness ASTM D5199 (mils)	Density ASTM D1505 (g/cc)	Carbon Black ASTM D4218 (%)	Resin MFI ASTM D1238-00 (g/10m)	Tensile MD ASTM D4595 (lb/ft)
4300557	11/22/04	369.6	0.943	2.38	0.040	1944.0
4300558	11/23/04	325.4			0.040	
4300559	11/23/04	325.2	0.943	2.41	0.040	1296.9
4300561	11/24/04	322.7	0.954	2.49	0.040	1410.3
4300563	11/24/04	325.3	0.944	2.39	0.040	1400.0
4300564	11/24/04	325.5			0.040	
4300565	11/25/04	326.1	0.952	2.27	0.040	1507.5
4300568	11/26/04	322.3	0.945	2.14	0.040	1536.0
4300570	11/27/04	314.5	0.957	2.26	0.040	1534.5
4300572	11/27/04	324.5	0.952	2.37	0.040	1451.1
4300574	11/28/04	324.2	0.953	2.43	0.040	1377.8
4300576	11/29/04	329.5	0.957	2.57	0.040	1411.4
4300578	11/29/04	311.7	0.945	2.4	0.040	1378.5
4300579	11/30/04	334.7	0.953	2.67	0.040	1534.5
4300581	12/01/04	334.3	0.952	2.27	0.040	1662.0
4300583	12/02/04	340.3	0.956	2.37	0.040	1537.5
Average=		328.49	0.950	2.38	0.040	1498.71
Std. Deviation=		12.99	0.005	0.14	0.000	158.78



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Fax: 251-578-6141

SECTION THREE

GEOTEXTILE MQC

01/03/2004

Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. ALC
QA/QC Laboratory
Evergreen, Alabama
Nonwoven Test
Rolls
Lot Summary

Reviewed By:

QA:

Engineer:

Page 1 of 3

Roll No.	Test Date	Weight ASTM D5261 (oz/yd ²)	Grab Tensile/Elongation ASTM D4832		Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)	M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap Tear ASTM D4533 MD (lbs)	CD (lbs)	Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft ²)	A.O.S. ASTM D4751 (mm)
			M.D.	C.D.										Permit. (sec-1)	Perm.(Kv) (cm/sec)		
4008127	10/30/2004	6.9	273.0	130.3	214.0	65.6				98.5	85.4	74.0	83	1.73	0.343	129.8	0.105
4008128	10/30/2004	6.8	266.8	126.3	205.3	61.2											
4008129	10/30/2004	6.7	259.7	119.4	206.7	58.5				101.0	81.9	75.5	80	1.65	0.293	123.6	0.108
4008132	10/30/2004	6.5	247.0	132.6	218.3	61.4				102.4	67.1	69.2	78				
4008135	10/30/2004	6.6	237.1	125.8	208.4	61.5				103.4	65.0	67.7	80				
4008138	10/31/2004	6.6	236.1	126.6	203.1	60.8				100.6	66.8	66.6	79				
4008141	10/31/2004	6.6	219.8	133.6	197.8	58.0				96.2	78.4	68.8	80				
4008144	10/31/2004	6.5	228.8	118.3	195.1	57.5				104.4	70.4	66.9	77				
4008147	10/31/2004	6.4	235.0	117.4	202.8	57.9				94.8	71.7	74.3	77	1.48	0.301	111.2	0.105
4008150	10/31/2004	6.2	249.4	118.3	214.9	55.5				113.0	75.4	72.2	75				
4008153	10/31/2004	6.4	218.1	118.5	195.2	62.5				95.1	78.8	74.7	77				
4008155	10/31/2004	6.6	221.2	121.0	203.5	57.3				97.6	68.0	69.1	79	1.41	0.252	105.7	0.114
4008156	10/31/2004	6.6	235.5	118.9	196.6	56.9											
4008157	10/31/2004	6.3	234.0	120.3	188.4	56.8				96.8	70.7	69.1	77	1.27	0.238	95.1	0.107
4008160	11/01/2004	6.5	240.2	124.1	207.4	60.2				101.7	67.5	71.9	79				
4008163	11/01/2004	6.6	220.0	132.5	210.3	61.9				99.9	67.1	70.9	79				
4008166	11/01/2004	6.4	245.8	127.2	207.7	62.1				100.2	81.8	98.1	77				
4008169	11/01/2004	6.6	245.0	141.8	209.0	66.6				99.0	76.7	87.3	77				
4008172	11/01/2004	6.3	246.8	143.5	211.1	70.8				94.4	78.6	93.1	74				
4008174	11/01/2004	6.3	238.5	136.8	196.0	64.7				89.0	63.5	65.5	76	1.65	0.296	123.8	0.125
4008175	11/02/2004	6.5	234.3	126.0	196.2	61.4											
4008176	11/01/2004	6.4	239.0	124.7	201.0	61.3				93.5	64.2	66.0	77	1.56	0.295	116.7	0.103
4008179	11/02/2004	6.4	243.3	123.8	204.1	60.3				90.0	69.6	65.2	77				
4008182	11/02/2004	6.4	238.9	118.4	199.6	60.3				96.1	67.3	63.7	77				
4008185	11/02/2004	6.3	242.9	135.9	216.2	65.4				96.3	86.1	88.6	74				
4008188	11/02/2004	6.4	250.9	119.1	205.6	59.7				94.5	83.0	84.6	75				
4008190	11/03/2004	6.5	245.6	118.5	204.6	56.3				105.6	71.5	73.8	80	1.29	0.257	96.2	0.147
4008191	11/03/2004	6.6	232.0	116.8	221.3	58.2											
4008194	11/03/2004	6.4															
4008200	11/03/2004	6.7															
4008201	11/03/2004	6.5	257.6	114.7	232.8	53.0				118.0	68.9	75.6	80	1.32	0.256	98.6	0.103
4008203	11/03/2004	6.5															
4008204	11/03/2004	6.3	245.1	113.9	232.5	51.2				102.5	76.3	79.1	76				
4008207	11/03/2004	6.4	242.0	115.3	220.9	54.3				107.8	68.9	80.2	78				

01-01-2004

Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. LLC
QA/QC Laboratory
Evergreen, Alabama
Nonwoven Test
Rolls
Lot Summary

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Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	Grab Tensile/Elongation ASTM D4632		M.D. Tens. (lbs)	Elong (%)	C.D. Tens. (lbs)	Elong (%)	M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533 MD (lbs)	CD	Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
														Permit. (sec-1)	Perm.(Kv) (cm/sec)		
4008210	11/04/2004	6.7	243.9	119.4	223.9	52.5				101.3	79.7	79.1	78				
4008213	11/04/2004	6.4	280.0	119.3	230.4	57.9				110.4	83.2	70.5	78	1.49	0.292	111.5	0.099
4008216	11/04/2004	6.3	280.0	119.3	230.4	57.9				114.6	84.9	77.8	75				
4008218	11/04/2004	6.5	236.7	125.4	209.1	60.3				99.8	88.2	73.4	79	1.37	0.250	102.2	0.136
4008220	11/04/2004	6.4	259.4	130.9	223.3	61.6											
4008228	11/04/2004	6.5															
4008231	11/04/2004	6.4															
4008233	11/04/2004	6.6	281.7	124.3	226.3	59.6				107.7	88.3	83.5	80				
4008236	11/04/2004	6.6	248.0	131.3	231.9	64.0				104.7	79.5	75.2	79				
4008239	11/05/2004	6.6	288.0	123.8	229.3	56.7				112.9	90.5	75.8	81				
4008242	11/05/2004	6.5	266.1	124.3	220.4	59.3				104.6	88.2	95.0	79				
4008244	11/05/2004	6.4	274.7	125.0	213.5	59.3											
4008245	11/05/2004	6.6	260.5	118.7	219.2	61.8				102.9	78.3	70.7	83	1.53	0.311	114.5	0.142
4008246	11/05/2004	6.6															
4008247	11/05/2004	6.4	252.0	122.7	196.1	58.3											
4008248	11/05/2004	6.2	256.4	128.2	218.5	62.8				107.3	66.9	68.7	78	1.46	0.297	109.0	0.152
4008249	11/05/2004	6.7															
4008251	11/05/2004	6.6	264.6	123.7	220.5	57.2				97.3	78.7	79.5	82				
4008254	11/05/2004	6.4	263.3	123.6	224.3	60.1				100.1	73.9	78.7	81				
4008257	11/06/2004	6.4	283.3	128.9	232.4	63.7				102.9	86.6	79.5	81				
4008260	11/06/2004	6.4	283.4	135.3	237.2	62.8				101.6	112.5	100.2	81				
4008263	11/06/2004	6.5	273.1	139.8	210.1	63.0				98.3	113.3	105.9	81				
4008266	11/06/2004	6.2	260.3	149.4	219.9	71.1				108.9	110.4	100.3	77	1.53	0.288	114.4	0.141
4008269	11/06/2004	6.4	232.9	144.0	206.3	66.7				94.8	82.4	79.8	81	1.50	0.294	112.0	0.151
4008270	11/06/2004	6.4	239.2	146.7	235.4	63.8											
4008271	11/06/2004	6.6	248.5	130.3	204.8	59.4				97.3	86.5	77.0	82	1.40	0.282	104.8	0.116
4008274	11/06/2004	6.4	248.0	123.5	205.0	59.3				97.9	83.7	75.2	80				
4008277	11/07/2004	6.6	260.5	128.8	219.6	63.0				99.9	88.2	73.2	82				
4008280	11/07/2004	6.3	255.8	125.4	218.8	61.0				91.8	111.6	108.8	73				
4008283	11/07/2004	6.2	257.8	127.4	206.3	63.9				92.6	120.3	101.1	76				
4008286	11/07/2004	6.3	258.4	139.7	213.5	63.8				97.6	100.1	88.2	75				
4008288	11/07/2004	6.5	254.3	127.4	211.1	60.9				98.6	90.8	70.8	82	1.63	0.308	121.9	0.128
4008289	11/07/2004	6.3	255.2	121.3	212.6	59.2											
4008291	11/07/2004	6.4	245.3	111.5	212.1	59.6				99.3	87.8	75.3	80				

01-000-2004

Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. America LLC
QA/QC Laboratory
Evergreen, Alabama

Nonwoven Test**Rolls****Lot Summary**

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Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	Grab Tensile/Elongation ASTM D4632				M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			M.D.		C.D.				MD (lbs)	CD		Permit. (sec-1)	Perm.(Kv) (cm/sec)		
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)									
4008292	11/08/2004	6.4	254.7	121.9	230.6	63.2									
Average =		6.5	250.3	126.2	213.2	60.5		100.7	81.2	78.4	78.4	1.49	0.285	111.2	0.122
Standard Deviation =		.1	16.1	8.4	11.9	3.9		6.2	13.6	11.2	2.5	.13	0.027	10.1	0.019



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SECTION FOUR

GEOCOMPOSITE MQC

Tenax Corporation

Traceability, Peel and Transmissivity report

PRODUCT : Tendrain 770-2
JOB: Southeast Co. LF, FL
Batch 1

COMPOSITE #	NET #	Top TEXTILE #	Bottom TEXTILE #	Roll length (ft)	Top Geotextile ASTM F904 Peel Adhesion lbs/in (avg. peaks)	Bottom Geotextile ASTM F904 Peel Adhesion lbs/in (avg. peaks)	ASTM F904 Peel Adhesion lbs/in (req.)	ASTM D 4716 Transmissivity* (m2/sec) Value	ASTM D 4716 Transmissivity* (m2/sec) Required	Gradient
4504007	4300557	4008188	4008157	200	5.48	4.69	1.0	6.48 x 10 ⁻³	5.7 x 10 ⁻³	0.02
4504008	4300557	4008188	4008157	200						
4504009	4300557	4008188	4008157	200						
4504010	4300557	4008188	4008157	200						
4504011	4300557	4008188	4008157	200						
4504012	4300557	4008188	4008157	225						
4504013	4300558	4008165	4008166	200						
4504014	4300558	4008165	4008166	200						
4504015	4300558	4008165	4008166	200						
4504016	4300558	4008165	4008166	200						
4504017	4300558	4008165	4008166	200						
4504018	4300558	4008165	4008166	200						
4504019	4300558	4008165	4008166	200						
4504020	4300558	4008165	4008166	275						
4504021	4300559	4008165	4008166	180						
4504022	4300559	4008159	4008153	200						
4504023	4300559	4008159	4008153	200						
4504024	4300559	4008159	4008153	200						
4504025	4300559	4008159	4008153	200						
4504026	4300559	4008159	4008153	200						
4504027	4300559	4008159	4008153	200						
4504028	4300560	4008159	4008153	275						
4504029	4300560	4008159	4008153	200						
4504030	4300560	4008164	4008158	200						
4504031	4300560	4008164	4008158	200						
4504032	4300560	4008164	4008158	200						
4504033	4300560	4008164	4008158	200						
4504034	4300560	4008164	4008158	200						
4504035	4300560	4008164	4008158	200						
4504036	4300560	4008164	4008158	255						
4504037	4300561	4008164	4008158	200						
4504038	4300561	4008164	4008158	200						
4504039	4300561	4008163	4008151	200						
4504040	4300561	4008163	4008151	195						
4504041	4300562	4008163	4008151	200						
4504042	4300562	4008163	4008151	200						
4504043	4300562	4008163	4008151	200						
4504044	4300562	4008163	4008151	200						

* a confining pressure of 10,000 psf with boundary conditions of steel plate/Ottawa sand/geocomposite/60 mil HDPE/steel plate and a seating time of 100 hour

Tested by: *Melanie Richardson*

Checked by: *Rosalyn Torrey*

Tenax Mfg AL LLC - Roll Listing

Date: 12-01-2004

Time: 14:36:40

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Roll Number	Product Code	Description	Line	Lot Number	Production Date	Shift	Stg Area	Status	On BL	Job Number	Slit From Roll	Original Roll	Linear Ft.	Sq Ft./Yds
001	4504007	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/23/2004	A	0702	H	N	41199			200.00	2,500.00 SQF
002	4504008	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/23/2004	A	0702	H	N	41199			200.00	2,500.00 SQF
003	4504009	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/23/2004	A	0702	H	N	41199			200.00	2,500.00 SQF
004	4504010	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/23/2004	A	0702	H	N	41199			200.00	2,500.00 SQF
005	4504011	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/23/2004	A	0702	H	N	41199			200.00	2,500.00 SQF
006	4504012	TDO770AA150225 TDO770-2 6oz/6oz 12.5x225		45032	11/23/2004	A	0702	H	N	41199			225.00	2,812.50 SQF
007	4504013	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/23/2004	A	0702	H	N	41199			200.00	2,500.00 SQF
008	4504014	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/23/2004	A	0702	H	N	41199			200.00	2,500.00 SQF
009	4504015	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/23/2004	A	0702	H	N	41199			200.00	2,500.00 SQF
010	4504016	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/23/2004	A	0702	H	N	41199			200.00	2,500.00 SQF
011	4504017	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/23/2004	A	0702	H	N	41199			200.00	2,500.00 SQF
012	4504018	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/23/2004	A	0702	H	N	41199			200.00	2,500.00 SQF
013	4504019	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/23/2004	A	0702	H	N	41199			200.00	2,500.00 SQF
014	4504020	TDO770AA150275 TDO770-2 6oz/6oz 12.5x275		45032	11/24/2004	C	0702	H	N	41199			275.00	3,437.50 SQF
015	4504021	TDO770AA150180 TDO770-2 6oz/6oz 12.5x180		45032	11/24/2004	C	0702	H	N	41199			180.00	2,250.00 SQF
016	4504022	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
017	4504023	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
018	4504024	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
019	4504025	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
020	4504026	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
021	4504027	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
022	4504028	TDO770AA150275 TDO770-2 6oz/6oz 12.5x275		45032	11/24/2004	C	0702	H	N	41199			275.00	3,437.50 SQF
023	4504029	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
024	4504030	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
025	4504031	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
026	4504032	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
027	4504033	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
028	4504034	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
029	4504035	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
030	4504036	TDO770AA150255 TDO770-2 6oz/6oz 12.5x255		45032	11/24/2004	C	0702	H	N	41199			255.00	3,187.50 SQF
031	4504037	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
032	4504038	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
033	4504039	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
034	4504040	TDO770AA150195 TDO770-2 6oz/6oz 12.5x195		45032	11/24/2004	C	0702	H	N	41199			195.00	2,437.50 SQF
035	4504041	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
036	4504042	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
037	4504043	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF

Tenax Mfg AL LLC - Roll Listing

Date: 12-01-2004

Time: 14:36:40

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Roll Number	Product Code	Description	Line	Lot Number	Production Date	Shift	Stg Area	Status	On BL	Job Number	Slt From Roll	Original Roll	Linear Ft	Sq Ft./Yds
038	4504044	TDO770AA150200	TDO770-2 6oz/6oz 12.5x200	45032	11/24/2004	C	0702	H	N	41199			200.00	2,500.00 SQF
Totals													7,805.00	97,562.50 SQF

BATCH 2



200 Miller Sellers Drive
Evergreen, Alabama 36401

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Web Site: <http://www.tenaxus.com>

QUALITY CONTROL SUMMARY

Tenax Tendrain 770-2

Date: December 7, 2004

Batch 2

Project: Southeast Hillsboro LF, Corporate

Submitted to:
Mr. Tom Heasley
Geo-Synthetics, Inc
W239 N428 Pewaukee Road
Waukesha, WI 53188
Ph: 262-524-7979
Fx: 262-524-7961

**Performance in
Plastic Technology™**



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SECTION ONE

SPECIFICATION



Corporation

DENDRAIN 770-2**Double-Sided Geocomposite****Southeast Co. LF, FL**

The drainage geocomposite is comprised of a tri-axial geonet structure consisting of thick supporting ribs with diagonally placed top and bottom ribs and with a thermally bonded, non-woven high UV resistant Ultra Vera geotextile on both sides. The product is capable of providing high Transmissivity in a soil environment under high normal loads and will have properties conforming to the values and test methods listed below.

Property	Test Methods	Units	Value	Qualifier	Test Frequency
Resin					
• Density	ASTM D 1505	g/cm ³	0.94	MAV	lot
• Melt Flow Index	ASTM D 1238	g/10min	1.0	MAX	lot
Geonet Core ³					
Structure			Tri-axial		
• Tensile Strength – MD	ASTM D 4595	lb/ft (kN/m)	1200 (17.5)	MAV	50,000 sf
• Creep Reduction Factor ¹	GRI-GC8	-	1.2		
• Thickness ²	ASTM D 5199	mil (mm)	300 (7.6)	MAV	50,000 sf
• Carbon Black	ASTM D 4218	%	2-3	range	50,000 sf
Geotextile ^{3,4}					
• U.V. Resistance (500 hrs)	ASTM G 154	%	95		Per formula
• Mass/Unit Area	ASTM D 5261	oz/yd ² (g/m ²)	6 (203)	MARV	100,000 sf
• Grab Tensile	ASTM D 4632	lbs (N)	157 (700)	MARV	100,000 sf
• Puncture Resistance	ASTM D 4833	lbs (N)	56 (250)	MARV	100,000 sf
• AOS	ASTM D 4751	US Std. Sieve (mm)	70 (0.212)	MaxARV	100,000 sf
• Permittivity	ASTM D 4491 Falling head	Sec ⁻¹	0.5	MARV	500,000 sf
Geocomposite					
• Peel Adhesion ⁵ – MD	F904 Modified	lb/in (g/in)	1.0 (454)	MAV	100,000 sf
• Labeling	Product code, geotextile type, roll dimensions, finished product lot and roll number.				
Hydraulic Behavior of Geocomposite					
• Transmissivity ⁶ – MD			10,000 psf (480 kPa)		
Gradient / Load					
0.02	ASTM D 4716 GRI - GCR	m ² /sec	3.7*10 ⁻³	MAV	100,000 sf

Qualifiers: MARV = Minimum Average Roll Value (MARV)
MaxARV = Maximum average roll value

MAV = Minimum Average Value
AVE = Average value

MAX = Maximum Value

NOTES:

1. Creep Reduction Factor is based on 10,000 hour test duration, extrapolated to 30 years and using a compressive load of 25,000 psf.
2. Thickness measured by manufacturer per ASTM D5199 with a 2.22 in. diameter presser foot and 2.9 psi pressure.
3. Geotextile and geonet properties listed are prior to lamination.
4. Top filter geotextile meets ASSHTO Standard Specification M 288-00 strength requirements of class 2 and the highest filter requirements.
5. Peel Adhesion is tested by the manufacturer per modified ASTM F904, with a 2-inch wide (5 longitudinal ribs) by 10-inch long strip. The geotextile bonded to either side of the geonet is pulled apart at a peeling rate of 12 in/min., for at least 4 inches of peeling distance. The reported value for each laminated side is the average of the "peak" values from 5 tested samples. The 5 samples are cut evenly distributed along the roll width with a 1-foot margin from both edges of the roll.
6. Geocomposite transmissivity measured by manufacturer per ASTM D4716 with testing boundary conditions as follows: steel plate / Ottawa sand / geocomposite / 60 mil HDPE geomembrane / steel plate, and seating period of 100 hours according to GRI-GC8.



Engineered for Life

Sales/Technical Service

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www.tenaxus.com

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9/20/2004



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SECTION TWO

GEONET REPORT AND MQC

4300566	11/26/04	322.3	0.945	2.14	0.040	1536.0
4300570	11/27/04	314.5	0.951	2.26	0.040	1534.5
4300572	11/27/04	324.5	0.952	2.37	0.040	1451.1
4300574	11/28/04	324.2	0.953	2.43	0.040	1377.8
4300576	11/29/04	329.5	0.957	2.57	0.040	1411.4
4300578	11/29/04	311.7	0.945	2.4	0.040	1378.5
4300579	11/30/04	334.7	0.953	2.67	0.040	1534.5
4300581	12/01/04	334.3	0.952	2.27	0.040	1662.0
4300583	12/02/04	340.3	0.956	2.37	0.040	1537.5

Average=	328.49	0.950	2.38	0.040	1498.71
Std. Deviation=	12.99	0.005	0.14	0.000	158.78



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SECTION THREE

GEOTEXTILE MQC

000000-2004

Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. LLC
QA/QC Laboratory
Evergreen, Alabama
Nonwoven Test
Rolls
Lot Summary

Reviewed By: *[Signature]*

QA: _____

Engineer: _____

Page 1 of 3

Grab Tensile/Elongation ASTM D4832															
Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	M.D.		C.D.		M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)			MD (lbs)	CD		Permit. (sec-1)	Perm.(Kv) (cm/sec)		
4008127	10/30/2004	6.9	273.0	130.3	214.0	65.6		98.5	85.4	74.0	83	1.73	0.343	129.8	0.105
4008128	10/30/2004	6.8	266.8	126.3	205.3	61.2									
4008129	10/30/2004	6.7	259.7	119.4	206.7	56.5		101.0	81.9	75.5	80	1.65	0.293	123.6	0.108
4008132	10/30/2004	6.5	247.0	132.6	218.3	61.4		102.4	67.1	69.2	78				
4008135	10/30/2004	6.6	237.1	125.8	208.4	61.5		103.4	65.0	67.7	80				
4008138	10/31/2004	6.6	238.1	126.6	203.1	60.8		100.6	66.8	66.6	79				
4008141	10/31/2004	6.6	219.8	133.6	197.8	58.0		96.2	78.4	68.8	80				
4008144	10/31/2004	6.5	228.8	118.3	195.1	57.5		104.4	70.4	66.9	77				
4008147	10/31/2004	6.4	235.0	117.4	202.8	57.9		94.8	71.7	74.3	77	1.48	0.301	111.2	0.105
4008150	10/31/2004	6.2	249.4	118.3	214.9	55.5		113.0	75.4	72.2	75				
4008153	10/31/2004	6.4	218.1	118.5	195.2	62.5		95.1	78.6	74.7	77				
4008155	10/31/2004	6.6	221.2	121.0	203.5	57.3		97.6	68.0	69.1	79	1.41	0.252	105.7	0.114
4008156	10/31/2004	6.6	235.5	118.9	196.6	56.9									
4008157	10/31/2004	6.3	234.0	120.3	188.4	56.8		96.8	70.7	69.1	77	1.27	0.238	95.1	0.107
4008160	11/01/2004	6.5	240.2	124.1	207.4	60.2		101.7	67.5	71.9	79				
4008163	11/01/2004	6.6	220.0	132.5	210.3	61.9		99.9	67.1	70.9	79				
4008166	11/01/2004	6.4	245.8	127.2	207.7	62.1		100.2	81.8	98.1	77				
4008169	11/01/2004	6.6	245.0	141.8	209.0	68.6		99.0	76.7	87.3	77				
4008172	11/01/2004	6.3	246.8	143.5	211.1	70.8		94.4	78.6	93.1	74				
4008174	11/01/2004	6.3	238.5	136.8	196.0	64.7		89.0	63.5	65.5	76	1.65	0.296	123.8	0.125
4008175	11/02/2004	6.5	234.3	126.0	196.2	61.4									
4008176	11/01/2004	6.4	239.0	124.7	201.0	61.3		93.5	64.2	66.0	77	1.56	0.295	116.7	0.103
4008179	11/02/2004	6.4	243.3	123.8	204.1	60.3		90.0	69.6	65.2	77				
4008182	11/02/2004	6.4	238.9	118.4	199.6	60.3		96.1	67.3	63.7	77				
4008185	11/02/2004	6.3	242.9	135.9	216.2	65.4		96.3	86.1	88.6	74				
4008188	11/02/2004	6.4	250.9	119.1	205.6	59.7		94.5	83.0	84.6	75				
4008190	11/03/2004	6.5	245.6	118.5	204.6	56.3		105.6	71.5	73.8	80	1.29	0.257	96.2	0.147
4008191	11/03/2004	6.6	232.0	116.8	221.3	58.2									
4008194	11/03/2004	6.4													
4008200	11/03/2004	6.7													
4008201	11/03/2004	6.5	257.6	114.7	232.8	53.0		118.0	68.9	75.6	80	1.32	0.256	98.6	0.103
4008203	11/03/2004	6.5													
4008204	11/03/2004	6.3	245.1	113.9	232.5	51.2		102.5	76.3	79.1	76				
4008207	11/03/2004	6.4	242.0	115.3	220.9	54.3		107.8	68.9	80.2	76				

03-Dec-2004

Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860R

Tenax Mfg. All LLC
QA/QC Laboratory
Evergreen, Alabama

Nonwoven Test
Rolls
Lot Summary

Page 2 of 3

Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	Grab Tensile/Elongation ASTM D4632				M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			M.D.		C.D.				MD	CD		Permit. (sec-1)	Perm.(Kv) (cm/sec)		
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)									
4008210	11/04/2004	6.7	243.9	119.4	223.9	52.5		101.3	79.7	79.1	78				
4008213	11/04/2004	6.4	280.0	119.3	230.4	57.9		110.4	83.2	70.5	78	1.49	0.292	111.5	0.099
4008216	11/04/2004	6.3	280.0	119.3	230.4	57.9		114.6	84.9	77.8	75				
4008218	11/04/2004	6.5	236.7	125.4	209.1	60.3		99.8	88.2	73.4	79	1.37	0.250	102.2	0.136
4008220	11/04/2004	6.4	259.4	130.9	223.3	61.6									
4008228	11/04/2004	6.5													
4008231	11/04/2004	6.4													
4008233	11/04/2004	6.6	281.7	124.3	226.3	59.6		107.7	88.3	83.5	80				
4008236	11/04/2004	6.6	248.0	131.3	231.9	64.0		104.7	79.5	75.2	79				
4008239	11/05/2004	6.6	268.0	123.8	229.3	56.7		112.9	90.5	75.8	81				
4008242	11/05/2004	6.5	266.1	124.3	220.4	59.3		104.6	88.2	95.0	79				
4008244	11/05/2004	6.4	274.7	125.0	213.5	59.3									
4008245	11/05/2004	6.6	260.5	118.7	219.2	61.8		102.9	78.3	70.7	83	1.53	0.311	114.5	0.142
4008246	11/05/2004	6.6													
4008247	11/05/2004	6.4	252.0	122.7	196.1	58.3									
4008248	11/05/2004	6.2	256.4	128.2	218.5	62.8		107.3	66.9	68.7	78	1.46	0.297	109.0	0.152
4008249	11/05/2004	6.7													
4008251	11/05/2004	6.6	264.6	123.7	220.5	57.2		97.3	78.7	79.5	82				
4008254	11/05/2004	6.4	263.3	123.6	224.3	60.1		100.1	73.9	78.7	81				
4008257	11/06/2004	6.4	283.3	128.9	232.4	63.7		102.9	86.6	79.5	81				
4008260	11/06/2004	6.4	283.4	135.3	237.2	62.8		101.6	112.5	100.2	81				
4008263	11/06/2004	6.5	273.1	139.8	210.1	63.0		98.3	113.3	105.9	81				
4008266	11/06/2004	6.2	260.3	149.4	219.9	71.1		108.9	110.4	100.3	77	1.53	0.288	114.4	0.141
4008269	11/06/2004	6.4	232.9	144.0	206.3	66.7		94.8	82.4	79.8	81	1.50	0.294	112.0	0.151
4008270	11/06/2004	6.4	239.2	146.7	235.4	63.8									
4008271	11/06/2004	6.6	248.5	130.3	204.8	59.4		97.3	86.5	77.0	82	1.40	0.282	104.8	0.116
4008274	11/06/2004	6.4	248.0	123.5	205.0	59.3		97.9	83.7	75.2	80				
4008277	11/07/2004	6.6	260.5	128.8	219.6	63.0		99.9	88.2	73.2	82				
4008280	11/07/2004	6.3	255.8	125.4	218.8	61.0		91.8	111.6	108.8	73				
4008283	11/07/2004	6.2	257.8	127.4	206.3	63.9		92.6	120.3	101.1	76				
4008286	11/07/2004	6.3	258.4	139.7	213.5	63.8		97.6	100.1	88.2	75				
4008288	11/07/2004	6.5	254.3	127.4	211.1	60.9		98.6	90.8	70.8	82	1.63	0.308	121.9	0.128
4008289	11/07/2004	6.3	255.2	121.3	212.6	59.2									
4008291	11/07/2004	6.4	245.3	111.5	212.1	59.6		99.3	87.8	75.3	80				

c-2004

Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. LLC
QA/QC Laboratory
Evergreen, Alabama

Nonwoven Test
Rolls

Lot Summary

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Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	Grab Tensile/Elongation ASTM D4632				M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			M.D.		C.D.				MD (lbs)	CD		Permit. (sec-1)	Perm.(Kv) (cm/sec)		
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)									
4008292	11/08/2004	6.4	254.7	121.9	230.6	63.2									
Average =		6.5	250.3	126.2	213.2	60.5		100.7	81.2	78.4	78.4	1.49	0.285	111.2	0.122
Standard Deviation =		.1	16.1	8.4	11.9	3.9		6.2	13.6	11.2	2.5	.13	0.027	10.1	0.019



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SECTION FOUR

GEOCOMPOSITE MQC

Tenax Corporation

Traceability, Peel and Transmissivity report

PRODUCT: Tendrain 770-2
 JOB: Southeast Co. LF, FL
 Batch: 2

COMPOSITE #	NET #	Top TEXTILE #	Bottom TEXTILE #	Roll length (ft)	Top Geotextile ASTM F904 Peel Adhesion lbs/in (avg. peaks)	Bottom Geotextile ASTM F904 Peel Adhesion lbs/in (avg. peaks)	ASTM F904 Peel Adhesion lbs/in (req.)	ASTM D 4716 Transmissivity* (m2/sec) Value	ASTM D 4716 Transmissivity* (m2/sec) Required	Gradient
4504045	4300562	4008163	4008151	170	3.88	1.28	1.0	6.75 x 10 ⁻³	3.7 x 10 ⁻³	0.02
4504046	4300563	4008163	4008151	195						
4504047	4300563	4008163	4008151	200						
4504048	4300563	4008162	4008148	200						
4504050	4300563	4008162	4008148	200						
4504051	4300563	4008162	4008148	200						
4504052	4300563	4008162	4008148	200						
4504053	4300563	4008162	4008148	310						
4504054	4300564	4008162	4008148	200						
4504055	4300564	4008162	4008148	200						
4504056	4300564	4008162	4008148	200						
4504057	4300564	4008279	4008149	200						
4504058	4300564	4008279	4008149	200						
4504059	4300564	4008279	4008149	200						
4504060	4300564	4008279	4008149	200						
4504061	4300564	4008279	4008149	250						
4504062	4300565	4008279	4008149	200						
4504063	4300565	4008279	4008149	200						
4504064	4300565	4008279	4008149	200						
4504065	4300565	4008279	4008161	200						
4504066	4300565	4008286	4008161	200						
4504067	4300565	4008286	4008161	200						
4504068	4300565	4008286	4008161	270						
4504070	4300568	4008286	4008161	200						
4504071	4300568	4008286	4008161	200						
4504072	4300568	4008286	4008161	200						
4504073	4300568	4008286	4008161	200						
4504074	4300568	4008288	4008291	200						
4504075	4300568	4008288	4008291	200						
4504076	4300568	4008288	4008291	200						
4504077	4300568	4008288	4008291	270						
4504078	4300569	4008288	4008291	200						
4504079	4300569	4008288	4008291	200						
4504080	4300569	4008288	4008291	200						
4504081	4300569	4008288	4008291	200						
4504082	4300569	4008288	4008283	200						
4504083	4300569	4008285	4008283	200						
4504084	4300569	4008285	4008283	200						

* a confining pressure of 10,000 psf with boundary conditions of steel plate/Ottawa sand/geocomposite/60 mil HDPE/steel plate and a seating time of 100 hour

Tested by: *Melanie Richardson*

Checked by: *Leslye Farney*

Tenax Mfg AL LLC - Roll Listing

Date: 12-03-2004

Time: 08:48:49

Page 1 of 2

Roll Number	Product Code	Description	Line	Lot Number	Production Date	Shift	Stg Area	Status	On BL	Job Number	Silt From Roll	Original Roll	Linear Ft.	Sq Ft./Yds
001	4504045	TDO770AA150170 TDO770-2 6oz/6oz 12.5x170		45032	11/26/2004	A	0701	H	N	41199			170.00	2,125.00 SQF
002	4504046	TDO770AA150195 TDO770-2 6oz/6oz 12.5x195		45032	11/26/2004	A	0701	H	N	41199			195.00	2,437.50 SQF
003	4504047	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/26/2004	A	0701	H	N	41199			200.00	2,500.00 SQF
004	4504049	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/26/2004	A	0701	H	N	41199			200.00	2,500.00 SQF
005	4504050	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/26/2004	A	0701	H	N	41199			200.00	2,500.00 SQF
006	4504051	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/26/2004	A	0701	H	N	41199			200.00	2,500.00 SQF
007	4504052	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/26/2004	A	0701	H	N	41199			200.00	2,500.00 SQF
008	4504053	TDO770AA150310 TDO770-2 6oz/6oz 12.5x310		45032	11/26/2004	A	0701	H	N	41199			310.00	3,875.00 SQF
009	4504054	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/26/2004	A	0701	H	N	41199			200.00	2,500.00 SQF
010	4504055	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/26/2004	A	0701	H	N	41199			200.00	2,500.00 SQF
011	4504056	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/26/2004	A	0701	H	N	41199			200.00	2,500.00 SQF
012	4504057	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/26/2004	A	0701	H	N	41199			200.00	2,500.00 SQF
013	4504058	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/26/2004	A	0701	H	N	41199			200.00	2,500.00 SQF
014	4504059	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/26/2004	A	0701	H	N	41199			200.00	2,500.00 SQF
015	4504060	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/26/2004	A	0701	H	N	41199			200.00	2,500.00 SQF
016	4504061	TDO770AA150250 TDO770-2 6oz/6oz 12.5x250		45032	11/26/2004	A	0701	H	N	41199			250.00	3,125.00 SQF
017	4504062	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/26/2004	A	0701	H	N	41199			200.00	2,500.00 SQF
018	4504063	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/26/2004	A	0701	H	N	41199			200.00	2,500.00 SQF
019	4504064	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/26/2004	A	0701	H	N	41199			200.00	2,500.00 SQF
020	4504065	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/26/2004	A	0701	H	N	41199			200.00	2,500.00 SQF
021	4504066	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/26/2004	A	0701	H	N	41199			200.00	2,500.00 SQF
022	4504067	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/26/2004	A	0701	H	N	41199			200.00	2,500.00 SQF
023	4504068	TDO770AA150270 TDO770-2 6oz/6oz 12.5x270		45032	11/26/2004	A	0701	H	N	41199			270.00	3,375.00 SQF
024	4504070	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/29/2004	C	0701	H	N	41199			200.00	2,500.00 SQF
025	4504071	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/29/2004	C	0701	H	N	41199			200.00	2,500.00 SQF
026	4504072	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/29/2004	C	0701	H	N	41199			200.00	2,500.00 SQF
027	4504073	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/29/2004	C	0701	H	N	41199			200.00	2,500.00 SQF
028	4504074	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/29/2004	C	0701	H	N	41199			200.00	2,500.00 SQF
029	4504075	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/29/2004	C	0701	H	N	41199			200.00	2,500.00 SQF
030	4504076	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/29/2004	C	0701	H	N	41199			200.00	2,500.00 SQF
031	4504077	TDO770AA150270 TDO770-2 6oz/6oz 12.5x270		45032	11/29/2004	C	0701	H	N	41199			270.00	3,375.00 SQF
032	4504078	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/29/2004	C	0701	H	N	41199			200.00	2,500.00 SQF
033	4504079	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/29/2004	C	0701	H	N	41199			200.00	2,500.00 SQF
034	4504080	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/29/2004	C	0701	H	N	41199			200.00	2,500.00 SQF
035	4504081	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/29/2004	C	0701	H	N	41199			200.00	2,500.00 SQF
036	4504082	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/29/2004	C	0701	H	N	41199			200.00	2,500.00 SQF
037	4504083	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/29/2004	C	0701	H	N	41199			200.00	2,500.00 SQF

Tenax Mfg AL LLC - Roll Listing

Date: 12-03-2004

Time: 08:48:49

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Roll Number	Product Code	Description	Line	Lot Number	Production Date	Shift	Stg Area	Status	On BL	Job Number	Slit From Roll	Original Roll	Linear Ft.	Sq Ft./Yds
038	4504084	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/29/2004	C	0803	H	N	41199			200.00	2,500.00 SQF
												Totals	7,865.00	98,312.50 SQF

BATCH 3



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QUALITY CONTROL SUMMARY

Tenax Tendrain 770-2

Date: December 7, 2004

Batch 3

Submittal

Project: Southeast Hillsboro LF, Corporate

Submitted to:

Mr. Tom Heasley

Geo-Synthetics, Inc

W239 N428 Pewaukee Road

Waukesha, WI 53188

Ph: 262-524-7979

Fx: 262-524-7961

**Performance in
Plastic TechnologySM**



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SECTION ONE

SPECIFICATION



Corporation

TENDRAIN 770-2**Double-Sided Geocomposite****Southeast Co. LF, FL**

The drainage geocomposite is comprised of a tri-axial geonet structure consisting of thick supporting ribs with diagonally placed top and bottom ribs and with a thermally bonded, non-woven high UV resistant Ultra Vera geotextile on both sides. The product is capable of providing high Transmissivity in a soil environment under high normal loads and will have properties conforming to the values and test methods listed below.

Property	Test Methods	Units	Value	Qualifier	Test Frequency
Resin					
• Density	ASTM D 1505	g/cm ³	0.94	MAV	lot
• Melt Flow Index	ASTM D 1238	g/10min	1.0	MAX	lot
Geonet Core³					
Structure			Tri-axial		
• Tensile Strength – MD	ASTM D 4595	lb/ft (kN/m)	1200 (17.5)	MAV	50,000 sf
• Creep Reduction Factor ¹	GRI-GC8	-	1.2		
• Thickness ²	ASTM D 5199	mil (mm)	300 (7.6)	MAV	50,000 sf
• Carbon Black	ASTM D 4218	%	2-3	range	50,000 sf
Geotextile⁴					
• U.V. Resistance (500 hrs)	ASTM G 154	%	95		Per formula
• Mass/Unit Area	ASTM D 5261	oz/yd ² (g/m ²)	6 (203)	MARV	100,000 sf
• Grab Tensile	ASTM D 4632	lbs (N)	157 (700)	MARV	100,000 sf
• Puncture Resistance	ASTM D 4833	lbs (N)	56 (250)	MARV	100,000 sf
• AOS	ASTM D 4751	US Std. Sieve (mm)	70 (0.212)	MaxARV	100,000 sf
• Permittivity	ASTM D 4491 Falling head	Sec ⁻¹	0.5	MARV	500,000 sf
Geocomposite					
Peel Adhesion ⁵ – MD	F904 Modified	lb/in (g/in)	1.0 (454)	MAV	100,000 sf
Labeling	Product code, geotextile type, roll dimensions, finished product lot and roll number.				
Hydraulic Behavior of Geocomposite					
• Transmissivity ⁶ - MD			10,000 psf (480 kPa)		
<u>Gradient / Load</u>					
0.02	ASTM D 4716 GRI - GC8	m ² /sec	3.7*10 ⁻³	MAV	100,000 sf

Qualifiers: MARV = Minimum Average Roll Value (MARV)
MaxARV = Maximum average roll value

MAV = Minimum Average Value
AVE = Average value

MAX = Maximum Value

NOTES:

- Creep Reduction Factor is based on 10,000 hour test duration, extrapolated to 30 years and using a compressive load of 25,000 psf.
- Thickness measured by manufacturer per ASTM D5199 with a 2.22 in. diameter presser foot and 2.9 psi pressure.
- Geotextile and geonet properties listed are prior to lamination.
- Top filter geotextile meets ASSHTO Standard Specification M 288-00 strength requirements of class 2 and the highest filter requirements.
- Peel Adhesion is tested by the manufacturer per modified ASTM F904, with a 2-inch wide (5 longitudinal ribs) by 10-inch long strip. The geotextile bonded to either side of the geonet is pulled apart at a peeling rate of 12 in/min., for at least 4 inches of peeling distance. The reported value for each laminated side is the average of the "peak" values from 5 tested samples. The 5 samples are cut evenly distributed along the roll width with a 1-foot margin from both edges of the roll.
- Geocomposite transmissivity measured by manufacturer per ASTM D4716 with testing boundary conditions as follows: steel plate / Ottawa sand / geocomposite / 80 mil HDPE geomembrane / steel plate; and seating period of 100 hours according to GRI-GC8.



Engineered for Life

Sales/Technical Service
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9/20/2004



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SECTION TWO

GEONET REPORT AND MQC

Product Grade: TD7
 Color: Black
 Roll Dimensions: 13 x 1760 ft
 Lot Number: 43045

Tenax Mfg. AL LLC
QA/QC Lab
Net Product Report

Reviewed By: _____
 QA
 Engineer

Geonet Roll	Date Tested	Thickness ASTM D5199 (mils)	Density ASTM D1505 (g/cc)	Carbon Black ASTM D4218 (%)	Resin MFI ASTM D1238-00 (g/10m)	Tensile MD ASTM D4595 (lb/ft)
4300557	11/22/04	369.6	0.943	2.38	0.040	1944.0
4300558	11/23/04	325.4			0.040	
4300559	11/23/04	325.2	0.943	2.41	0.040	1296.9
4300561	11/24/04	322.7	0.954	2.49	0.040	1410.3
4300563	11/24/04	325.3	0.944	2.39	0.040	1400.0
4300564	11/24/04	325.5			0.040	
4300565	11/25/04	326.1	0.952	2.27	0.040	1507.5
4300568	11/26/04	322.3	0.945	2.14	0.040	1536.0
✓4300570	11/27/04	314.5	0.957	2.26	0.040	1534.5
4300572	11/27/04	324.5	0.952	2.37	0.040	1451.1
4300574	11/28/04	324.2	0.953	2.43	0.040	1377.8
4300576	11/29/04	329.5	0.957	2.57	0.040	1411.4
4300578	11/29/04	311.7	0.945	2.4	0.040	1378.5
4300579	11/30/04	334.7	0.953	2.67	0.040	1534.5
4300581	12/01/04	334.3	0.952	2.27	0.040	1662.0
4300583	12/02/04	340.3	0.956	2.37	0.040	1537.5
Average=		328.49	0.950	2.38	0.040	1498.71
Std. Deviation=		12.99	0.005	0.14	0.000	158.78



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SECTION THREE

GEOTEXTILE MQC

03-D-004

Product Grade: UV506

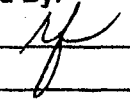
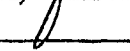
Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. AL LLC
QA/QC Laboratory
Evergreen, Alabama
Nonwoven Test
Rolls
Lot Summary

Reviewed By:

QA: Engineer: 

Page 1 of 3

Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	Grab Tensile/Elongation ASTM D4632				M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			M.D.		C.D.				MD	CD		Permit. (sec-1)	Perm.(Kv) (cm/sec)		
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)									
4008127	10/30/2004	6.9	273.0	130.3	214.0	65.6		98.5	85.4	74.0	83	1.73	0.343	129.8	0.105
4008128	10/30/2004	6.8	266.8	126.3	205.3	61.2									
4008129	10/30/2004	6.7	259.7	119.4	206.7	56.5		101.0	81.9	75.5	80	1.65	0.293	123.6	0.108
4008132	10/30/2004	6.5	247.0	132.6	218.3	61.4		102.4	67.1	69.2	78				
4008135	10/30/2004	6.6	237.1	125.8	208.4	61.5		103.4	65.0	67.7	80				
4008138	10/31/2004	6.6	238.1	126.6	203.1	60.8		100.6	66.8	66.6	79				
4008141	10/31/2004	6.6	219.8	133.6	197.8	58.0		96.2	78.4	68.8	80				
4008144	10/31/2004	6.5	228.8	118.3	195.1	57.5		104.4	70.4	66.9	77				
4008147	10/31/2004	6.4	235.0	117.4	202.8	57.9		94.8	71.7	74.3	77	1.48	0.301	111.2	0.105
4008150	10/31/2004	6.2	249.4	118.3	214.9	55.5		113.0	75.4	72.2	75				
4008153	10/31/2004	6.4	218.1	118.5	195.2	62.5		95.1	78.6	74.7	77				
4008155	10/31/2004	6.6	221.2	121.0	203.5	57.3		97.6	68.0	69.1	79	1.41	0.252	105.7	0.114
4008156	10/31/2004	6.6	235.5	118.9	196.6	56.9									
4008157	10/31/2004	6.3	234.0	120.3	188.4	56.8		96.8	70.7	69.1	77	1.27	0.238	95.1	0.107
4008160	11/01/2004	6.5	240.2	124.1	207.4	60.2		101.7	67.5	71.9	79				
4008163	11/01/2004	6.6	220.0	132.5	210.3	61.9		99.9	67.1	70.9	79				
4008166	11/01/2004	6.4	245.8	127.2	207.7	62.1		100.2	81.8	98.1	77				
4008169	11/01/2004	6.6	245.0	141.8	209.0	68.6		99.0	76.7	87.3	77				
4008172	11/01/2004	6.3	246.8	143.5	211.1	70.8		94.4	78.6	93.1	74				
4008174	11/01/2004	6.3	238.5	136.8	196.0	64.7		89.0	63.5	65.5	76	1.65	0.296	123.8	0.125
4008175	11/02/2004	6.5	234.3	126.0	196.2	61.4									
4008176	11/01/2004	6.4	239.0	124.7	201.0	61.3		93.5	64.2	66.0	77	1.56	0.295	116.7	0.103
4008179	11/02/2004	6.4	243.3	123.8	204.1	60.3		90.0	69.6	65.2	77				
4008182	11/02/2004	6.4	238.9	118.4	199.6	60.3		96.1	67.3	63.7	77				
4008186	11/02/2004	6.3	242.9	135.9	216.2	65.4		96.3	86.1	88.6	74				
4008188	11/02/2004	6.4	250.9	119.1	205.6	59.7		94.5	83.0	84.6	75				
4008190	11/03/2004	6.5	245.6	118.5	204.6	56.3		105.6	71.5	73.8	80	1.29	0.257	96.2	0.147
4008191	11/03/2004	6.6	232.0	116.8	221.3	58.2									
4008194	11/03/2004	6.4													
4008200	11/03/2004	6.7													
4008201	11/03/2004	6.5	257.6	114.7	232.8	53.0		118.0	68.9	75.6	80	1.32	0.256	98.6	0.103
4008203	11/03/2004	6.5													
4008204	11/03/2004	6.3	245.1	113.9	232.5	51.2		102.5	76.3	79.1	76				
4008207	11/03/2004	6.4	242.0	115.3	220.9	54.3		107.8	68.9	80.2	76				

03-Dec-04

Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. AL LLC
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Rolls
Lot Summary

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Grab Tensile/Elongation ASTM D4632															
Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	M.D.		C.D.		M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)			MD (lbs)	CD		Permit. (sec-1)	Perm.(Kv) (cm/sec)		
4008210	11/04/2004	6.7	243.9	119.4	223.9	52.5		101.3	79.7	79.1	78				
4008213	11/04/2004	6.4	280.0	119.3	230.4	57.9		110.4	83.2	70.5	78	1.49	0.292	111.5	0.099
4008216	11/04/2004	6.3	280.0	119.3	230.4	57.9		114.6	84.9	77.8	75				
4008218	11/04/2004	6.5	236.7	125.4	209.1	60.3		99.8	88.2	73.4	79	1.37	0.250	102.2	0.136
4008220	11/04/2004	6.4	259.4	130.9	223.3	61.6									
4008228	11/04/2004	6.5													
4008231	11/04/2004	6.4													
4008233	11/04/2004	6.6	281.7	124.3	226.3	59.6		107.7	88.3	83.5	80				
4008236	11/04/2004	6.6	248.0	131.3	231.9	64.0		104.7	79.5	75.2	79				
4008239	11/05/2004	6.6	268.0	123.8	229.3	56.7		112.9	90.5	75.8	81				
4008242	11/05/2004	6.5	266.1	124.3	220.4	59.3		104.6	88.2	95.0	79				
4008244	11/05/2004	6.4	274.7	125.0	213.5	59.3									
4008245	11/05/2004	6.6	260.5	118.7	219.2	61.8		102.9	78.3	70.7	83	1.53	0.311	114.5	0.142
4008246	11/05/2004	6.6													
4008247	11/05/2004	6.4	252.0	122.7	196.1	58.3									
4008248	11/05/2004	6.2	256.4	128.2	218.5	62.8		107.3	66.9	68.7	78	1.46	0.297	109.0	0.152
4008249	11/05/2004	6.7													
4008251	11/05/2004	6.6	264.6	123.7	220.5	57.2		97.3	78.7	79.5	82				
4008254	11/05/2004	6.4	263.3	123.6	224.3	60.1		100.1	73.9	78.7	81				
4008257	11/06/2004	6.4	283.3	128.9	232.4	63.7		102.9	86.6	79.5	81				
4008260	11/06/2004	6.4	283.4	135.3	237.2	62.8		101.6	112.5	100.2	81				
4008263	11/06/2004	6.5	273.1	139.8	210.1	63.0		98.3	113.3	105.9	81				
4008266	11/06/2004	6.2	260.3	149.4	219.9	71.1		108.9	110.4	100.3	77	1.53	0.288	114.4	0.141
4008269	11/06/2004	6.4	232.9	144.0	206.3	66.7		94.8	82.4	79.8	81	1.50	0.294	112.0	0.151
4008270	11/06/2004	6.4	239.2	146.7	235.4	63.8									
4008271	11/06/2004	6.6	248.5	130.3	204.8	59.4		97.3	86.5	77.0	82	1.40	0.282	104.8	0.116
4008274	11/06/2004	6.4	248.0	123.5	205.0	59.3		97.9	83.7	75.2	80				
4008277	11/07/2004	6.6	260.5	128.8	219.6	63.0		99.9	88.2	73.2	82				
4008280	11/07/2004	6.3	255.8	125.4	218.8	61.0		91.8	111.6	108.8	73				
4008283	11/07/2004	6.2	257.8	127.4	206.3	63.9		92.6	120.3	101.1	76				
4008286	11/07/2004	6.3	258.4	139.7	213.5	63.8		97.6	100.1	88.2	75				
4008288	11/07/2004	6.5	254.3	127.4	211.1	60.9		98.6	90.8	70.8	82	1.63	0.308	121.9	0.128
4008289	11/07/2004	6.3	255.2	121.3	212.6	59.2									
4008291	11/07/2004	6.4	245.3	111.5	212.1	59.6		99.3	87.8	75.3	80				

Bottom

03-Dec-2004

Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. AL LLC
QA/QC Laboratory
Evergreen, Alabama
Nonwoven Test
Rolls
Lot Summary

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Grab Tensile/Elongation
ASTM D4632

Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	M.D.		C.D.		M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)			MD (lbs)	CD		Permit. (sec-1)	Perm.(Kv) (cm/sec)		
4008292	11/08/2004	6.4	254.7	121.9	230.6	63.2									
Average =		6.5	250.3	126.2	213.2	60.5		100.7	81.2	78.4	78.4	1.49	0.285	111.2	0.122
Standard Deviation =		.1	16.1	8.4	11.9	3.9		6.2	13.6	11.2	2.5	.13	0.027	10.1	0.019



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SECTION FOUR

GEOCOMPOSITE MQC

Tenax Corporation

Traceability, Peel and Transmissivity report

PRODUCT: Tendrain 770-2
 JOB: Southeast Co. LF, FL
 Batch: 3

COMPOSITE #	NET #	Top TEXTILE #	Bottom TEXTILE #	Roll length (ft)	Top Geotextile	Bottom Geotextile	ASTM F904	ASTM D 4716	ASTM D 4716	Gradient
					ASTM F904 Peel Adhesion lbs/in (avg. peaks)	ASTM F904 Peel Adhesion lbs/in (avg. peaks)	Peel Adhesion lbs/in (req.)	Transmissivity* (m2/sec) Value	Transmissivity* (m2/sec) Required	
4504085	4300569	4008285	4008283	250	1.60	1.47	1.0	6.99 x 10 ⁻³	3.7 x 10 ⁻³	0.02
4504086	4300570	4008285	4008283	200						
4504087	4300570	4008285	4008283	200						
4504088	4300570	4008285	4008283	200						
4504089	4300570	4008285	4008283	200						
4504090	4300570	4008285	4008283	200						
4504091	4300570	4008160	4008282	200						
4504092	4300570	4008160	4008282	200						
4504093	4300570	4008160	4008282	250						
4504094	4300571	4008160	4008282	200						
4504095	4300571	4008160	4008282	200						
4504096	4300571	4008160	4008282	200						
4504097	4300571	4008160	4008282	200						
4504098	4300571	4008160	4008282	200						
4504099	4300571	4008160	4008284	200						
4504100	4300571	4008281	4008284	200						
4504101	4300571	4008281	4008284	280						
4504102	4300572	4008281	4008284	200						
4504103	4300572	4008281	4008284	200						
4504104	4300572	4008281	4008284	200						
4504105	4300572	4008281	4008284	200						
4504106	4300572	4008281	4008284	200						
4504107	4300572	4008281	4008284	200						
4504108	4300572	4008281	4008289	200						
4504109	4300572	4008280	4008289	285						
4504110	4300573	4008280	4008289	200						
4504111	4300573	4008280	4008289	200						
4504112	4300573	4008280	4008289	200						
4504113	4300573	4008280	4008289	200						
4504114	4300573	4008280	4008289	200						
4504115	4300573	4008280	4008289	200						
4504116	4300573	4008280	4008142	200						
4504117	4300573	4008280	4008142	230						
4504118	4500574	4008290	4008142	200						
4504119	4500574	4008290	4008142	200						
4504120	4500574	4008290	4008142	200						
4504122	4500574	4008290	4008142	195						
4504123	4500574	4008290	4008142	200						

* a confining pressure of 10,000 psf with boundary conditions of steel plate/Ottawa sand/geocomposite/60 mil HDPE/steel plate and a seating time of 100 hour

Tested by:

Maline Nicholson

Checked by:

Lesalyn Tracy

Tenax Mfg AL LLC - Roll Listing

Date: 12-03-2004

Time: 08:49:12

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Roll Number	Product Code	Description	Line	Lot Number	Production Date	Shift	Stg Area	Status	On BL	Job Number	Slit From Roll	Original Roll	Linear Ft.	Sq Ft./Yds
001	4504085	TDO770AA150250		45032	11/29/2004	C	0603	H	N	41199			250.00	3,125.00 SQF
002	4504086	TDO770AA150200		45032	11/29/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
003	4504087	TDO770AA150200		45032	11/29/2004	C	0701	H	N	41199			200.00	2,500.00 SQF
004	4504088	TDO770AA150200		45032	11/29/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
005	4504089	TDO770AA150200		45032	11/29/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
006	4504090	TDO770AA150200		45032	11/29/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
007	4504091	TDO770AA150200		45032	11/29/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
008	4504092	TDO770AA150200		45032	11/29/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
009	4504093	TDO770AA150250		45032	11/29/2004	C	0603	H	N	41199			250.00	3,125.00 SQF
010	4504094	TDO770AA150200		45032	11/29/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
011	4504095	TDO770AA150200		45032	11/29/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
012	4504096	TDO770AA150200		45032	11/29/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
013	4504097	TDO770AA150200		45032	11/29/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
014	4504098	TDO770AA150200		45032	11/29/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
015	4504099	TDO770AA150200		45032	11/29/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
016	4504100	TDO770AA150200		45032	11/29/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
017	4504101	TDO770AA150280		45032	11/29/2004	C	0603	H	N	41199			280.00	3,500.00 SQF
018	4504102	TDO770AA150200		45032	11/29/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
019	4504103	TDO770AA150200		45032	11/30/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
020	4504104	TDO770AA150200		45032	11/30/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
021	4504105	TDO770AA150200		45032	11/30/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
022	4504106	TDO770AA150200		45032	11/30/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
023	4504107	TDO770AA150200		45032	11/30/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
024	4504108	TDO770AA150200		45032	11/30/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
025	4504109	TDO770AA150265		45032	11/30/2004	C	0603	H	N	41199			265.00	3,312.50 SQF
026	4504110	TDO770AA150200		45032	11/30/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
027	4504111	TDO770AA150200		45032	11/30/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
028	4504112	TDO770AA150200		45032	11/30/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
029	4504113	TDO770AA150200		45032	11/30/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
030	4504114	TDO770AA150200		45032	11/30/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
031	4504115	TDO770AA150200		45032	11/30/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
032	4504116	TDO770AA150200		45032	11/30/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
033	4504117	TDO770AA150230		45032	11/30/2004	C	0603	H	N	41199			230.00	2,875.00 SQF
034	4504118	TDO770AA150200		45032	11/30/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
035	4504119	TDO770AA150200		45032	11/30/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
036	4504120	TDO770AA150200		45032	11/30/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
037	4504122	TDO770AA150195		45032	11/30/2004	C	0603	H	N	41199			195.00	2,437.50 SQF

Tenax Mfg AL LLC - Roll Listing

Date: 12-03-2004

Time: 08:49:12

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Roll Number	Product Code	Description	Line	Lot Number	Production Date	Shift	Stg Area	Status	On BL	Job Number	Slit From Roll	Original Roll	Linear Ft.	Sq Ft./Yds
038	4504123	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/30/2004	C	0603	H	N	41199			200.00	2,500.00 SQF
												Totals	7,870.00	98,375.00 SQF

BATCH 4



200 Miller Sellers Drive
Evergreen, Alabama 36401

Office: 251-578-9003
Fax: 251-578-6141

Web Site: <http://www.tenaxus.com>

QUALITY CONTROL SUMMARY

Tenax Tendrain 770-2

Date: December 7, 2004

Batch 4

Project: Southeast Hillsboro LF, Corporate

Submitted to:

Mr. Tom Heasley
Geo-Synthetics, Inc
W239 N428 Pewaukee Road
Waukesha, WI 53188
Ph: 262-524-7979
Fx: 262-524-7961

**Performance in
Plastic TechnologySM**



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200 Miller Sellers Drive
Evergreen, Alabama 36401

Office: 251-578-9003
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SECTION ONE

SPECIFICATION



Corporation

TENDRAIN 770-2

Double-Sided Geocomposite

Southeast Co. LF, FL

The drainage geocomposite is comprised of a tri-axial geonet structure consisting of thick supporting ribs with diagonally placed top and bottom ribs and with a thermally bonded, non-woven high UV resistant Ultra Vera geotextile on both sides. The product is capable of providing high Transmissivity in a soil environment under high normal loads and will have properties conforming to the values and test methods listed below.

Property	Test Methods	Units	Value	Qualifier	Test Frequency
Resin					
• Density	ASTM D 1505	g/cm ³	0.94	MAV	lot
• Melt Flow Index	ASTM D 1238	g/10min	1.0	MAX	lot
Geonet Core³					
Structure			Tri-axial		
• Tensile Strength – MD	ASTM D 4595	lb/ft (kN/m)	1200 (17.5)	MAV	50,000 sf
• Creep Reduction Factor ¹	GRI-GC8	-	1.2		
• Thickness ²	ASTM D 5199	mil (mm)	300 (7.6)	MAV	50,000 sf
• Carbon Black	ASTM D 4218	%	2-3	range	50,000 sf
Geotextile⁴					
• U.V. Resistance (500 hrs)	ASTM G 154	%	95		Per formula
• Mass/Unit Area	ASTM D 5261	oz/yd ² (g/m ²)	6 (203)	MARV	100,000 sf
• Grab Tensile	ASTM D 4632	lbs (N)	157 (700)	MARV	100,000 sf
• Puncture Resistance	ASTM D 4833	lbs (N)	56 (250)	MARV	100,000 sf
• AOS	ASTM D 4751	US Std. Sieve (mm)	70 (0.212)	MaxARV	100,000 sf
• Permittivity	ASTM D 4491 Falling head	Sec ⁻¹	0.5	MARV	500,000 sf
Geocomposite					
• Peel Adhesion ⁵ – MD	F904 Modified	lb/in (g/in)	1.0 (454)	MAV	100,000 sf
• Labeling	Product code, geotextile type, roll dimensions, finished product lot and roll number.				
Hydraulic Behavior of Geocomposite					
• Transmissivity ⁶ – MD			10,000 psf (480 kPa)		
Gradient / Load					
0.02	ASTM D 4716 GRI - GC8	m ² /sec	3.7*10 ⁻³	MAV	100,000 sf

Qualifiers: MARV = Minimum Average Roll Value (MARV)
MaxARV = Maximum average roll value

MAV = Minimum Average Value
AVE = Average value

MAX = Maximum Value

NOTES:

1. Creep Reduction Factor is based on 10,000 hour test duration, extrapolated to 30 years and using a compressive load of 25,000 psf.
2. Thickness measured by manufacturer per ASTM D5199 with a 2.22 in. diameter presser foot and 2.9 psi pressure.
3. Geotextile and geonet properties listed are prior to lamination.
4. Top filter geotextile meets ASSHTO Standard Specification M 288-00 strength requirements of class 2 and the highest filter requirements.
5. Peel Adhesion is tested by the manufacturer per modified ASTM F904, with a 2-inch wide (5 longitudinal ribs) by 10-inch long strip. The geotextile bonded to either side of the geonet is pulled apart at a peeling rate of 12 in/min., for at least 4 inches of peeling distance. The reported value for each laminated side is the average of the "peak" values from 5 tested samples. The 5 samples are cut evenly distributed along the roll width with a 1-foot margin from both edges of the roll.
6. Geocomposite transmissivity measured by manufacturer per ASTM D4716 with testing boundary conditions as follows: steel plate / Ottawa sand / geocomposite / 80 mil HDPE geomembrane / steel plate, and seating period of 100 hours according to GRI-GC8.



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Web Site: <http://www.tenaxus.com>

SECTION TWO

GEONET REPORT AND MQC

Product Grade: TD7
 Color: Black
 Roll Dimensions: 13 x 1760 ft
 Lot Number: 43045

Tenax Mfg. AL LLC
 QA/QC Lab
 Net Product Report

Reviewed By: QA
 Engineer [Signature]

Geonet Roll	Date Tested	Thickness ASTM D5199 (mils)	Density ASTM D1505 (g/cc)	Carbon Black ASTM D4218 (%)	Resin MFI ASTM D1238-00 (g/10m)	Tensile MD ASTM D4595 (lb/ft)
4300557	11/22/04	369.6	0.943	2.38	0.040	1944.0
4300558	11/23/04	325.4			0.040	
4300559	11/23/04	325.2	0.943	2.41	0.040	1296.9
4300561	11/24/04	322.7	0.954	2.49	0.040	1410.3
4300563	11/24/04	325.3	0.944	2.39	0.040	1400.0
4300564	11/24/04	325.5			0.040	
4300565	11/25/04	326.1	0.952	2.27	0.040	1507.5
4300568	11/26/04	322.3	0.945	2.14	0.040	1536.0
4300570	11/27/04	314.5	0.957	2.26	0.040	1534.5
4300572	11/27/04	324.5	0.952	2.37	0.040	1451.1
4300574	11/28/04	324.2	0.953	2.43	0.040	1377.8
4300576	11/29/04	329.5	0.957	2.57	0.040	1411.4
4300578	11/29/04	311.7	0.945	2.4	0.040	1378.5
4300579	11/30/04	334.7	0.953	2.67	0.040	1534.5
4300581	12/01/04	334.3	0.952	2.27	0.040	1662.0
4300583	12/02/04	340.3	0.956	2.37	0.040	1537.5
Average=		328.49	0.950	2.38	0.040	1498.71
Std. Deviation=		12.99	0.005	0.14	0.000	158.78



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SECTION THREE

GEOTEXTILE MQC

07-Dec-2004

Product Grade: UV506

Lot Number: 40056

Color: ORANG

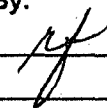
Roll Dimensions: 14ft x 1860ft

Tenax Mfg. AL LLC
QA/QC Laboratory
Evergreen, Alabama

Nonwoven Test
Rolls

Lot Summary

Reviewed By:

QA: 

Engineer: _____

Page 1 of 3

Grab Tensile/Elongation
ASTM D4832

Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	M.D.		C.D.		M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533 MD (lbs)		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491 Permit. Perm.(Kv) (sec-1) (cm/sec)		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)			CD						
4008127	10/30/2004	6.9	273.0	130.3	214.0	65.6		98.5	85.4	74.0	83	1.73	0.343	129.8	0.105
4008128	10/30/2004	6.8	266.8	126.3	205.3	61.2									
4008129	10/30/2004	6.7	259.7	119.4	206.7	56.5		101.0	81.9	75.5	80	1.65	0.293	123.6	0.108
4008132	10/30/2004	6.5	247.0	132.6	218.3	61.4		102.4	67.1	69.2	78				
4008135	10/30/2004	6.6	237.1	125.8	208.4	61.5		103.4	65.0	67.7	80				
4008138	10/31/2004	6.6	238.1	126.6	203.1	60.8		100.6	66.8	66.6	79				
4008141	10/31/2004	6.6	219.8	133.6	197.8	58.0		96.2	78.4	68.8	80				
4008144	10/31/2004	6.5	228.8	118.3	195.1	57.5		104.4	70.4	66.9	77				
4008147	10/31/2004	6.4	235.0	117.4	202.8	57.9		94.8	71.7	74.3	77	1.48	0.301	111.2	0.105
4008150	10/31/2004	6.2	249.4	118.3	214.9	55.5		113.0	75.4	72.2	75				
4008153	10/31/2004	6.4	218.1	118.5	195.2	62.5		95.1	78.6	74.7	77				
4008155	10/31/2004	6.6	221.2	121.0	203.5	57.3		97.6	68.0	69.1	79	1.41	0.252	105.7	0.114
4008156	10/31/2004	6.6	235.5	118.9	196.6	56.9									
4008157	10/31/2004	6.3	234.0	120.3	188.4	56.8		96.8	70.7	69.1	77	1.27	0.238	95.1	0.107
4008160	11/01/2004	6.5	240.2	124.1	207.4	60.2		101.7	67.5	71.9	79				
4008163	11/01/2004	6.6	220.0	132.5	210.3	61.9		99.9	67.1	70.9	79				
4008166	11/01/2004	6.4	245.8	127.2	207.7	62.1		100.2	81.8	98.1	77				
4008169	11/01/2004	6.6	245.0	141.8	209.0	68.6		99.0	76.7	87.3	77				
4008172	11/01/2004	6.3	246.8	143.5	211.1	70.8		94.4	78.6	93.1	74				
4008174	11/01/2004	6.3	238.5	136.8	196.0	64.7		89.0	63.5	65.5	76	1.65	0.296	123.8	0.125
4008175	11/02/2004	6.5	234.3	126.0	196.2	61.4									
4008176	11/01/2004	6.4	239.0	124.7	201.0	61.3		93.5	64.2	66.0	77	1.56	0.295	116.7	0.103
4008179	11/02/2004	6.4	243.3	123.8	204.1	60.3		90.0	69.6	65.2	77				
4008182	11/02/2004	6.4	238.9	118.4	199.6	60.3		96.1	67.3	63.7	77				
4008185	11/02/2004	6.3	242.9	135.9	216.2	65.4		96.3	86.1	88.6	74				
4008188	11/02/2004	6.4	250.9	119.1	205.6	59.7		94.5	83.0	84.6	75				
4008190	11/03/2004	6.5	245.6	118.5	204.6	56.3		105.6	71.5	73.8	80	1.29	0.257	96.2	0.147
4008191	11/03/2004	6.6	232.0	116.8	221.3	56.2									
4008194	11/03/2004	6.4													
4008200	11/03/2004	6.7													
4008201	11/03/2004	6.5	257.6	114.7	232.8	53.0		118.0	68.9	75.6	80	1.32	0.256	98.6	0.103
4008203	11/03/2004	6.5													
4008204	11/03/2004	6.3	245.1	113.9	232.5	51.2		102.5	76.3	79.1	76				
4008207	11/03/2004	6.4	242.0	115.3	220.9	54.3		107.8	68.9	80.2	76				

07-Dec-2004

Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. AL LLC
QA/QC Laboratory
Evergreen, Alabama
Nonwoven Test
Rolls
Lot Summary

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Grab Tensile/Elongation
ASTM D4632

Roll No.	Test Date	Weight ASTM D5261 (oz/yd ²)	M.D.		C.D.		M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap Tear ASTM D4533 MD CD (lbs)		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft ²)	A.O.S. ASTM D4751 (mm)
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)						Permit. (sec-1)	Perm.(Kv) (cm/sec)		
4008210	11/04/2004	6.7	243.9	119.4	223.9	52.5		101.3	79.7	79.1	78				
4008213	11/04/2004	6.4	280.0	119.3	230.4	57.9		110.4	83.2	70.5	78	1.49	0.292	111.5	0.099
4008216	11/04/2004	6.3	280.0	119.3	230.4	57.9		114.6	84.9	77.8	75				
4008218	11/04/2004	6.5	236.7	125.4	209.1	60.3		99.8	88.2	73.4	79	1.37	0.250	102.2	0.136
4008220	11/04/2004	6.4	259.4	130.9	223.3	61.6									
4008228	11/04/2004	6.5													
4008230	11/04/2004	6.3	277.7	126.3	230.3	57.8		105.1	85.9	81.3	75	1.19	0.235	88.8	0.129
4008231	11/04/2004	6.4													
4008233	11/04/2004	6.6	281.7	124.3	226.3	59.6		107.7	88.3	83.5	80				
4008236	11/04/2004	6.6	248.0	131.3	231.9	64.0		104.7	79.5	75.2	79				
4008239	11/05/2004	6.6	268.0	123.8	229.3	56.7		112.9	90.5	75.8	81				
4008242	11/05/2004	6.5	266.1	124.3	220.4	59.3		104.6	88.2	95.0	79				
4008244	11/05/2004	6.4	274.7	125.0	213.5	59.3									
4008245	11/05/2004	6.6	260.5	118.7	219.2	61.8		102.9	78.3	70.7	83	1.53	0.311	114.5	0.142
4008246	11/05/2004	6.6													
4008247	11/05/2004	6.4	252.0	122.7	196.1	58.3									
4008248	11/05/2004	6.2	256.4	128.2	218.5	62.8		107.3	66.9	68.7	78	1.46	0.297	109.0	0.152
4008249	11/05/2004	6.7													
4008251	11/05/2004	6.6	264.6	123.7	220.5	57.2		97.3	78.7	79.5	82				
4008254	11/05/2004	6.4	263.3	123.6	224.3	60.1		100.1	73.9	78.7	81				
4008257	11/06/2004	6.4	283.3	128.9	232.4	63.7		102.9	86.6	79.5	81				
4008260	11/06/2004	6.4	283.4	135.3	237.2	62.8		101.6	112.5	100.2	81				
4008263	11/06/2004	6.5	273.1	139.8	210.1	63.0		98.3	113.3	105.9	81				
4008266	11/06/2004	6.2	260.3	149.4	219.9	71.1		108.9	110.4	100.3	77	1.53	0.288	114.4	0.141
4008269	11/06/2004	6.4	232.9	144.0	206.3	66.7		94.8	82.4	79.8	81	1.50	0.294	112.0	0.151
4008270	11/06/2004	6.4	239.2	146.7	235.4	63.8									
4008271	11/06/2004	6.6	248.5	130.3	204.8	59.4		97.3	86.5	77.0	82	1.40	0.282	104.8	0.116
4008274	11/06/2004	6.4	248.0	123.5	205.0	59.3		97.9	83.7	75.2	80				
4008277	11/07/2004	6.6	260.5	128.8	219.6	63.0		99.9	88.2	73.2	82				
4008280	11/07/2004	6.3	255.8	125.4	218.8	61.0		91.8	111.6	108.8	73				
4008283	11/07/2004	6.2	257.8	127.4	206.3	63.9		92.6	120.3	101.1	76				
4008286	11/07/2004	6.3	258.4	139.7	213.5	63.8		97.6	100.1	88.2	75				
4008288	11/07/2004	6.5	254.3	127.4	211.1	60.9		98.6	90.8	70.8	82	1.63	0.308	121.9	0.128
4008289	11/07/2004	6.3	255.2	121.3	212.6	59.2									

4008290

07-Dec-2004

Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. AL LLC
QA/QC Laboratory
Evergreen, Alabama
Nonwoven Test
Rolls
Lot Summary

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Grab Tensile/Elongation
ASTM D4632

Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	M.D.		C.D.		M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533 MD CD		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491 Permit. Perm.(Kv) (sec-1) (cm/sec)		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)									
4008291	11/07/2004	6.4	245.3	111.5	212.1	59.6		99.3	87.8	75.3	80				
4008292	11/08/2004	6.4	254.7	121.9	230.6	63.2									
4008293	11/08/2004	6.3	233.2	118.5	202.7	54.4		102.4	80.8	74.3	77	1.59	0.308	119.2	0.128
4008295	11/08/2004	6.1	250.0	123.8	215.5	56.9									
Average =		6.5	250.4	126.0	213.3	60.3		100.8	81.3	78.3	78.3	1.48	0.284	110.5	0.123
Standard Deviation =		.2	16.3	8.3	11.9	3.9		6.1	13.4	11.0	2.5	.15	0.028	11.0	0.018



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SECTION FOUR

GEOCOMPOSITE MQC

Tenax Corporation

Traceability, Peel and Transmissivity report

PRODUCT : Tendrain 770-2
 JOB: Southeast Co. LF, FL
 Batch 4

COMPOSITE #	NET #	Top TEXTILE #	Bottom TEXTILE #	Roll length (ft)	Top Geotextile ASTM F904 Peel Adhesion	Bottom Geotextile ASTM F904 Peel Adhesion	ASTM F904 Peel Adhesion	ASTM D 4716 Transmissivity* (m2/sec)	ASTM D 4716 Transmissivity* (m2/sec)	Gradient
					lbs/in (avg. peaks)	lbs/in (avg. peaks)	lbs/in (req.)	Value	Required	
4504124	4300574	4008290	4008142	200	2.50	1.10	1.0	5.52 x 10 ⁻³	3.7 x 10 ⁻³	0.02
4504125	4300574	4008290	4008130	215						
4504126	4300575	4008287	4008130	200						
4504127	4300575	4008287	4008130	200						
4504128	4300575	4008287	4008130	200						
4504129	4300575	4008287	4008130	200						
4504130	4300575	4008287	4008130	200						
4504131	4300575	4008287	4008130	200						
4504132	4300575	4008287	4008130	200						
4504133	4300575	4008287	4008130	300						
4504134	4300576	4008140	4008143	200						
4504135	4300576	4008140	4008143	200						
4504136	4300576	4008140	4008143	200						
4504137	4300576	4008140	4008143	200						
4504138	4300576	4008140	4008143	200						
4504139	4300576	4008140	4008143	200						
4504140	4300576	4008140	4008143	200						
4504141	4300576	4008140	4008143	250						
4504142	4500579	4008140	4008147	200						
4504143	4500579	4008146	4008147	200						
4504144	4500579	4008146	4008147	200						
4504145	4500579	4008146	4008147	200						
4504146	4500579	4008146	4008147	200						
4504147	4500579	4008146	4008147	200						
4504148	4500579	4008146	4008147	200						
4504149	4500579	4008146	4008147	245						
4504150	4300578	4008146	4008141	200						
4504151	4300578	4008133	4008141	200						
4504152	4300578	4008133	4008141	200						
4504153	4300578	4008133	4008141	200						
4504154	4300578	4008133	4008141	200						
4504155	4300578	4008133	4008141	200						
4504156	4300578	4008133	4008141	200						
4504157	4300578	4008133	4008141	195						
4504159	4300580	4008133	4008141	200						
4504160	4300580	4008133	4008167	170						
4504161	4300577	4008135	4008167	220						
4504162	4300577	4008135	4008167	200						

* a confining pressure of 10,000 psf with boundary conditions of steel plate/Ottawa sand/geocomposite/60 mil HDPE/steel plate and a seating time of 100 hour

Tested by:

Checked by:

Tenax Mfg AL LLC - Roll Listing

Date: 12-07-2004

Time: 09:47:39

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Roll Number	Product Code	Description	Line	Lot Number	Production Date	Shift	Stg Area	Status	On BL	Job Number	Slit From Roll	Original Roll	Linear Ft.	Sq Ft./Yds
001	4504124	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/30/2004	C	1002	H	N	41199			200.00	2,500.00 SQF
002	4504125	TDO770AA150215 TDO770-2 6oz/6oz 12.5x215		45032	11/30/2004	C	1002	H	N	41199			215.00	2,687.50 SQF
003	4504126	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/30/2004	C	1002	H	N	41199			200.00	2,500.00 SQF
004	4504127	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/30/2004	C	1002	H	N	41199			200.00	2,500.00 SQF
005	4504128	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/30/2004	C	1002	H	N	41199			200.00	2,500.00 SQF
006	4504129	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/30/2004	C	1002	H	N	41199			200.00	2,500.00 SQF
007	4504130	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	11/30/2004	C	1002	H	N	41199			200.00	2,500.00 SQF
008	4504131	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
009	4504132	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
010	4504133	TDO770AA150300 TDO770-2 6oz/6oz 12.5x300		45032	12/01/2004	A	1002	H	N	41199			300.00	3,750.00 SQF
011	4504134	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
012	4504135	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
013	4504136	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
014	4504137	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
015	4504138	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
016	4504139	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
017	4504140	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
018	4504141	TDO770AA150250 TDO770-2 6oz/6oz 12.5x250		45032	12/01/2004	A	1002	H	N	41199			250.00	3,125.00 SQF
019	4504142	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
020	4504143	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
021	4504144	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
022	4504145	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
023	4504146	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
024	4504147	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
025	4504148	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
026	4504149	TDO770AA150245 TDO770-2 6oz/6oz 12.5x245		45032	12/01/2004	A	1002	H	N	41199			245.00	3,062.50 SQF
027	4504150	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
028	4504151	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
029	4504152	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
030	4504153	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
031	4504154	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
032	4504155	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
033	4504156	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
034	4504157	TDO770AA150195 TDO770-2 6oz/6oz 12.5x195		45032	12/01/2004	A	1002	H	N	41199			195.00	2,437.50 SQF
035	4504159	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/01/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
036	4504160	TDO770AA150170 TDO770-2 6oz/6oz 12.5x170		45032	12/01/2004	A	1002	H	N	41199			170.00	2,125.00 SQF
037	4504161	TDO770AA150220 TDO770-2 6oz/6oz 12.5x220		45032	12/02/2004	A	1002	H	N	41199			220.00	2,750.00 SQF

Tenax Mfg AL LLC - Roll Listing

Date: 12-07-2004

Time: 09:47:39

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Roll Number	Product Code	Description	Line	Lot Number	Production Date	Shift	Stg Area	Status	On BL	Job Number	Slit From Roll	Original Roll	Linear Ft.	Sq Ft./Yds
038	4504162	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
Totals													7,795.00	97,437.50 SQF

BATCH 5



200 Miller Sellers Drive
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Fax: 251-578-6141

QUALITY CONTROL SUMMARY

Tenax Tendrain 770-2

Date: December 7, 2004

Batch 5

Project: Southeast Hillsboro LF, Corporate

Submitted to:

**Mr. Tom Heasley
Geo-Synthetics, Inc
W239 N428 Pewaukee Road
Waukesha, WI 53188
Ph: 262-524-7979
Fx: 262-524-7961**

**Performance in
Plastic TechnologySM**



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SECTION ONE

SPECIFICATION



Corporation

TENDRAIN 770-2

Double-Sided Geocomposite

Southeast Co. LF, FL

The drainage geocomposite is comprised of a tri-axial geonet structure consisting of thick supporting ribs with diagonally placed top and bottom ribs and with a thermally bonded, non-woven high UV resistant **Ultra Vera** geotextile on both sides. The product is capable of providing high Transmissivity in a soil environment under high normal loads and will have properties conforming to the values and test methods listed below.

Property	Test Methods	Units	Value	Qualifier	Test Frequency
Resin					
• Density	ASTM D 1505	g/cm ³	0.94	MAV	lot
• Melt Flow Index	ASTM D 1238	g/10min	1.0	MAX	lot
Geonet Core ³					
Structure			Tri-axial		
• Tensile Strength – MD	ASTM D 4595	lb/ft (kN/m)	1200 (17.5)	MAV	50,000 sf
• Creep Reduction Factor ¹	GRI-GC8	-	1.2		
• Thickness ²	ASTM D 5199	mil (mm)	300 (7.6)	MAV	50,000 sf
• Carbon Black	ASTM D 4218	%	2-3	range	50,000 sf
Geotextile ^{3,4}					
• U.V. Resistance (500 hrs)	ASTM G 154	%	95		Per formula
• Mass/Unit Area	ASTM D 5261	oz/yd ² (g/m ²)	6 (203)	MARV	100,000 sf
• Grab Tensile	ASTM D 4632	lbs (N)	157 (700)	MARV	100,000 sf
• Puncture Resistance	ASTM D 4833	lbs (N)	56 (250)	MARV	100,000 sf
• AOS	ASTM D 4751	US Std. Sieve (mm)	70 (0.212)	MaxARV	100,000 sf
• Permittivity	ASTM D 4491 Falling head	Sec ⁻¹	0.5	MARV	500,000 sf
Geocomposite					
• Peel Adhesion ⁵ – MD	F904 Modified	lb/in (g/in)	1.0 (454)	MAV	100,000 sf
• Labeling	Product code, geotextile type, roll dimensions, finished product lot and roll number.				
Hydraulic Behavior of Geocomposite					
• Transmissivity ⁶ - MD					
Gradient / Load			10,000 psf (480 kPa)		
0.02	ASTM D 4716 GRI - GC8 ⁷	m ² /sec	3.7*10 ⁻³	MAV	100,000 sf

Qualifiers: MARV = Minimum Average Roll Value (MARV)
MaxARV = Maximum average roll value

MAV = Minimum Average Value
AVE = Average value

MAX = Maximum Value

NOTES:

- Creep Reduction Factor is based on 10,000 hour test duration, extrapolated to 30 years and using a compressive load of 25,000 psf.
- Thickness measured by manufacturer per ASTM D5199 with a 2.22 in. diameter presser foot and 2.9 psi pressure.
- Geotextile and geonet properties listed are prior to lamination.
- Top filter geotextile meets ASSHTO Standard Specification M 288-00 strength requirements of class 2 and the highest filter requirements.
- Peel Adhesion is tested by the manufacturer per modified ASTM F904, with a 2-inch wide (5 longitudinal ribs) by 10-inch long strip. The geotextile bonded to either side of the geonet is pulled apart at a peeling rate of 12 in/min., for at least 4 inches of peeling distance. The reported value for each laminated side is the average of the "peak" values from 5 tested samples. The 5 samples are cut evenly distributed along the roll width with a 1-foot margin from both edges of the roll.
- Geocomposite transmissivity measured by manufacturer per ASTM D4716 with testing boundary conditions as follows: steel plate / Ottawa sand / geocomposite / 60 mil HDPE geomembrane / steel plate, and seating period of 100 hours according to GRI-GC8.



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9/20/2004



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SECTION TWO

GEONET REPORT AND MQC

Product Grade: TD7
Color: Black
Roll Dimensions: 13 x 1760 ft
Lot Number: 43045

Tenax Mfg. AL LLC
QA/QC Lab
Net Product Report

Reviewed By:
QA
Engineer

Geonet Roll	Date Tested	Thickness ASTM D5199 (mils)	Density ASTM D1505 (g/cc)	Carbon Black ASTM D4218 (%)	Resin MFI ASTM D1238-00 (g/10m)	Tensile MD ASTM D4595 (lb/ft)
4300557	11/22/04	369.6	0.943	2.38	0.040	1944.0
4300558	11/23/04	325.4			0.040	
4300559	11/23/04	325.2	0.943	2.41	0.040	1296.9
4300561	11/24/04	322.7	0.954	2.49	0.040	1410.3
4300563	11/24/04	325.3	0.944	2.39	0.040	1400.0
4300564	11/24/04	325.5			0.040	
4300565	11/25/04	326.1	0.952	2.27	0.040	1507.5
4300568	11/26/04	322.3	0.945	2.14	0.040	1536.0
4300570	11/27/04	314.5	0.957	2.26	0.040	1534.5
4300572	11/27/04	324.5	0.952	2.37	0.040	1451.1
4300574	11/28/04	324.2	0.953	2.43	0.040	1377.8
4300576	11/29/04	329.5	0.957	2.57	0.040	1411.4
4300578	11/29/04	311.7	0.945	2.4	0.040	1378.5
4300579	11/30/04	334.7	0.953	2.67	0.040	1534.5
4300581	12/01/04	334.3	0.952	2.27	0.040	1662.0
4300583	12/02/04	340.3	0.956	2.37	0.040	1537.5
Average=		328.49	0.950	2.38	0.040	1498.71
Std. Deviation=		12.99	0.005	0.14	0.000	158.78



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SECTION THREE

GEOTEXTILE MQC

07-Dec-04

Product Grade: UV506

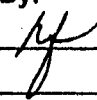
Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. AL
QA/QC Laboratory
Evergreen, Alabama
Nonwoven Test
Rolls
Lot Summary

Reviewed By:

QA: Engineer: 

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Grab Tensile/Elongation
ASTM D4632

Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	M.D.		C.D.		M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)			MD (lbs)	CD		Permit. (sec-1)	Perm.(Kv) (cm/sec)		
4008127	10/30/2004	6.9	273.0	130.3	214.0	65.6		98.5	85.4	74.0	83	1.73	0.343	129.8	0.105
4008128	10/30/2004	6.8	266.8	126.3	205.3	61.2									
4008129	10/30/2004	6.7	259.7	119.4	206.7	56.5		101.0	81.9	75.5	80	1.65	0.293	123.6	0.108
4008132	10/30/2004	6.5	247.0	132.6	218.3	61.4		102.4	67.1	69.2	78				
4008135	10/30/2004	6.6	237.1	125.8	208.4	61.5		103.4	65.0	67.7	80				
4008138	10/31/2004	6.6	238.1	126.6	203.1	60.8		100.6	66.8	66.6	79				
4008141	10/31/2004	6.6	219.8	133.6	197.8	58.0		96.2	78.4	68.8	80				
4008144	10/31/2004	6.5	228.8	118.3	195.1	57.5		104.4	70.4	66.9	77				
4008147	10/31/2004	6.4	235.0	117.4	202.8	57.9		94.8	71.7	74.3	77	1.48	0.301	111.2	0.105
4008150	10/31/2004	6.2	249.4	118.3	214.9	55.5		113.0	75.4	72.2	75				
4008153	10/31/2004	6.4	218.1	118.5	195.2	62.5		95.1	78.6	74.7	77				
4008155	10/31/2004	6.6	221.2	121.0	203.5	57.3		97.6	68.0	69.1	79	1.41	0.252	105.7	0.114
4008156	10/31/2004	6.6	235.5	118.9	196.6	56.9									
4008157	10/31/2004	6.3	234.0	120.3	188.4	56.8		96.8	70.7	69.1	77	1.27	0.238	95.1	0.107
4008160	11/01/2004	6.5	240.2	124.1	207.4	60.2		101.7	67.5	71.9	79				
4008163	11/01/2004	6.6	220.0	132.5	210.3	61.9		99.9	67.1	70.9	79				
4008166	11/01/2004	6.4	245.8	127.2	207.7	62.1		100.2	81.8	98.1	77				
4008169	11/01/2004	6.6	245.0	141.8	209.0	68.6		99.0	76.7	87.3	77				
4008172	11/01/2004	6.3	246.8	143.5	211.1	70.8		94.4	78.6	93.1	74				
4008174	11/01/2004	6.3	238.5	136.8	196.0	64.7		89.0	63.5	65.5	76	1.65	0.296	123.8	0.125
4008175	11/02/2004	6.5	234.3	126.0	196.2	61.4									
4008176	11/01/2004	6.4	239.0	124.7	201.0	61.3		93.5	64.2	66.0	77	1.56	0.295	116.7	0.103
4008179	11/02/2004	6.4	243.3	123.8	204.1	60.3		90.0	69.6	65.2	77				
4008182	11/02/2004	6.4	238.9	118.4	199.6	60.3		96.1	67.3	63.7	77				
4008185	11/02/2004	6.3	242.9	135.9	216.2	65.4		96.3	86.1	88.6	74				
4008188	11/02/2004	6.4	250.9	119.1	205.6	59.7		94.5	83.0	84.6	75				
4008190	11/03/2004	6.5	245.6	118.5	204.6	56.3		105.6	71.5	73.8	80	1.29	0.257	96.2	0.147
4008191	11/03/2004	6.6	232.0	116.8	221.3	58.2									
4008194	11/03/2004	6.4													
4008200	11/03/2004	6.7													
4008201	11/03/2004	6.5	257.6	114.7	232.8	53.0		118.0	68.9	75.6	80	1.32	0.256	98.6	0.103
4008203	11/03/2004	6.5													
4008204	11/03/2004	6.3	245.1	113.9	232.5	51.2		102.5	76.3	79.1	76				
4008207	11/03/2004	6.4	242.0	115.3	220.9	54.3		107.8	68.9	80.2	76				

07-Dec-2004

Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. AL LLC
QA/QC Laboratory
Evergreen, Alabama
Nonwoven Test
Rolls
Lot Summary

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Grab Tensile/Elongation
ASTM D4632

Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	M.D.		C.D.		M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap Tear ASTM D4533 MD CD (lbs)		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491 Permit. Perm.(Kv) (sec-1) (cm/sec)		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)									
4008210	11/04/2004	6.7	243.9	119.4	223.9	52.5		101.3	79.7	79.1	78				
4008213	11/04/2004	6.4	280.0	119.3	230.4	57.9		110.4	83.2	70.5	78	1.49	0.292	111.5	0.099
4008216	11/04/2004	6.3	280.0	119.3	230.4	57.9		114.6	84.9	77.8	75				
4008218	11/04/2004	6.5	236.7	125.4	209.1	60.3		99.8	88.2	73.4	79	1.37	0.250	102.2	0.136
4008220	11/04/2004	6.4	259.4	130.9	223.3	61.6									
4008228	11/04/2004	6.5													
4008230	11/04/2004	6.3	277.7	126.3	230.3	57.8		105.1	85.9	81.3	75	1.19	0.235	88.8	0.129
4008231	11/04/2004	6.4													
4008233	11/04/2004	6.6	281.7	124.3	226.3	59.6		107.7	88.3	83.5	80				
4008236	11/04/2004	6.6	248.0	131.3	231.9	64.0		104.7	79.5	75.2	79				
4008239	11/05/2004	6.6	268.0	123.8	229.3	56.7		112.9	90.5	75.8	81				
4008242	11/05/2004	6.5	266.1	124.3	220.4	59.3		104.6	88.2	95.0	79				
4008244	11/05/2004	6.4	274.7	125.0	213.5	59.3									
4008245	11/05/2004	6.6	260.5	118.7	219.2	61.8		102.9	78.3	70.7	83	1.53	0.311	114.5	0.142
4008246	11/05/2004	6.6													
4008247	11/05/2004	6.4	252.0	122.7	196.1	58.3									
4008248	11/05/2004	6.2	256.4	128.2	218.5	62.8		107.3	66.9	68.7	78	1.46	0.297	109.0	0.152
4008249	11/05/2004	6.7													
4008251	11/05/2004	6.6	264.6	123.7	220.5	57.2		97.3	78.7	79.5	82				
4008254	11/05/2004	6.4	263.3	123.6	224.3	60.1		100.1	73.9	78.7	81				
4008257	11/06/2004	6.4	283.3	128.9	232.4	63.7		102.9	86.6	79.5	81				
4008260	11/06/2004	6.4	283.4	135.3	237.2	62.8		101.6	112.5	100.2	81				
4008263	11/06/2004	6.5	273.1	139.8	210.1	63.0		98.3	113.3	105.9	81				
4008266	11/06/2004	6.2	260.3	149.4	219.9	71.1		108.9	110.4	100.3	77	1.53	0.288	114.4	0.141
4008269	11/06/2004	6.4	232.9	144.0	206.3	66.7		94.8	82.4	79.8	81	1.50	0.294	112.0	0.151
4008270	11/06/2004	6.4	239.2	146.7	235.4	63.8									
4008271	11/06/2004	6.6	248.5	130.3	204.8	59.4		97.3	86.5	77.0	82	1.40	0.282	104.8	0.116
4008274	11/06/2004	6.4	248.0	123.5	205.0	59.3		97.9	83.7	75.2	80				
4008277	11/07/2004	6.6	260.5	128.8	219.6	63.0		99.9	88.2	73.2	82				
4008280	11/07/2004	6.3	255.8	125.4	218.8	61.0		91.8	111.6	108.8	73				
4008283	11/07/2004	6.2	257.8	127.4	206.3	63.9		92.6	120.3	101.1	76				
4008286	11/07/2004	6.3	258.4	139.7	213.5	63.8		97.6	100.1	88.2	75				
4008288	11/07/2004	6.5	254.3	127.4	211.1	60.9		98.6	90.8	70.8	82	1.63	0.308	121.9	0.128
4008289	11/07/2004	6.3	255.2	121.3	212.6	59.2									

8290

07-Dec-2004

Tenax Mfg. AL LLC
QA/QC Laboratory
Evergreen, Alabama
Nonwoven Test
Rolls
Lot Summary

Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

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Grab Tensile/Elongation
ASTM D4632

Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	M.D.		C.D.		M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533 MD CD (lbs)		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491 Permit. Perm.(Kv) (sec-1) (cm/sec)		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)									
4008291	11/07/2004	6.4	245.3	111.5	212.1	59.6		99.3	87.8	75.3	80				
4008292	11/08/2004	6.4	254.7	121.9	230.6	63.2									
4008293	11/08/2004	6.3	233.2	118.5	202.7	54.4		102.4	80.8	74.3	77	1.59	0.308	119.2	0.128
4008295	11/08/2004	6.1	250.0	123.8	215.5	56.9									
Average =		6.5	250.4	126.0	213.3	60.3		100.8	81.3	78.3	78.3	1.48	0.284	110.5	0.123
Standard Deviation =		.2	16.3	8.3	11.9	3.9		6.1	13.4	11.0	2.5	.15	0.028	11.0	0.018



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SECTION FOUR

GEOCOMPOSITE MQC

Tenax Corporation

Traceability, Peel and Transmissivity report

PRODUCT : Tendrain 770-2
 JOB: Southeast Co. LF, FL
 Batch 5

COMPOSITE #	NET #	Top TEXTILE #	Bottom TEXTILE #	Roll length (ft)	Top Geotextile ASTM F904 Peel Adhesion lbs/in (avg. peaks)	Bottom Geotextile ASTM F904 Peel Adhesion lbs/in (avg. peaks)	ASTM F904 Peel Adhesion lbs/in (req.)	ASTM D 4716 Transmissivity* (m2/sec) Value	ASTM D 4716 Transmissivity* (m2/sec) Required	Gradient
4504163	4300574	4008290	4008142	200	2.50	1.10	1.0	8.72 x 10 ⁻³	3.7 x 10 ⁻³	0.02
4504164	4300574	4008290	4008130	210						
4504165	4300575	4008287	4008130	200						
4504166	4300575	4008287	4008130	200						
4504167	4300575	4008287	4008130	200						
4504168	4300575	4008287	4008130	200						
4504169	4300575	4008287	4008130	200						
4504170	4300575	4008287	4008130	200						
4504171	4300575	4008287	4008130	200						
4504172	4300575	4008287	4008130	250						
4504173	4300576	4008140	4008143	200						
4504174	4300576	4008140	4008143	200						
4504175	4300576	4008140	4008143	200						
4504176	4300576	4008140	4008143	200						
4504177	4300576	4008140	4008143	200						
4504178	4300576	4008140	4008143	200						
4504179	4300576	4008140	4008143	200						
4504180	4300576	4008140	4008143	265						
4504181	4500579	4008140	4008147	200						
4504182	4500579	4008146	4008147	200						
4504183	4500579	4008146	4008147	200						
4504184	4500579	4008146	4008147	200						
4504185	4500579	4008146	4008147	200						
4504186	4500579	4008146	4008147	200						
4504187	4500579	4008146	4008147	210						
4504188	4500579	4008146	4008147	230						
4504189	4300578	4008146	4008141	200						
4504190	4300578	4008133	4008141	200						
4504191	4300578	4008133	4008141	200						
4504192	4300578	4008133	4008141	200						
4504193	4300578	4008133	4008141	115						
4504196	4300578	4008133	4008141	200						
4504197	4300578	4008133	4008141	255						
4504198	4300578	4008133	4008141	200						
4504199	4300580	4008133	4008141	200						
4504200	4300580	4008133	4008167	200						
4504201	4300577	4008135	4008167	200						
4504202	4300577	4008135	4008167	200						

* a confining pressure of 10,000 psf with boundary conditions of steel plate/Ottawa sand/geocomposite/60 mil HDPE/steel plate and a seating time of 100 hour

Tested by

Melina Nihilson

Checked by

Rochelle Loney

Tenax Mfg AL LLC - Roll Listing

Date: 12-07-2004

Time: 09:49:08

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Roll Number	Product Code	Description	Line	Lot Number	Production Date	Shift	Stg Area	Status	On BL	Job Number	Slit From Roll	Original Roll	Linear Ft.	Sq Ft./Yds
001	4504163	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
002	4504164	TDO770AA150210 TDO770-2 6oz6/oz 12.5x210		45032	12/02/2004	A	1002	H	N	41199			210.00	2,625.00 SQF
003	4504165	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
004	4504166	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
005	4504167	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
006	4504168	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
007	4504169	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
008	4504170	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
009	4504171	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
010	4504172	TDO770AA150250 TDO770-2 6oz/6oz 12.5x250		45032	12/02/2004	A	1002	H	N	41199			250.00	3,125.00 SQF
011	4504173	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
012	4504174	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
013	4504175	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
014	4504176	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
015	4504177	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
016	4504178	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
017	4504179	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1003	H	N	41199			200.00	2,500.00 SQF
018	4504180	TDO770AA150265 TDO770-2 6oz/6oz 12.5x265		45032	12/02/2004	A	1003	H	N	41199			265.00	3,312.50 SQF
019	4504181	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1003	H	N	41199			200.00	2,500.00 SQF
020	4504182	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1003	H	N	41199			200.00	2,500.00 SQF
021	4504183	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1002	H	N	41199			200.00	2,500.00 SQF
022	4504184	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1003	H	N	41199			200.00	2,500.00 SQF
023	4504185	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1003	H	N	41199			200.00	2,500.00 SQF
024	4504186	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1003	H	N	41199			200.00	2,500.00 SQF
025	4504187	TDO770AA150210 TDO770-2 6oz6/oz 12.5x210		45032	12/02/2004	A	1003	H	N	41199			210.00	2,625.00 SQF
026	4504188	TDO770AA150230 TDO770-2 6oz/6oz 12.5x230		45032	12/02/2004	A	1003	H	N	41199			230.00	2,875.00 SQF
027	4504189	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1003	H	N	41199			200.00	2,500.00 SQF
028	4504190	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1003	H	N	41199			200.00	2,500.00 SQF
029	4504191	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1003	H	N	41199			200.00	2,500.00 SQF
030	4504192	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/02/2004	A	1003	H	N	41199			200.00	2,500.00 SQF
031	4504193	TDO770AA150115 TDO770-2 6oz/6oz 12.5x115		45032	12/03/2004	C	1003	H	N	41199			115.00	1,437.50 SQF
032	4504196	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/03/2004	C	1003	H	N	41199			200.00	2,500.00 SQF
033	4504197	TDO770AA150255 TDO770-2 6oz/6oz 12.5x255		45032	12/03/2004	C	1003	H	N	41199			255.00	3,187.50 SQF
034	4504198	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/03/2004	C	1003	H	N	41199			200.00	2,500.00 SQF
035	4504199	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/03/2004	C	1003	H	N	41199			200.00	2,500.00 SQF
036	4504200	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/03/2004	C	1003	H	N	41199			200.00	2,500.00 SQF
037	4504201	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/03/2004	C	1003	H	N	41199			200.00	2,500.00 SQF

Tenax Mfg AL LLC - Roll Listing

Date: 12-07-2004

Time: 09:49:08

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Roll Number	Product Code	Description	Line	Lot Number	Production Date	Shift	Stg Area	Status	On BL	Job Number	Slit From Roll	Original Roll	Linear Ft.	Sq Ft./Yds
038	4504202	TDO770AA150200		45032	12/03/2004	C	1003	H	N	41199			200.00	2,500.00 SQF
												Totals	7,735.00	96,687.50 SQF

BATCH 6



QUALITY CONTROL SUMMARY

Tenax Tendrain 770-2

Date: January 11, 2005

Batch 6

Project: Southeast Hillsboro LF, Corporate

Submitted to:

Mr. Tom Heasley

Geo-Synthetics, Inc

W239 N428 Pewaukee Road

Waukesha, WI 53188

Ph: 262-524-7979

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200 Miller Sellers Drive / Evergreen, Alabama 36401

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SECTION ONE

SPECIFICATION



Corporation

TENDRAIN 770-2

Double-Sided Geocomposite

Southeast Co. LF, FL

The drainage geocomposite is comprised of a tri-axial geonet structure consisting of thick supporting ribs with diagonally placed top and bottom ribs and with a thermally bonded, non-woven high UV resistant Ultra Vera geotextile on both sides. The product is capable of providing high Transmissivity in a soil environment under high normal loads and will have properties conforming to the values and test methods listed below.

Property	Test Methods	Units	Value	Qualifier	Test Frequency
Resin					
• Density	ASTM D 1505	g/cm ³	0.94	MAV	lot
• Melt Flow Index	ASTM D 1238	g/10min	1.0	MAX	lot
Geonet Core ¹					
Structure			Tri-axial		
• Tensile Strength – MD	ASTM D 4595	lb/ft (kN/m)	1200 (17.5)	MAV	50,000 sf
• Creep Reduction Factor ¹	GRI-GC8	-	1.2		
• Thickness ²	ASTM D 5199	mil (mm)	300 (7.6)	MAV	50,000 sf
• Carbon Black	ASTM D 4218	%	2-3	range	50,000 sf
Geotextile ^{3,4}					
• U.V. Resistance (500 hrs)	ASTM G 154	%	95		Per formula
• Mass/Unit Area	ASTM D 5261	oz/yd ² (g/m ²)	6 (203)	MARV	100,000 sf
• Grab Tensile	ASTM D 4632	lbs (N)	157 (700)	MARV	100,000 sf
• Puncture Resistance	ASTM D 4833	lbs (N)	56 (250)	MARV	100,000 sf
• AOS	ASTM D 4751	US Std. Sieve (mm)	70 (0.212)	MaxARV	100,000 sf
• Permittivity	ASTM D 4491 Falling head	Sec ⁻¹	0.5	MARV	500,000 sf
Geocomposite					
• Peel Adhesion ⁵ – MD	F904 Modified	lb/in (g/in)	1.0 (454)	MAV	100,000 sf
• Labeling	Product code, geotextile type, roll dimensions, finished product lot and roll number.				
Hydraulic Behavior of Geocomposite					
• Transmissivity ⁶ - MD			10,000 psf (480 kPa)		
Gradient / Load					
0.02	ASTM D 4716 GRI - GC8	m ² /sec	3.7*10 ⁻³	MAV	100,000 sf

Qualifiers: MARV = Minimum Average Roll Value (MARV)
MaxARV = Maximum average roll value

MAV = Minimum Average Value
AVE = Average value

MAX = Maximum Value

NOTES:

- Creep Reduction Factor is based on 10,000 hour test duration, extrapolated to 30 years and using a compressive load of 25,000 psf.
- Thickness measured by manufacturer per ASTM D5199 with a 2.22 in. diameter presser foot and 2.9 psi pressure.
- Geotextile and geonet properties listed are prior to lamination.
- Top filter geotextile meets ASSHTO Standard Specification M 288-00 strength requirements of class 2 and the highest filter requirements.
- Peel Adhesion is tested by the manufacturer per modified ASTM F904, with a 2-inch wide (5 longitudinal ribs) by 10-inch long strip. The geotextile bonded to either side of the geonet is pulled apart at a peeling rate of 12 in./min., for at least 4 inches of peeling distance. The reported value for each laminated side is the average of the "peak" values from 5 tested samples. The 5 samples are cut evenly distributed along the roll width with a 1-foot margin from both edges of the roll.
- Geocomposite transmissivity measured by manufacturer per ASTM D4716 with testing boundary conditions as follows: steel plate / Ottawa sand / geocomposite / 60 mil HDPE geomembrane / steel plate, and seating period of 100 hours according to GRI-GC8.



Engineered for Life

Sales/Technical Service
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www.tenaxus.com

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9/20/2004



200 Miller Sellers Drive
Evergreen, Alabama 36401

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Web Site: <http://www.tenaxus.com>

Fax: 251-578-6141

SECTION TWO

GEONET REPORT AND MQC

Product Grade: TD7
Color: Black
Roll Dimensions: 13 x 1760 ft
Lot Number: 43046

Tenax Mfg. AL LLC
QA/QC Lab
Net Product Report

Reviewed By:
QA if
Engineer

Geonet Roll	Date Tested	Thickness ASTM D5199 (mils)	Density ASTM D1505 (g/cc)	Carbon Black ASTM D4218 (%)	Resin MFI ASTM D1238-00 (g/10m)	Tensile MD ASTM D4595 (lb/ft)
4300584	12/02/04	343.3	0.945	2.00	0.350	1437.60
4300586	12/03/04	341.3	0.943	2.00	0.350	1486.50
4300589	12/06/04	344.7	0.952	2.34	0.350	1468.00
4300591	12/06/04	324.8	0.943	2.17	0.350	1499.55
4300593	12/07/04	322.6	0.953	2.38	0.350	1228.05
4300595	12/07/04	321.3	0.946	2.17	0.350	1239.00
4300597	12/08/04	324.5	0.947	2.33	0.350	1219.65
4300598	12/08/04	330.3		2.28	0.350	
4300599	12/08/04	324.4	0.945	2.18	0.350	1280.70
Average=		330.80	0.947	2.24	0.350	1357.38
Std. Deviation=		9.58	0.004	0.13	0.000	126.01



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SECTION THREE

GEOTEXTILE MQC

07-Dec-04

Product Grade: UV506

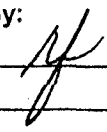
Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. AL LLC
QA/QC Laboratory
Evergreen, Alabama
Nonwoven Test
Rolls
Lot Summary

Reviewed By:

QA: 

Engineer: _____

Page 1 of 3

Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	Grab Tensile/Elongation ASTM D4632		M.D. Tens. (lbs)	M.D. Elong (%)	C.D. Tens. (lbs)	C.D. Elong (%)	M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533 MD (lbs) CD (lbs)		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
														Permit. (sec-1)	Perm.(Kv) (cm/sec)		
4008127	10/30/2004	6.9	273.0	130.3	214.0	65.6				98.5	85.4	74.0	83	1.73	0.343	129.8	0.105
4008128	10/30/2004	6.8	266.8	126.3	205.3	61.2											
4008129	10/30/2004	6.7	259.7	119.4	208.7	56.5				101.0	81.9	75.5	80	1.65	0.293	123.6	0.108
4008132	10/30/2004	6.5	247.0	132.6	218.3	61.4				102.4	67.1	69.2	78				
4008135	10/30/2004	6.6	237.1	125.8	208.4	61.5				103.4	65.0	67.7	80				
4008138	10/31/2004	6.6	238.1	126.6	203.1	60.8				100.6	66.8	66.6	79				
4008141	10/31/2004	6.6	219.8	133.6	197.8	58.0				96.2	78.4	68.8	80				
4008144	10/31/2004	6.5	228.8	118.3	195.1	57.5				104.4	70.4	66.9	77				
4008147	10/31/2004	6.4	235.0	117.4	202.8	57.9				94.8	71.7	74.3	77	1.48	0.301	111.2	0.105
4008150	10/31/2004	6.2	249.4	118.3	214.9	55.5				113.0	75.4	72.2	75				
4008153	10/31/2004	6.4	218.1	118.5	195.2	62.5				95.1	78.6	74.7	77				
4008155	10/31/2004	6.6	221.2	121.0	203.5	57.3				97.6	68.0	69.1	79	1.41	0.252	105.7	0.114
4008156	10/31/2004	6.6	235.5	118.9	196.6	56.9											
4008157	10/31/2004	6.3	234.0	120.3	188.4	56.8				96.8	70.7	69.1	77	1.27	0.238	95.1	0.107
4008160	11/01/2004	6.5	240.2	124.1	207.4	60.2				101.7	67.5	71.9	79				
4008163	11/01/2004	6.6	220.0	132.5	210.3	61.9				99.9	67.1	70.9	79				
4008166	11/01/2004	6.4	245.8	127.2	207.7	62.1				100.2	81.8	98.1	77				
4008169	11/01/2004	6.6	245.0	141.8	209.0	68.6				99.0	76.7	87.3	77				
4008172	11/01/2004	6.3	246.8	143.5	211.1	70.8				94.4	78.6	93.1	74				
4008174	11/01/2004	6.3	238.5	136.8	196.0	64.7				89.0	63.5	65.5	76	1.65	0.296	123.8	0.125
4008175	11/02/2004	6.5	234.3	126.0	196.2	61.4											
4008176	11/01/2004	6.4	239.0	124.7	201.0	61.3				93.5	64.2	66.0	77	1.56	0.295	116.7	0.103
4008179	11/02/2004	6.4	243.3	123.8	204.1	60.3				90.0	69.6	65.2	77				
4008182	11/02/2004	6.4	238.9	118.4	199.6	60.3				96.1	67.3	63.7	77				
4008185	11/02/2004	6.3	242.9	135.9	216.2	65.4				96.3	86.1	88.6	74				
4008188	11/02/2004	6.4	250.9	119.1	205.6	59.7				94.5	83.0	84.6	75				
4008190	11/03/2004	6.5	245.6	118.5	204.6	56.3				105.6	71.5	73.8	80	1.29	0.257	96.2	0.147
4008191	11/03/2004	6.6	232.0	116.8	221.3	58.2											
4008194	11/03/2004	6.4															
4008200	11/03/2004	6.7															
4008201	11/03/2004	6.5	257.6	114.7	232.8	53.0				118.0	68.9	75.6	80	1.32	0.256	98.6	0.103
4008203	11/03/2004	6.5															
4008204	11/03/2004	6.3	245.1	113.9	232.5	51.2				102.5	76.3	79.1	76				
4008207	11/03/2004	6.4	242.0	115.3	220.9	54.3				107.8	68.9	80.2	76				

Grab Tensile/Elongation ASTM D4632															
Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	M.D.		C.D.		M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)			MD (lbs)	CD		Permit. (sec-1)	Perm.(Kv) (cm/sec)		
4008210	11/04/2004	6.7	243.9	119.4	223.9	52.5		101.3	79.7	79.1	78				
4008213	11/04/2004	6.4	280.0	119.3	230.4	57.9		110.4	83.2	70.5	78	1.49	0.292	111.5	0.099
4008216	11/04/2004	6.3	280.0	119.3	230.4	57.9		114.6	84.9	77.8	75				
4008218	11/04/2004	6.5	236.7	125.4	209.1	60.3		99.8	88.2	73.4	79	1.37	0.250	102.2	0.136
4008220	11/04/2004	6.4	259.4	130.9	223.3	61.6									
4008228	11/04/2004	6.5													
4008230	11/04/2004	6.3	277.7	126.3	230.3	57.8		105.1	85.9	81.3	75	1.19	0.235	88.8	0.129
4008231	11/04/2004	6.4													
4008233	11/04/2004	6.6	281.7	124.3	226.3	59.6		107.7	88.3	83.5	80				
4008236	11/04/2004	6.6	248.0	131.3	231.9	64.0		104.7	79.5	75.2	79				
4008239	11/05/2004	6.6	268.0	123.8	229.3	56.7		112.9	90.5	75.8	81				
4008242	11/05/2004	6.5	266.1	124.3	220.4	59.3		104.6	88.2	95.0	79				
4008244	11/05/2004	6.4	274.7	125.0	213.5	59.3									
4008245	11/05/2004	6.6	260.5	118.7	219.2	61.8		102.9	78.3	70.7	83	1.53	0.311	114.5	0.142
4008246	11/05/2004	6.6													
4008247	11/05/2004	6.4	252.0	122.7	196.1	58.3									
4008248	11/05/2004	6.2	256.4	128.2	218.5	62.8		107.3	66.9	68.7	78	1.46	0.297	109.0	0.152
4008249	11/05/2004	6.7													
4008251	11/05/2004	6.6	264.6	123.7	220.5	57.2		97.3	78.7	79.5	82				
4008254	11/05/2004	6.4	263.3	123.6	224.3	60.1		100.1	73.9	78.7	81				
4008257	11/06/2004	6.4	283.3	128.9	232.4	63.7		102.9	86.6	79.5	81				
4008260	11/06/2004	6.4	283.4	135.3	237.2	62.8		101.6	112.5	100.2	81				
4008263	11/06/2004	6.5	273.1	139.8	210.1	63.0		98.3	113.3	105.9	81				
4008266	11/06/2004	6.2	260.3	149.4	219.9	71.1		108.9	110.4	100.3	77	1.53	0.288	114.4	0.141
4008269	11/06/2004	6.4	232.9	144.0	206.3	66.7		94.8	82.4	79.8	81	1.50	0.294	112.0	0.151
4008270	11/06/2004	6.4	239.2	146.7	235.4	63.8									
4008271	11/06/2004	6.6	248.5	130.3	204.8	59.4		97.3	86.5	77.0	82	1.40	0.282	104.8	0.116
4008274	11/06/2004	6.4	248.0	123.5	205.0	59.3		97.9	83.7	75.2	80				
4008277	11/07/2004	6.6	260.5	128.8	219.6	63.0		99.9	88.2	73.2	82				
4008280	11/07/2004	6.3	255.8	125.4	218.8	61.0		91.8	111.6	108.8	73				
4008283	11/07/2004	6.2	257.8	127.4	206.3	63.9		92.6	120.3	101.1	76				
4008286	11/07/2004	6.3	258.4	139.7	213.5	63.8		97.6	100.1	88.2	75				
4008288	11/07/2004	6.5	254.3	127.4	211.1	60.9		98.6	90.8	70.8	82	1.63	0.308	121.9	0.128
4008289	11/07/2004	6.3	255.2	121.3	212.6	59.2									

07-Dec-04

Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. AL LLC
QA/QC Laboratory
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Nonwoven Test
Rolls
Lot Summary

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Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	Grab Tensile/Elongation ASTM D4832				M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			M.D.		C.D.				MD	CD		Permit. (sec-1)	Perm.(Kv) (cm/sec)		
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)									
4008291	11/07/2004	6.4	245.3	111.5	212.1	59.6		99.3	87.8	75.3	80				
4008292	11/08/2004	6.4	254.7	121.9	230.6	63.2									
4008293	11/08/2004	6.3	233.2	118.5	202.7	54.4		102.4	80.8	74.3	77	1.59	0.308	119.2	0.128
4008295	11/08/2004	6.1	250.0	123.8	215.5	56.9									
Average =		6.5	250.4	126.0	213.3	60.3		100.8	81.3	78.3	78.3	1.48	0.284	110.5	0.123
Standard Deviation =		.2	16.3	8.3	11.9	3.9		6.1	13.4	11.0	2.5	.15	0.028	11.0	0.018



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SECTION FOUR

GEOCOMPOSITE MQC

Tenax Corporation

Traceability, Peel and Transmissivity report

PRODUCT: Tendrain 770-2
 JOB: Southeast Co. LF, FL
 Batch: 6

COMPOSITE #	NET #	Top TEXTILE #	Bottom TEXTILE #	Roll length (ft)	Top Geotextile ASTM F904 Peel Adhesion lbs/in (avg. peaks)	Bottom Geotextile ASTM F904 Peel Adhesion lbs/in (avg. peaks)	ASTM F904 Peel Adhesion lbs/in (req.)	ASTM D 4716 Transmissivity* (m2/sec) Value	ASTM D 4716 Transmissivity* (m2/sec) Required	Gradient
4504203	4300587	4008152	4008132	215	5.94	4.13	1.0	8.87 x 10 ⁻³	3.7 x 10 ⁻³	0.02
4504204	4300585	4008152	4008132	200						
4504205	4300585	4008213	4008132	200						
4504206	4300585	4008213	4008132	200						
4504207	4300585	4008213	4008132	200						
4504208	4300585	4008213	4008132	200						
4504209	4300585	4008213	4008132	200						
4504210	4300585	4008213	4008132	200						
4504211	4300585	4008213	4008132	260						
4504212	4300586	4008213	4008210	240						
4504213	4300576	4008131	4008210	195						
4504214	4300588	4008131	4008210	200						
4504215	4300588	4008131	4008210	200						
4504216	4300588	4008131	4008210	200						
4504217	4300588	4008131	4008210	200						
4504218	4300588	4008131	4008210	200						
4504219	4300588	4008131	4008210	215						
4504220	4300589	4008131	4008231	210						
4504222	4500589	4008211	4008231	245						
4504223	4500590	4008211	4008231	200						
4504224	4500590	4008211	4008231	200						
4504225	4500590	4008211	4008231	200						
4504226	4500590	4008211	4008231	200						
4504227	4500590	4008211	4008231	200						
4504228	4500590	4008211	4008231	200						
4504229	4500590	4008211	4008209	200						
4504230	4500590	4008211	4008209	250						
4504231	4300591	4008208	4008209	200						
4504232	4300591	4008208	4008209	200						
4504233	4300591	4008208	4008209	200						
4504234	4300591	4008208	4008209	200						
4504235	4300591	4008208	4008209	200						
4504236	4300591	4008208	4008209	255						
4504237	4300592	4008208	4008234	200						
4504238	4300592	4008207	4008234	200						
4504239	4300592	4008207	4008234	200						
4504240	4300592	4008207	4008234	200						
4504241	4300592	4008207	4008234	200						

* a confining pressure of 10,000 psf with boundary conditions of steel plate/Ottawa sand/geocomposite/60 mil HDPE/steel plate and a seating time of 100 hour

Tested by:

Checked by:

Tenax Mfg AL LLC - Roll Listing

Date: 01-11-2005

Time: 14:35:00

Page 1 of 2

Roll Number	Product Code	Description	Line	Lot Number	Production Date	Shift	Stg Area	Status	On BL	Job Number	Slit From Roll	Original Roll	Linear Ft.	Sq Ft./Yds
001	4504203	TDO770AA150215 TDO770-2 8oz/6oz 12.5x215		45032	12/03/2004	C	0703	H	N	41199			215.00	2,687.50 SQF
002	4504204	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/03/2004	C	0310	H	N	41199			200.00	2,500.00 SQF
003	4504205	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/03/2004	C	0310	H	N	41199			200.00	2,500.00 SQF
004	4504206	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/03/2004	C	0310	H	N	41199			200.00	2,500.00 SQF
005	4504207	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/03/2004	C	0310	H	N	41199			200.00	2,500.00 SQF
006	4504208	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/03/2004	C	0310	H	N	41199			200.00	2,500.00 SQF
007	4504209	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/03/2004	C	0310	H	N	41199			200.00	2,500.00 SQF
008	4504210	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/03/2004	C	0310	H	N	41199			200.00	2,500.00 SQF
009	4504211	TDO770AA150260 TDO770-2 6oz/6oz 12.5x260		45032	12/03/2004	C	0310	H	N	41199			260.00	3,250.00 SQF
010	4504212	TDO770AA150240 TDO770-2 6oz/6oz 12.5x240		45032	12/03/2004	C	0310	H	N	41199			240.00	3,000.00 SQF
011	4504213	TDO770AA150195 TDO770-2 6oz/6oz 12.5x195		45032	12/03/2004	C	0310	H	N	41199			195.00	2,437.50 SQF
012	4504214	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/03/2004	C	0310	H	N	41199			200.00	2,500.00 SQF
013	4504215	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/03/2004	C	0310	H	N	41199			200.00	2,500.00 SQF
014	4504216	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/03/2004	C	0310	H	N	41199			200.00	2,500.00 SQF
015	4504217	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/03/2004	C	0310	H	N	41199			200.00	2,500.00 SQF
016	4504218	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/03/2004	C	0310	H	N	41199			200.00	2,500.00 SQF
017	4504219	TDO770AA150215 TDO770-2 8oz/6oz 12.5x215		45032	12/07/2004	B	0703	H	N	41199			215.00	2,687.50 SQF
018	4504220	TDO770AA150210 TDO770-2 6oz/6oz 12.5x210		45032	12/07/2004	B	0310	H	N	41199			210.00	2,625.00 SQF
019	4504222	TDO770AA150245 TDO770-2 6oz/6oz 12.5x245		45032	12/07/2004	B	0703	H	N	41199			245.00	3,062.50 SQF
020	4504223	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/07/2004	B	0310	H	N	41199			200.00	2,500.00 SQF
021	4504224	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/07/2004	B	0703	H	N	41199			200.00	2,500.00 SQF
022	4504225	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/07/2004	B	0703	H	N	41199			200.00	2,500.00 SQF
023	4504226	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/07/2004	B	0703	H	N	41199			200.00	2,500.00 SQF
024	4504227	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/07/2004	B	0310	H	N	41199			200.00	2,500.00 SQF
025	4504228	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/07/2004	B	0310	H	N	41199			200.00	2,500.00 SQF
026	4504229	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/07/2004	B	0703	H	N	41199			200.00	2,500.00 SQF
027	4504230	TDO770AA150250 TDO770-2 8oz/6oz 12.5x250		45032	12/07/2004	B	0605	H	N	41199			250.00	3,125.00 SQF
028	4504231	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/07/2004	B	0605	H	N	41199			200.00	2,500.00 SQF
029	4504232	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/07/2004	B	0605	H	N	41199			200.00	2,500.00 SQF
030	4504233	TDO770AA150200 TDO770-2 8oz/6oz 12.5x200		45032	12/07/2004	B	0605	H	N	41199			200.00	2,500.00 SQF
031	4504234	TDO770AA150200 TDO770-2 8oz/6oz 12.5x200		45032	12/07/2004	B	0605	H	N	41199			200.00	2,500.00 SQF
032	4504235	TDO770AA150200 TDO770-2 8oz/6oz 12.5x200		45032	12/07/2004	B	0605	H	N	41199			200.00	2,500.00 SQF
033	4504236	TDO770AA150255 TDO770-2 8oz/6oz 12.5x255		45032	12/07/2004	B	0605	H	N	41199			255.00	3,187.50 SQF
034	4504237	TDO770AA150200 TDO770-2 8oz/6oz 12.5x200		45032	12/08/2004	B	0605	H	N	41199			200.00	2,500.00 SQF
035	4504238	TDO770AA150200 TDO770-2 8oz/6oz 12.5x200		45032	12/08/2004	B	0605	H	N	41199			200.00	2,500.00 SQF
036	4504239	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	B	0605	H	N	41199			200.00	2,500.00 SQF
037	4504240	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	B	0605	H	N	41199			200.00	2,500.00 SQF

Tenax Mfg AL LLC - Roll Listing

Date: 01-11-2005

Time: 14:35:00

Page 2 of 2

	Roll Number	Product Code	Description	Line	Lot Number	Production Date	Shift	Stg Area	Status	On BL	Job Number	Slit From Roll	Original Roll	Linear Ft.	Sq Ft./Yds
038	4504241	TDO770AA150195	TDO770-2 6oz/6oz 12.5x195		45032	12/08/2004	B	0605	H	N	41199			195.00	2,437.50 SQF
													Totals	7,880.00	98,500.00 SQF

BATCH 7



QUALITY CONTROL SUMMARY

Tenax Tendrain 770-2

Date: January 11, 2005

Batch 7

Project: Southeast Hillsboro LF, Corporate

Submitted to:

Mr. Tom Heasley

Geo-Synthetics, Inc

W239 N428 Pewaukee Road

Waukesha, WI 53188

Ph: 262-524-7979

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200 Miller Sellers Drive / Evergreen, Alabama 36401

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SECTION ONE

SPECIFICATION



Corporation

TENDRAIN 770-2

Double-Sided Geocomposite

Southeast Co. LF, FL

The drainage geocomposite is comprised of a tri-axial geonet structure consisting of thick supporting ribs with diagonally placed top and bottom ribs and with a thermally bonded, non-woven high UV resistant Ultra Vera geotextile on both sides. The product is capable of providing high Transmissivity in a soil environment under high normal loads and will have properties conforming to the values and test methods listed below.

Property	Test Methods	Units	Value	Qualifier	Test Frequency
Resin					
• Density	ASTM D 1505	g/cm ³	0.94	MAV	lot
• Melt Flow Index	ASTM D 1238	g/10min	1.0	MAX	lot
Geonet Core ¹					
Structure			Tri-axial		
• Tensile Strength – MD	ASTM D 4595	lb/ft (kN/m)	1200 (17.5)	MAV	50,000 sf
• Creep Reduction Factor ¹	GRI-GC8	-	1.2		
• Thickness ²	ASTM D 5199	mil (mm)	300 (7.6)	MAV	50,000 sf
• Carbon Black	ASTM D 4218	%	2-3	range	50,000 sf
Geotextile ^{3,4}					
• U.V. Resistance (500 hrs)	ASTM G 154	%	95		Per formula
• Mass/Unit Area	ASTM D 5261	oz/yd ² (g/m ²)	6 (203)	MARV	100,000 sf
• Grab Tensile	ASTM D 4632	lbs (N)	157 (700)	MARV	100,000 sf
• Puncture Resistance	ASTM D 4833	lbs (N)	56 (250)	MARV	100,000 sf
• AOS	ASTM D 4751	US Std. Sieve (mm)	70 (0.212)	MaxARV	100,000 sf
• Permittivity	ASTM D 4491 Falling head	Sec ⁻¹	0.5	MARV	500,000 sf
Geocomposite					
• Peel Adhesion ⁵ – MD	F904 Modified	lb/in (g/in)	1.0 (454)	MAV	100,000 sf
Labeling	Product code, geotextile type, roll dimensions, finished product lot and roll number.				
Hydraulic Behavior of Geocomposite					
• Transmissivity ⁶ – MD			10,000 psf (480 kPa)		
Gradient / Load					
0.02	ASTM D 4716 GRI - GC8	m ² /sec	3.7*10 ⁻³	MAV	100,000 sf

Qualifiers: MARV = Minimum Average Roll Value (MARV)
MaxARV = Maximum average roll value

MAV = Minimum Average Value
AVE = Average value

MAX = Maximum Value

NOTES:

- Creep Reduction Factor is based on 10,000 hour test duration, extrapolated to 30 years and using a compressive load of 25,000 psf.
- Thickness measured by manufacturer per ASTM D5199 with a 2.22 in. diameter presser foot and 2.9 psi pressure.
- Geotextile and geonet properties listed are prior to lamination.
- Top filter geotextile meets ASSHTO Standard Specification M 288-00 strength requirements of class 2 and the highest filter requirements.
- Peel Adhesion is tested by the manufacturer per modified ASTM F904, with a 2-inch wide (5 longitudinal ribs) by 10-inch long strip. The geotextile bonded to either side of the geonet is pulled apart at a peeling rate of 12 in/min., for at least 4 inches of peeling distance. The reported value for each laminated side is the average of the "peak" values from 5 tested samples. The 5 samples are cut evenly distributed along the roll width with a 1-foot margin from both edges of the roll.
- Geocomposite transmissivity measured by manufacturer per ASTM D4716 with testing boundary conditions as follows: steel plate / Ottawa sand / geocomposite / 60 mil HDPE geomembrane / steel plate, and seating period of 100 hours according to GRI-GC8.



Engineered for Life

Sales/Technical Service
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9/20/2004



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SECTION TWO

GEONET REPORT AND MQC

Product Grade: TD7
Color: Black
Roll Dimensions: 13 x 1760 ft
Lot Number: 43046

Tenax Mfg. AL LLC
QA/QC Lab
Net Product Report

Reviewed By: QA
Engineer

Geonet Roll	Date Tested	Thickness ASTM D5199 (mils)	Density ASTM D1505 (g/cc)	Carbon Black ASTM D4218 (%)	Resin MFI ASTM D1238-00 (g/10m)	Tensile MD ASTM D4595 (lb/ft)
4300584	12/02/04	343.3	0.945	2.00	0.350	1437.60
4300586	12/03/04	341.3	0.943	2.00	0.350	1486.50
4300589	12/06/04	344.7	0.952	2.34	0.350	1468.00
4300591	12/06/04	324.8	0.943	2.17	0.350	1499.55
4300593	12/07/04	322.6	0.953	2.38	0.350	1228.05
4300595	12/07/04	321.3	0.946	2.17	0.350	1239.00
4300597	12/08/04	324.5	0.947	2.33	0.350	1219.65
4300598	12/08/04	330.3		2.28	0.350	
4300599	12/08/04	324.4	0.945	2.18	0.350	1280.70
Average=		330.80	0.947	2.24	0.350	1357.38
Std. Deviation=		9.58	0.004	0.13	0.000	126.01

Product Grade: TD7
Color: Black
Roll Dimensions: 13 x 1760 ft
Lot Number: 43047

Tenax Mfg. AL LLC
QA/QC Lab
Net Product Report

Reviewed By: _____
QA
Engineer

Geonet Roll	Date Tested	Thickness ASTM D5199 (mils)	Density ASTM D1505 (g/cc)	Carbon Black ASTM D4218 (%)	Resin MFI ASTM D1238-00 (g/10m)	Tensile MD ASTM D4595 (lb/ft)
4300600	12/09/04	330.3	0.946	2.55	0.350	1259.0
4300601	12/10/04	319.0			0.350	
4300602	12/10/04	321.4	0.943	2.21	0.350	1310.9
4300605	12/11/04	333.7	0.952	2.44	0.350	1266.8
4300607	12/11/04	321.1	0.951	2.44	0.350	1329.0
Average=		325.10	0.948	2.33	0.350	1291.40
Std. Deviation=		6.48	0.004	0.16	0.000	33.91



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SECTION THREE

GEOTEXTILE MQC

07-D-04

Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. ALC

QA/QC Laboratory
Evergreen, AlabamaNonwoven Test
Rolls

Lot Summary

Reviewed By:

QA:

Engineer:

Page 1 of 3

Grab Tensile/Elongation
ASTM D4632

Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	M.D.		C.D.		M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)			MD (lbs)	CD		Permit. (sec-1)	Perm.(Kv) (cm/sec)		
4008127	10/30/2004	6.9	273.0	130.3	214.0	65.6		98.5	85.4	74.0	83	1.73	0.343	129.8	0.105
4008128	10/30/2004	6.8	266.8	126.3	205.3	61.2									
4008129	10/30/2004	6.7	259.7	119.4	206.7	56.5		101.0	81.9	75.5	80	1.65	0.293	123.6	0.108
4008132	10/30/2004	6.5	247.0	132.6	218.3	61.4		102.4	67.1	69.2	78				
4008135	10/30/2004	6.6	237.1	125.8	208.4	61.5		103.4	65.0	67.7	80				
4008138	10/31/2004	6.6	238.1	126.6	203.1	60.8		100.6	66.8	66.6	79				
4008141	10/31/2004	6.6	219.8	133.6	197.8	58.0		96.2	78.4	68.8	80				
4008144	10/31/2004	6.5	228.8	118.3	195.1	57.5		104.4	70.4	66.9	77				
4008147	10/31/2004	6.4	235.0	117.4	202.8	57.9		94.8	71.7	74.3	77	1.48	0.301	111.2	0.105
4008150	10/31/2004	6.2	249.4	118.3	214.9	55.5		113.0	75.4	72.2	75				
4008153	10/31/2004	6.4	218.1	118.5	195.2	62.5		95.1	78.6	74.7	77				
4008155	10/31/2004	6.6	221.2	121.0	203.5	57.3		97.6	68.0	69.1	79	1.41	0.252	105.7	0.114
4008156	10/31/2004	6.6	235.5	118.9	196.6	56.9									
4008157	10/31/2004	6.3	234.0	120.3	188.4	56.8		96.8	70.7	69.1	77	1.27	0.238	95.1	0.107
4008160	11/01/2004	6.5	240.2	124.1	207.4	60.2		101.7	67.5	71.9	79				
4008163	11/01/2004	6.6	220.0	132.5	210.3	61.9		99.9	67.1	70.9	79				
4008166	11/01/2004	6.4	245.8	127.2	207.7	62.1		100.2	81.8	98.1	77				
4008169	11/01/2004	6.6	245.0	141.8	209.0	68.6		99.0	76.7	87.3	77				
4008172	11/01/2004	6.3	246.8	143.5	211.1	70.8		94.4	78.6	93.1	74				
4008174	11/01/2004	6.3	238.5	136.8	196.0	64.7		89.0	63.5	65.5	76	1.65	0.296	123.8	0.125
4008175	11/02/2004	6.5	234.3	126.0	196.2	61.4									
4008176	11/01/2004	6.4	239.0	124.7	201.0	61.3		93.5	64.2	66.0	77	1.56	0.295	116.7	0.103
4008179	11/02/2004	6.4	243.3	123.8	204.1	60.3		90.0	69.6	65.2	77				
4008182	11/02/2004	6.4	238.9	118.4	199.6	60.3		96.1	67.3	63.7	77				
4008185	11/02/2004	6.3	242.9	135.9	216.2	65.4		96.3	86.1	88.6	74				
4008188	11/02/2004	6.4	250.9	119.1	205.6	59.7		94.5	83.0	84.6	75				
4008190	11/03/2004	6.5	245.6	118.5	204.6	56.3		105.6	71.5	73.8	80	1.29	0.257	96.2	0.147
4008191	11/03/2004	6.6	232.0	116.8	221.3	58.2									
4008194	11/03/2004	6.4													
4008200	11/03/2004	6.7													
4008201	11/03/2004	6.5	257.6	114.7	232.8	53.0		118.0	68.9	75.6	80	1.32	0.256	98.6	0.103
4008203	11/03/2004	6.5													
4008204	11/03/2004	6.3	245.1	113.9	232.5	51.2		102.5	76.3	79.1	76				
4008207	11/03/2004	6.4	242.0	115.3	220.9	54.3		107.8	68.9	80.2	76				

Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	M.D.		C.D.		M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)			MD (lbs)	CD		Permit. (sec-1)	Perm.(Kv) (cm/sec)		
4008210	11/04/2004	6.7	243.9	119.4	223.9	52.5		101.3	79.7	79.1	78				
4008213	11/04/2004	6.4	280.0	119.3	230.4	57.9		110.4	83.2	70.5	78	1.49	0.292	111.5	0.099
4008216	11/04/2004	6.3	280.0	119.3	230.4	57.9		114.6	84.9	77.8	75				
4008218	11/04/2004	6.5	236.7	125.4	209.1	60.3		99.8	88.2	73.4	79	1.37	0.250	102.2	0.136
4008220	11/04/2004	6.4	259.4	130.9	223.3	61.6									
4008228	11/04/2004	6.5													
4008230	11/04/2004	6.3	277.7	126.3	230.3	57.8		105.1	85.9	81.3	75	1.19	0.235	88.8	0.129
4008231	11/04/2004	6.4													
4008233	11/04/2004	6.6	281.7	124.3	226.3	59.6		107.7	88.3	83.5	80				
4008236	11/04/2004	6.6	248.0	131.3	231.9	64.0		104.7	79.5	75.2	79				
4008239	11/05/2004	6.6	268.0	123.8	229.3	56.7		112.9	90.5	75.8	81				
4008242	11/05/2004	6.5	266.1	124.3	220.4	59.3		104.6	88.2	95.0	79				
4008244	11/05/2004	6.4	274.7	125.0	213.5	59.3									
4008245	11/05/2004	6.6	260.5	118.7	219.2	61.8		102.9	78.3	70.7	83	1.53	0.311	114.5	0.142
4008246	11/05/2004	6.6													
4008247	11/05/2004	6.4	252.0	122.7	196.1	58.3									
4008248	11/05/2004	6.2	256.4	128.2	218.5	62.8		107.3	66.9	68.7	78	1.46	0.297	109.0	0.152
4008249	11/05/2004	6.7													
4008251	11/05/2004	6.6	264.6	123.7	220.5	57.2		97.3	78.7	79.5	82				
4008254	11/05/2004	6.4	263.3	123.6	224.3	60.1		100.1	73.9	78.7	81				
4008257	11/06/2004	6.4	283.3	128.9	232.4	63.7		102.9	86.6	79.5	81				
4008260	11/06/2004	6.4	283.4	135.3	237.2	62.8		101.6	112.5	100.2	81				
4008263	11/06/2004	6.5	273.1	139.8	210.1	63.0		98.3	113.3	105.9	81				
4008266	11/06/2004	6.2	260.3	149.4	219.9	71.1		108.9	110.4	100.3	77	1.53	0.288	114.4	0.141
4008269	11/06/2004	6.4	232.9	144.0	206.3	66.7		94.8	82.4	79.8	81	1.50	0.294	112.0	0.151
4008270	11/06/2004	6.4	239.2	146.7	235.4	63.8									
4008271	11/06/2004	6.6	248.5	130.3	204.8	59.4		97.3	86.5	77.0	82	1.40	0.282	104.8	0.116
4008274	11/06/2004	6.4	248.0	123.5	205.0	59.3		97.9	83.7	75.2	80				
4008277	11/07/2004	6.6	260.5	128.8	218.6	63.0		99.9	88.2	73.2	82				
4008280	11/07/2004	6.3	255.8	125.4	218.8	61.0		91.8	111.6	108.8	73				
4008283	11/07/2004	6.2	257.8	127.4	206.3	63.9		92.6	120.3	101.1	76				
4008286	11/07/2004	6.3	258.4	139.7	213.5	63.8		97.6	100.1	88.2	75				
4008288	11/07/2004	6.5	254.3	127.4	211.1	60.9		98.6	90.8	70.8	82	1.63	0.308	121.9	0.128
4008289	11/07/2004	6.3	255.2	121.3	212.6	59.2									

07-Dec-04

Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. AL LLC
QA/QC Laboratory
Evergreen, Alabama
Nonwoven Test
Rolls
Lot Summary

Page 3 of 3

Grab Tensile/Elongation
ASTM D4632

Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	M.D.		C.D.		M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)			MD (lbs)	CD		Permit. (sec-1)	Perm.(Kv) (cm/sec)		
4008291	11/07/2004	6.4	245.3	111.5	212.1	59.6		99.3	87.8	75.3	80				
4008292	11/08/2004	6.4	254.7	121.9	230.6	63.2									
4008293	11/08/2004	6.3	233.2	118.5	202.7	54.4		102.4	80.8	74.3	77	1.59	0.308	119.2	0.128
4008295	11/08/2004	6.1	250.0	123.8	215.5	56.9									
Average =		6.5	250.4	126.0	213.3	60.3		100.8	81.3	78.3	78.3	1.48	0.284	110.5	0.123
Standard Deviation =		.2	16.3	8.3	11.9	3.9		6.1	13.4	11.0	2.5	.15	0.028	11.0	0.018



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SECTION FOUR

GEOCOMPOSITE MQC

Tenax Corporation

Traceability, Peel and Transmissivity report

PRODUCT : Tendrain 770-2
 JOB: Southeast Co. LF, FL
 Batch: 7

COMPOSITE #	NET #	Top TEXTILE #	Bottom TEXTILE #	Roll length (ft)	Top Geotextile ASTM F904	Bottom Geotextile ASTM F904	ASTM F904	ASTM D 4716	ASTM D 4716	Gradient
					Peel Adhesion lbs/in (avg. peaks)	Peel Adhesion lbs/in (avg. peaks)	Peel Adhesion lbs/in (req.)	Transmissivity* (m2/sec) Value	Transmissivity* (m2/sec) Required	
4504242	4300592	4008207	4008234	200	2.64	3.21	1.0	6.69 x 10 ⁻³	3.7 x 10 ⁻³	0.02
4504243	4300592	4008207	4008234	200						
4504244	4300592	4008207	4008234	215						
4504247	4300593	4008207	4008235	200						
4504248	4300593	4008232	4008235	200						
4504249	4300593	4008232	4008235	200						
4504250	4300593	4008232	4008235	200						
4504251	4300593	4008232	4008235	200						
4504252	4300593	4008232	4008235	300						
4504253	4300595	4008232	4008235	200						
4504254	4300595	4008232	4008204	200						
4504255	4300595	4008232	4008204	200						
4504256	4300595	4008202	4008204	200						
4504257	4300595	4008202	4008204	200						
4504258	4300595	4008202	4008204	200						
4504259	4300595	4008202	4008204	200						
4504260	4300595	4008202	4008204	265						
4504261	4300594	4008202	4008204	200						
4504262	4300594	4008202	4008204	230						
4504263	4500596	4008202	4008205	200						
4504264	4500596	4008202	4008205	200						
4504265	4500596	4008189	4008205	200						
4504266	4500596	4008189	4008205	200						
4504267	4500596	4008189	4008205	200						
4504268	4500596	4008189	4008205	80						
4504269	4500597	4008189	4008205	275						
4504270	4500597	4008189	4008205	200						
4504271	4500597	4008189	4008201	200						
4504272	4500597	4008189	4008201	200						
4504273	4500597	4008203	4008201	200						
4504274	4500597	4008203	4008201	200						
4504275	4500597	4008203	4008201	200						
4504276	4500597	4008203	4008201	200						
4504277	4500597	4008203	4008201	235						
4504278	4300600	4008203	4008201	200						
4504279	4300600	4008203	4008201	190						
4504280	4300600	4008203	4008216	200						
4504281	4300600	4008203	4008216	200						

* a confining pressure of 10,000 psf with boundary conditions of steel plate/Ottawa sand/geocomposite/60 mil HDPE/steel plate and a seating time of 100 hour

Tested by:

Checked by: *Rachyn J. Jurey*

Tenax Mfg AL LLC - Roll Listing

Date: 01-11-2005

Time: 10:41:22

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Roll Number	Product Code	Description	Line	Lot Number	Production Date	Shift	Stg Area	Status	On BL	Job Number	Slit From Roll	Original Roll	Linear Ft.	Sq Ft./Yds
001	4504242	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	B	0605	H	N	41199			200.00	2,500.00 SQF
002	4504243	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	B	0605	H	N	41199			200.00	2,500.00 SQF
003	4504244	TDO770AA150215 TDO770-2 6oz/6oz 12.5x215		45032	12/08/2004	C	0605	H	N	41199			215.00	2,687.50 SQF
004	4504247	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	C	0605	H	N	41199			200.00	2,500.00 SQF
005	4504248	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	C	0605	H	N	41199			200.00	2,500.00 SQF
006	4504249	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	C	0605	H	N	41199			200.00	2,500.00 SQF
007	4504250	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	C	0605	H	N	41199			200.00	2,500.00 SQF
008	4504251	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	C	0605	H	N	41199			200.00	2,500.00 SQF
009	4504252	TDO770AA150300 TDO770-2 6oz/6oz 12.5x300		45032	12/08/2004	C	0605	H	N	41199			300.00	3,750.00 SQF
010	4504253	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	C	0605	H	N	41199			200.00	2,500.00 SQF
011	4504254	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	C	0605	H	N	41199			200.00	2,500.00 SQF
012	4504255	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	C	0605	H	N	41199			200.00	2,500.00 SQF
013	4504256	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	C	0605	H	N	41199			200.00	2,500.00 SQF
014	4504257	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	C	0605	H	N	41199			200.00	2,500.00 SQF
015	4504258	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	C	0605	H	N	41199			200.00	2,500.00 SQF
016	4504259	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	C	0605	H	N	41199			200.00	2,500.00 SQF
017	4504260	TDO770AA150265 TDO770-2 6oz/6oz 12.5x265		45032	12/08/2004	C	0605	H	N	41199			265.00	3,312.50 SQF
018	4504261	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	C	0605	H	N	41199			200.00	2,500.00 SQF
019	4504262	TDO770AA150230 TDO770-2 6oz/6oz 12.5x230		45032	12/08/2004	C	0605	H	N	41199			230.00	2,875.00 SQF
020	4504263	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	C	0605	H	N	41199			200.00	2,500.00 SQF
021	4504264	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	C	0605	H	N	41199			200.00	2,500.00 SQF
022	4504265	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	C	0605	H	N	41199			200.00	2,500.00 SQF
023	4504266	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	C	0605	H	N	41199			200.00	2,500.00 SQF
024	4504267	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/08/2004	C	0605	H	N	41199			200.00	2,500.00 SQF
025	4504268	TDO770AA150080 TDO770-2 6oz/6oz 12.5x80 1		45032	12/08/2004	C	0605	H	N	41199			80.00	1,000.00 SQF
026	4504269	TDO770AA150275 TDO770-2 6oz/6oz 12.5x275		45032	12/10/2004	B	0703	H	N	41199			275.00	3,437.50 SQF
027	4504270	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/10/2004	B	0310	H	N	41199			200.00	2,500.00 SQF
028	4504271	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/10/2004	B	0310	H	N	41199			200.00	2,500.00 SQF
029	4504272	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/10/2004	B	0310	H	N	41199			200.00	2,500.00 SQF
030	4504273	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/10/2004	B	0310	H	N	41199			200.00	2,500.00 SQF
031	4504274	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/10/2004	B	0310	H	N	41199			200.00	2,500.00 SQF
032	4504275	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/10/2004	B	0406	H	N	41199			200.00	2,500.00 SQF
033	4504276	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/10/2004	B	0310	H	N	41199			200.00	2,500.00 SQF
034	4504277	TDO770AA150235 TDO770-2 6oz/6oz 12.5x235		45032	12/10/2004	B	0310	H	N	41199			235.00	2,937.50 SQF
035	4504278	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/10/2004	B	0310	H	N	41199			200.00	2,500.00 SQF
036	4504279	TDO770AA150190 TDO770-2 6oz/6oz 12.5x190		45032	12/10/2004	B	0310	H	N	41199			190.00	2,375.00 SQF
037	4504280	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/10/2004	B	0703	H	N	41199			200.00	2,500.00 SQF

Tenax Mfg AL LLC - Roll Listing

Date: 01-11-2005

Time: 10:41:22

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Roll Number	Product Code	Description	Line	Lot Number	Production Date	Shift	Stg Area	Status	On BL	Job Number	Slit From Roll	Original Roll	Linear Ft.	Sq Ft./Yds
038	4504281	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/10/2004	B	0406	H	N	41199			200.00	2,500.00 SQF
Totals													7,790.00	97,375.00 SQF

BATCH 8



QUALITY CONTROL SUMMARY

Tenax Tendrain 770-2

Date: January 11, 2005

Batch 8

Project: Southeast Hillsboro LF, Corporate

Submitted to:
Mr. Tom Heasley
Geo-Synthetics, Inc
W239 N428 Pewaukee Road
Waukesha, WI 53188
Ph: 262-524-7979
Fx: 262-524-7961



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Web Site: <http://www.tenaxus.com>

SECTION ONE

SPECIFICATION



Corporation

TENDRAIN 770-2

Double-Sided Geocomposite

Southeast Co. LF, FL

The drainage geocomposite is comprised of a tri-axial geonet structure consisting of thick supporting ribs with diagonally placed top and bottom ribs and with a thermally bonded, non-woven high UV resistant Ultra Vera geotextile on both sides. The product is capable of providing high Transmissivity in a soil environment under high normal loads and will have properties conforming to the values and test methods listed below.

Property	Test Methods	Units	Value	Qualifier	Test Frequency
Resin					
- Density	ASTM D 1505	g/cm ³	0.94	MAV	lot
- Melt Flow Index	ASTM D 1238	g/10min	1.0	MAX	lot
Geonet Core¹					
Structure			Tri-axial		
• Tensile Strength - MD	ASTM D 4595	lb/ft (kN/m)	1200 (17.5)	MAV	50,000 sf
• Creep Reduction Factor ¹	GRI-GC8	-	1.2		
• Thickness ²	ASTM D 5199	mil (mm)	300 (7.6)	MAV	50,000 sf
• Carbon Black	ASTM D 4218	%	2-3	range	50,000 sf
Geotextile^{3,4}					
• U.V. Resistance (500 hrs)	ASTM G 154	%	95		Per formula
• Mass/Unit Area	ASTM D 5261	oz/yd ² (g/m ²)	6 (203)	MARV	100,000 sf
• Grab Tensile	ASTM D 4632	lbs (N)	157 (700)	MARV	100,000 sf
• Puncture Resistance	ASTM D 4833	lbs (N)	56 (250)	MARV	100,000 sf
• AOS	ASTM D 4751	US Std. Sieve (mm)	70 (0.212)	MaxARV	100,000 sf
• Permeability	ASTM D 4491	Sec ⁻¹	0.5	MARV	500,000 sf
	Falling head				
Geocomposite					
• Peel Adhesion ⁵ - MD	F904 Modified	lb/in (g/in)	1.0 (454)	MAV	100,000 sf
• Labeling	Product code, geotextile type, roll dimensions, finished product lot and roll number.				
Hydraulic Behavior of Geocomposite					
• Transmissivity ⁶ - ML			10,000 psi (480 kPa)		
Gradient / Load					
0.02	ASTM D 4716 GRI - GC8	m ² /sec	3.7*10 ⁻³	MAV	100,000 sf

Qualifiers. MARV = Minimum Average Roll Value (MARV)
MaxARV = Maximum average roll value

MAV = Minimum Average Value
AVE = Average value

MAX = Maximum Value

NOTES:

1. Creep Reduction Factor is based on 10,000 hour test duration, extrapolated to 30 years and using a compressive load of 25,000 psi
2. Thickness measured by manufacturer per ASTM D5199 with a 2.22 in. diameter presser foot and 2.9 psi pressure.
3. Geotextile and geonet properties listed are prior to lamination.
4. Top filter geotextile meets ASTM Standard Specification M 288-00 strength requirements of class 2 and the highest filter requirements.
5. Peel Adhesion is tested by the manufacturer per modified ASTM F804, with a 2-inch wide (3 longitudinal ribs) by 10-inch long strip. The geotextile bonded to either side of the geonet is pulled apart at a peeling rate of 12 in/min., for at least 4 inches of peeling distance. The reported value for each laminated side is the average of the "peak" values from 5 tested samples. The 5 samples are cut evenly distributed along the roll width with a 1-foot margin from both edges of the roll.
6. Geocomposite transmissivity measured by manufacturer per ASTM D4716 with testing boundary conditions as follows: steel plate / Ottawa sand / geocomposite / 80 mil HDPE geomembrane / steel plate, and sealing period of 100 hours according to GRI-GC8.



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SECTION TWO

GEONET REPORT AND MQC

Product Grade: TD7
 Color: Black
 Roll Dimensions: 13 x 1760 ft
 Lot Number: 43048

Tenax Mfg. AL LLC
 QA/QC Lab
 Net Product Report

Reviewed By: _____
 QA RF
 Engineer _____

Geonet Roll	Date Tested	Thickness ASTM D5199 (mils)	Density ASTM D1505 (g/cc)	Carbon Black ASTM D4218 (%)	Resin MFI ASTM D1238-00 (g/10m)	Tensile MD ASTM D4595 (lb/ft)
4300584	12/02/04	343.3	0.945	2.00	0.350	1437.60
4300586	12/03/04	341.3	0.943	2.00	0.350	1486.50
4300589	12/06/04	344.7	0.952	2.34	0.350	1468.00
4300591	12/06/04	324.8	0.943	2.17	0.350	1499.55
4300593	12/07/04	322.6	0.953	2.38	0.350	1228.05
4300595	12/07/04	321.3	0.946	2.17	0.350	1239.00
4300597	12/08/04	324.5	0.947	2.33	0.350	1219.65
4300598	12/08/04	330.3		2.28	0.350	
4300599	12/08/04	324.4	0.945	2.18	0.350	1280.70
Average=		330.80	0.947	2.24	0.350	1357.38
Std. Deviation=		9.58	0.004	0.13	0.000	126.01

Product Grade: TD7
 Color: Black
 Roll Dimensions: 13 x 1760 ft
 Lot Number: 43047

Tenax Mfg. AL LLC
 QA/QC Lab
 Net Product Report

Reviewed By: QA
 Engineer:

Geonet Roll	Date Tested	Thickness ASTM D5199 (mils)	Density ASTM D1505 (g/cc)	Carbon Black ASTM D4218 (%)	Resin MFI ASTM D1238-00 (g/10m)	Tensile MD ASTM D4595 (lb/ft)
4300600	12/09/04	330.3	0.946	2.55	0.350	1259.0
4300601	12/10/04	319.0			0.350	
4300602	12/10/04	321.4	0.943	2.21	0.350	1310.9
4300605	12/11/04	333.7	0.952	2.44	0.350	1266.8
4300607	12/11/04	321.1	0.951	2.44	0.350	1329.0
Average=		325.10	0.948	2.33	0.350	1291.40
Std. Deviation=		6.48	0.004	0.16	0.000	33.91



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SECTION THREE

GEOTEXTILE MQC

07-Dec-2004

Product Grade: UV508

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. AL LLC
QA/QC Laboratory
Evergreen, Alabama

Nonwoven Test
Rolls
Lot Summary

Reviewed By:

QA:

Engineer:

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Roll No.	Test Date	Weight ASTM D5261 (oz/yd ²)	Grab Tensile/Elongation ASTM D4632		M.D.		C.D.		M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap Tear ASTM D4533 MD CD		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft ²)	A.O.S. ASTM D4751 (mm)
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)						Permit. (sec-1)	Perm. (Kv) (cm/sec)		
008127	10/30/2004	6.9	273.0	130.3	214.0	65.6				98.5	85.4	74.0	83	1.73	0.343	129.8	0.105
008128	10/30/2004	6.8	266.8	126.3	205.3	61.2											
008129	10/30/2004	6.7	259.7	119.4	208.7	56.5				101.0	81.9	75.5	80	1.65	0.293	123.6	0.108
008132	10/30/2004	6.5	247.0	132.6	218.3	61.4				102.4	67.1	69.2	78				
008135	10/30/2004	6.6	237.1	125.8	208.4	61.5				103.4	65.0	67.7	80				
008138	10/31/2004	6.6	238.1	126.8	203.1	60.8				100.6	66.8	66.6	79				
008141	10/31/2004	6.6	219.8	133.6	197.8	58.0				96.2	78.4	68.8	80				
008144	10/31/2004	6.5	228.8	118.3	195.1	57.5				104.4	70.4	68.9	77				
008147	10/31/2004	6.4	235.0	117.4	202.8	57.9				94.8	71.7	74.3	77	1.48	0.301	111.2	0.105
008150	10/31/2004	6.2	249.4	118.3	214.9	55.5				113.0	75.4	72.2	75				
008153	10/31/2004	6.4	218.1	118.5	195.2	62.5				95.1	78.6	74.7	77				
008155	10/31/2004	6.6	221.2	121.0	203.5	57.3				97.6	68.0	69.1	79	1.41	0.252	105.7	0.114
008156	10/31/2004	6.6	235.5	118.9	196.6	56.9											
008157	10/31/2004	6.3	234.0	120.3	188.4	56.8				98.8	70.7	69.1	77	1.27	0.238	95.1	0.107
008160	11/01/2004	6.5	240.2	124.1	207.4	60.2				101.7	67.5	71.9	79				
008163	11/01/2004	6.6	220.0	132.5	210.3	61.9				99.9	67.1	70.9	79				
008166	11/01/2004	6.4	245.8	127.2	207.7	62.1				100.2	81.8	98.1	77				
008169	11/01/2004	6.8	245.0	141.8	209.0	68.6				99.0	76.7	87.3	77				
008172	11/01/2004	6.3	246.8	143.5	211.1	70.8				94.4	78.6	93.1	74				
008174	11/01/2004	6.3	238.5	136.8	196.0	64.7				89.0	63.5	65.5	76	1.65	0.256	123.8	0.125
008175	11/02/2004	6.5	234.3	126.0	196.2	61.4											
008176	11/01/2004	6.4	239.0	124.7	201.0	61.3				93.5	64.2	66.0	77	1.58	0.295	116.7	0.103
008179	11/02/2004	6.4	243.3	123.8	204.1	60.3				90.0	69.6	85.2	77				
008182	11/02/2004	6.4	238.9	118.4	199.8	60.3				96.1	67.3	63.7	77				
008185	11/02/2004	6.3	242.9	135.9	216.2	65.4				96.3	86.1	88.6	74				
008188	11/02/2004	6.4	260.9	119.1	205.6	59.7				94.5	83.0	84.8	75				
008190	11/03/2004	6.5	245.6	118.5	204.5	56.3				105.6	71.5	73.8	80	1.28	0.257	96.2	0.147
008191	11/03/2004	6.6	232.0	116.8	221.3	58.2											
008194	11/03/2004	6.4															
008200	11/03/2004	6.7															
008201	11/03/2004	6.5	257.6	114.7	232.8	53.0				118.0	68.9	75.6	80	1.32	0.256	98.6	0.103
008203	11/03/2004	6.5															
008204	11/03/2004	6.3	245.1	113.9	232.5	51.2				102.5	76.3	79.1	76				
008207	11/03/2004	6.4	242.0	115.3	220.9	54.3				107.8	68.9	80.2	76				

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. AL LLC
QA/QC Laboratory
Evergreen, Alabama

Nonwoven Test Rolls Lot Summary

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Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	Grab Tensile/Elongation ASTM D4832				M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap Tear ASTM D4533		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/fl2)	A.O.S. ASTM D4751 (mm)
			M.D.		C.D.				MD (lbs)	CD (lbs)		Permil. (sec-1)	Perm.(Kv) (cm/sec)		
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)									
4008210	11/04/2004	6.7	243.9	119.4	223.9	52.5		101.3	79.7	79.1	78				
4008213	11/04/2004	6.4	280.0	119.3	230.4	57.9		110.4	83.2	70.5	78	1.49	0.292	111.5	0.099
4008216	11/04/2004	6.3	280.0	119.3	230.4	57.9		114.5	84.9	77.8	75				
4008218	11/04/2004	6.5	236.7	125.4	209.1	60.3		99.8	88.2	73.4	79	1.37	0.250	102.2	0.136
4008220	11/04/2004	6.4	259.4	130.9	223.3	61.6									
4008228	11/04/2004	6.5													
4008230	11/04/2004	6.3	277.7	126.3	230.3	57.8		105.1	85.9	81.3	75	1.19	0.235	88.8	0.129
4008231	11/04/2004	6.4													
4008233	11/04/2004	6.6	281.7	124.3	226.3	59.6		107.7	88.3	83.5	80				
4008236	11/04/2004	6.6	248.0	131.3	231.9	64.0		104.7	79.5	75.2	79				
4008239	11/05/2004	6.6	268.0	123.8	229.3	56.7		112.9	90.5	75.8	81				
4008242	11/05/2004	6.5	266.1	124.3	220.4	59.3		104.6	88.2	95.0	79				
4008244	11/05/2004	6.4	274.7	125.0	213.5	59.3									
4008245	11/05/2004	6.6	260.5	118.7	219.2	61.8		102.9	78.3	70.7	83	1.53	0.311	114.5	0.142
4008246	11/05/2004	6.6													
4008247	11/05/2004	6.4	252.0	122.7	196.1	58.3									
4008248	11/05/2004	6.2	256.4	128.2	218.5	62.8		107.3	66.9	68.7	78	1.46	0.297	109.0	0.152
4008249	11/05/2004	6.7													
4008251	11/05/2004	6.6	264.6	123.7	220.5	57.2		97.3	78.7	79.5	82				
4008254	11/05/2004	6.4	263.3	123.6	224.3	60.1		100.1	73.9	78.7	81				
4008257	11/06/2004	6.4	283.3	128.9	232.4	63.7		102.9	86.6	79.5	81				
4008260	11/06/2004	6.4	283.4	135.3	237.2	62.8		101.6	112.5	100.2	81				
4008263	11/06/2004	6.5	273.1	139.8	210.1	63.0		98.3	113.3	105.9	81				
4008266	11/06/2004	6.2	260.3	149.4	219.9	71.1		108.9	110.4	100.3	77	1.53	0.288	114.4	0.141
4008269	11/06/2004	6.4	232.9	144.0	206.3	68.7		94.8	82.4	79.8	81	1.50	0.294	112.0	0.151
4008270	11/06/2004	6.4	239.2	146.7	235.4	63.8									
4008271	11/06/2004	6.6	248.5	130.3	204.8	59.4		97.3	86.5	77.0	82	1.40	0.282	104.8	0.116
4008274	11/06/2004	6.4	248.0	123.5	205.0	59.3		97.9	83.7	75.2	80				
4008277	11/07/2004	6.6	260.5	128.8	219.6	63.0		98.9	88.2	73.2	82				
4008280	11/07/2004	6.3	255.8	125.4	218.8	61.0		91.8	111.6	108.8	73				
4008283	11/07/2004	6.2	257.8	127.4	206.3	63.8		92.6	120.3	101.1	76				
4008286	11/07/2004	6.3	256.4	139.7	213.5	63.8		97.6	100.1	88.2	75				
4008288	11/07/2004	6.5	254.3	127.4	211.1	60.9		98.8	90.8	70.8	82	1.63	0.308	121.9	0.128
4008289	11/07/2004	6.3	255.2	121.3	212.6	59.2									

07-Dec-2004

Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. AL LLC
QA/QC Laboratory
Evergreen, Alabama

Nonwoven Test
Rolls

Lot Summary

Page 3 of 3

Roll No.	Test Date	Weight ASTM D5261 (oz/yd ²)	Grab Tensile/Elongation ASTM D4832		M.D.		C.D.		M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap Tear ASTM D4533		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft ²)	A.O.S. ASTM D4751 (mm)
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)			MD	CD		PermIL (sec-1)	Perm.(Kv) (cm/sec)		
4008291	11/07/2004	6.4	245.3	111.5	212.1	59.6				99.3	87.8	75.3	80				
4008292	11/08/2004	6.4	254.7	121.9	230.6	63.2											
4008293	11/08/2004	6.3	233.2	118.5	202.7	54.4				102.4	80.8	74.3	77	1.59	0.308	119.2	0.128
4008295	11/08/2004	6.1	250.0	123.8	215.5	56.9											
Average =		6.5	250.4	126.0	213.3	60.3				100.8	81.3	78.3	78.3	1.48	0.284	110.5	0.123
Standard Deviation =		.2	16.3	8.3	11.9	3.9				6.1	13.4	11.0	2.5	.15	0.028	11.0	0.018



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Evergreen, Alabama 36401

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SECTION FOUR

GEOCOMPOSITE MQC

Tenax Corporation

Traceability, Peel and Transmissivity report

PRODUCT : Tendrain 770-2
 JOB: Southeast Co. LF, FL
 Batch: 8

COMPOSITE #	NET #	Top TEXTILE #	Bottom TEXTILE #	Roll length (ft)	Top Geotextile ASTM F904 Peel Adhesion lbs/in (avg. peaks)	Bottom Geotextile ASTM F904 Peel Adhesion lbs/in (avg. peaks)	ASTM F904 Peel Adhesion lbs/in (req.)	ASTM D 4716 Transmissivity* (m2/sec) Value	ASTM D 4716 Transmissivity* (m2/sec) Required	Gradient
4504282	4300600	4008182	4008216	200	3.86	2.89	1.0	5.59 x 10 ⁻³	3.7 x 10 ⁻³	0.02
4504283	4300600	4008182	4008216	200						
4504284	4300600	4008182	4008216	200						
4504285	4300600	4008182	4008216	245						
4504286	4300601	4008182	4008216	200						
4504287	4300601	4008182	4008216	200						
4504288	4300601	4008182	4008233	200						
4504289	4300601	4008182	4008233	200						
4504290	4300601	4008188	4008233	200						
4504291	4300601	4008188	4008233	200						
4504292	4300601	4008188	4008233	200						
4504293	4300601	4008188	4008233	265						
4504294	4300599	4008188	4008233	200						
4504295	4300599	4008188	4008233	285						
4504296	4300602	4008188	4008214	200						
4504297	4300602	4008188	4008214	200						
4504298	4300602	4008202	4008214	200						
4504299	4300602	4008202	4008214	320						
4504300	4300602	4008202	4008214	200						
4504301	4300603	4008202	4008214	200						
4504302	4300603	4008202	4008214	200						
4504303	4300603	4008189	4008214	200						
4504304	4300603	4008189	4008185	200						
4504305	4300603	4008189	4008185	200						
4504306	4300603	4008206	4008185	200						
4504307	4300603	4008187	4008185	200						
4504308	4300603	4008187	4008185	285						
4504309	4500604	4008187	4008185	200						
4504310	4500604	4008187	4008185	200						
4504311	4500604	4008187	4008185	195						
4504312	4500604	4008187	4008185	200						
4504313	4500604	4008187	4008185	200						
4504314	4500604	4008187	4008185	200						
4504315	4500604	4008181	4008188	200						
4504316	4500604	4008181	4008188	260						
4504317	4300605	4008181	4008188	200						
4504318	4300605	4008181	4008188	200						
4504319	4300605	4008181	4008188	200						

* a confining pressure of 10,000 psi with boundary conditions of steel plate/Ottawa sand/geocomposite/60 mil HDPE/steel plate and a seating time of 100 hour

Tested by: *Kimble Perkins*
 Checked by: *Leslyn Jolley*

Tenax Mfg AL LLC - Roll Listing

Date: 01-11-2005

Time: 10:44:37

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Roll Number	Product Code	Description	Line	Lot Number	Production Date	Shift	Std Area	Status	On BL	Job Number	Sit From Roll	Original Roll	Linear Ft.	Sq Ft./Yds
001	4504282	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/10/2004	B	0406	H	N	41199			200.00	2,500.00 SQF
002	4504283	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/10/2004	B	0406	H	N	41199			200.00	2,500.00 SQF
003	4504284	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/10/2004	B	0406	H	N	41199			200.00	2,500.00 SQF
004	4504285	TDO770AA150245 TDO770-2 6oz/6oz 12.5x245		45032	12/10/2004	B	0703	H	N	41199			245.00	3,062.50 SQF
005	4504286	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	B	0703	H	N	41199			200.00	2,500.00 SQF
006	4504287	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
007	4504288	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
008	4504289	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
009	4504290	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
010	4504291	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0310	H	N	41199			200.00	2,500.00 SQF
011	4504292	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
012	4504293	TDO770AA150265 TDO770-2 6oz/6oz 12.5x265		45032	12/13/2004	D	0406	H	N	41199			265.00	3,312.50 SQF
013	4504294	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
014	4504295	TDO770AA150285 TDO770-2 6oz/6oz 12.5x285		45032	12/13/2004	D	0406	H	N	41199			285.00	3,562.50 SQF
015	4504296	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
016	4504297	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
017	4504298	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
018	4504299	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
019	4504300	TDO770AA150320 TDO770-2 6oz/6oz 12.5x320		45032	12/13/2004	D	0406	H	N	41199			320.00	4,000.00 SQF
020	4504301	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0310	H	N	41199			200.00	2,500.00 SQF
021	4504302	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
022	4504303	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
023	4504304	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
024	4504305	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
025	4504306	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
026	4504307	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
027	4504308	TDO770AA150285 TDO770-2 6oz/6oz 12.5x285		45032	12/13/2004	D	0406	H	N	41199			285.00	3,562.50 SQF
028	4504309	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/13/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
029	4504310	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
030	4504311	TDO770AA150195 TDO770-2 6oz/6oz 12.5x195		45032	12/14/2004	D	0406	H	N	41199			195.00	2,437.50 SQF
031	4504312	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
032	4504313	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
033	4504314	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0703	H	N	41199			200.00	2,500.00 SQF
034	4504315	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
035	4504316	TDO770AA150260 TDO770-2 6oz/6oz 12.5x260		45032	12/14/2004	D	0406	H	N	41199			260.00	3,250.00 SQF
036	4504317	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
037	4504318	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0703	H	N	41199			200.00	2,500.00 SQF

Tenax Mfg AL LLC - Roll Listing

Date: 01-11-2005

Time: 10:44:37

Page 2 of 2

Roll Number	Product Code	Description	Line	Lot Number	Production Date	Shift	Stg Area	Status	On BL	Job Number	Slt From Roll	Original Roll	Linear Ft	Sq Ft./Yds
038	4504319	TDO770AA150200 TDO770-2 6oz/8oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
Totals													8,055.00	100,687.50 SQF

BATCH 9



QUALITY CONTROL SUMMARY

Tenax Tendrain 770-2

Date: January 19, 2005

Batch 9

Project: Southeast Hillsboro LF, Corporate

Submitted to:

**Mr. Tom Heasley
Geo-Synthetics, Inc
W239 N428 Pewaukee Road
Waukesha, WI 53188
Ph: 262-524-7979
Fx: 262-524-7961**

200 Miller Sellers Drive / Evergreen, Alabama 36401

Tel: 251.578.9003 / Fax: 251.578.6141

Web Site: <http://www.tenaxus.com>



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SECTION ONE

SPECIFICATION

200 Miller Sellers Drive / Evergreen, Alabama 36401

Tel: 251.578.9003 / Fax: 251.578.6141

Web Site: <http://www.tenaxus.com>



Corporation

TENDRAIN 770-2

Double-Sided Geocomposite

Southeast Co. LF, FL

The drainage geocomposite is comprised of a tri-axial geonet structure consisting of thick supporting ribs with diagonally placed top and bottom ribs and with a thermally bonded, non-woven high UV resistant Ultra Vera geotextile on both sides. The product is capable of providing high Transmissivity in a soil environment under high normal loads and will have properties conforming to the values and test methods listed below.

Property	Test Methods	Units	Value	Qualifier	Test Frequency
Resin					
• Density	ASTM D 1505	g/cm ³	0.94	MAV	lot
• Melt Flow Index	ASTM D 1238	g/10min	1.0	MAX	lot
Geonet Core³					
Structure			Tri-axial		
• Tensile Strength – MD	ASTM D 4595	lb/ft (kN/m)	1200 (17.5)	MAV	50,000 sf
• Creep Reduction Factor ¹	GRI-GC8	-	1.2		
• Thickness ²	ASTM D 5199	mil (mm)	300 (7.6)	MAV	50,000 sf
• Carbon Black	ASTM D 4218	%	2-3	range	50,000 sf
Geotextile^{3,4}					
• U.V. Resistance (500 hrs)	ASTM G 154	%	95		Per formula
• Mass/Unit Area	ASTM D 5261	oz/yd ² (g/m ²)	6 (203)	MARV	100,000 sf
• Grab Tensile	ASTM D 4632	lbs (N)	157 (700)	MARV	100,000 sf
• Puncture Resistance	ASTM D 4833	lbs (N)	56 (250)	MARV	100,000 sf
• AOS	ASTM D 4751	US Std. Sieve (mm)	70 (0.212)	MaxARV	100,000 sf
• Permittivity	ASTM D 4491 Falling head	Sec ⁻¹	0.5	MARV	500,000 sf
Geocomposite					
• Peel Adhesion ⁵ – MD	F904 Modified	lb/in (g/in)	1.0 (454)	MAV	100,000 sf
• Labeling	Product code, geotextile type, roll dimensions, finished product lot and roll number.				
Hydraulic Behavior of Geocomposite					
• Transmissivity ⁶ - MD			10,000 psf (480 kPa)		
Gradient / Load					
0.02	ASTM D 4716 GRI - GC8	m ² /sec	3.7*10 ⁻³	MAV	100,000 sf

Qualifiers: MARV = Minimum Average Roll Value (MARV)
MaxARV = Maximum average roll value

MAV = Minimum Average Value
AVE = Average value

MAX = Maximum Value

NOTES:

- Creep Reduction Factor is based on 10,000 hour test duration, extrapolated to 30 years and using a compressive load of 25,000 psf.
- Thickness measured by manufacturer per ASTM D5199 with a 2.22 in. diameter presser foot and 2.9 psi pressure.
- Geotextile and geonet properties listed are prior to lamination.
- Top filter geotextile meets ASSHTO Standard Specification M 288-00 strength requirements of class 2 and the highest filter requirements.
- Peel Adhesion is tested by the manufacturer per modified ASTM F904, with a 2-inch wide (5 longitudinal ribs) by 10-inch long strip. The geotextile bonded to either side of the geonet is pulled apart at a peeling rate of 12 in/min., for at least 4 inches of peeling distance. The reported value for each laminated side is the average of the "peak" values from 5 tested samples. The 5 samples are cut evenly distributed along the roll width with a 1-foot margin from both edges of the roll.
- Geocomposite transmissivity measured by manufacturer per ASTM D4716 with testing boundary conditions as follows: steel plate / Ottawa sand / geocomposite / 60 mil HDPE geomembrane / steel plate, and seating period of 100 hours according to GRI-GC8.



Engineered for Life

Sales/Technical Service
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9/20/2004



SECTION TWO

GEONET REPORT AND MQC

200 Miller Sellers Drive / Evergreen, Alabama 36401

Tel: 251.578.9003 / Fax: 251.578.6141

Web Site: <http://www.tenaxus.com>

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Product Grade: TD7
Color: Black
Roll Dimensions: 13 x 1760 ft
Lot Number: 43047

Tenax Mfg. AL LLC
QA/QC Lab
Net Product Report

Reviewed By: _____
QA _____
Engineer _____

Geonet Roll	Date Tested	Thickness ASTM D5199 (mils)	Density ASTM D1505 (g/cc)	Carbon Black ASTM D4218 (%)	Resin MFI ASTM D1238-00 (g/10m)	Tensile MD ASTM D4595 (lb/ft)
4300600	12/09/04	330.3	0.946	2.55	0.350	1259.0
4300601	12/10/04	319.0			0.350	
4300602	12/10/04	321.4	0.943	2.21	0.350	1310.9
4300605	12/11/04	333.7	0.952	2.44	0.350	1266.8
4300607	12/11/04	321.1	0.951	2.44	0.350	1329.0
Average=		325.10	0.948	2.33	0.350	1291.40
Std. Deviation=		6.48	0.004	0.16	0.000	33.91



SECTION THREE

GEOTEXTILE MQC

200 Miller Sellers Drive / Evergreen, Alabama 36401

Tel: 251.578.9003 / Fax: 251.578.6141

Web Site: <http://www.tenaxus.com>

07-Dec-2004

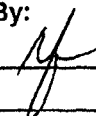
Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. AL LLC
QA/QC Laboratory
Evergreen, Alabama
Nonwoven Test
Rolls
Lot Summary

Reviewed By: 

QA: _____

Engineer: _____

Page 1 of 3

Grab Tensile/Elongation
ASTM D4632

Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	M.D.		C.D.		M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)			MD (lbs)	CD		Permit. (sec-1)	Perm.(Kv) (cm/sec)		
4008127	10/30/2004	6.9	273.0	130.3	214.0	65.6		98.5	85.4	74.0	83	1.73	0.343	129.8	0.105
4008128	10/30/2004	6.8	266.8	126.3	205.3	61.2									
4008129	10/30/2004	6.7	259.7	119.4	206.7	56.5		101.0	81.9	75.5	80	1.65	0.293	123.6	0.108
4008132	10/30/2004	6.5	247.0	132.6	218.3	61.4		102.4	67.1	69.2	78				
4008135	10/30/2004	6.6	237.1	125.8	208.4	61.5		103.4	65.0	67.7	80				
4008138	10/31/2004	6.6	238.1	126.6	203.1	60.8		100.6	66.8	66.6	79				
4008141	10/31/2004	6.6	219.8	133.6	197.8	58.0		96.2	78.4	68.8	80				
4008144	10/31/2004	6.5	228.8	118.3	195.1	57.5		104.4	70.4	66.9	77				
4008147	10/31/2004	6.4	235.0	117.4	202.8	57.9		94.8	71.7	74.3	77	1.48	0.301	111.2	0.105
4008150	10/31/2004	6.2	249.4	118.3	214.9	55.5		113.0	75.4	72.2	75				
4008153	10/31/2004	6.4	218.1	118.5	195.2	62.5		95.1	78.6	74.7	77				
4008155	10/31/2004	6.6	221.2	121.0	203.5	57.3		97.6	68.0	69.1	79	1.41	0.252	105.7	0.114
4008156	10/31/2004	6.6	235.5	118.9	196.6	56.9									
4008157	10/31/2004	6.3	234.0	120.3	188.4	56.8		96.8	70.7	69.1	77	1.27	0.238	95.1	0.107
4008160	11/01/2004	6.5	240.2	124.1	207.4	60.2		101.7	67.5	71.9	79				
4008163	11/01/2004	6.6	220.0	132.5	210.3	61.9		99.9	67.1	70.9	79				
4008166	11/01/2004	6.4	245.8	127.2	207.7	62.1		100.2	81.8	98.1	77				
4008169	11/01/2004	6.6	245.0	141.8	209.0	68.6		99.0	76.7	87.3	77				
4008172	11/01/2004	6.3	246.8	143.5	211.1	70.8		94.4	78.6	93.1	74				
4008174	11/01/2004	6.3	238.5	136.8	196.0	64.7		89.0	63.5	65.5	76	1.65	0.296	123.8	0.125
4008175	11/02/2004	6.5	234.3	126.0	196.2	61.4									
4008176	11/01/2004	6.4	239.0	124.7	201.0	61.3		93.5	64.2	66.0	77	1.56	0.295	116.7	0.103
4008179	11/02/2004	6.4	243.3	123.8	204.1	60.3		90.0	69.6	65.2	77				
4008182	11/02/2004	6.4	238.9	118.4	199.6	60.3		96.1	67.3	63.7	77				
4008185	11/02/2004	6.3	242.9	135.9	216.2	65.4		96.3	86.1	88.6	74				
4008188	11/02/2004	6.4	250.9	119.1	205.6	59.7		94.5	83.0	84.6	75				
4008190	11/03/2004	6.5	245.6	118.5	204.6	56.3		105.6	71.5	73.8	80	1.29	0.257	96.2	0.147
4008191	11/03/2004	6.6	232.0	116.8	221.3	58.2									
4008194	11/03/2004	6.4													
4008200	11/03/2004	6.7													
4008201	11/03/2004	6.5	257.6	114.7	232.8	53.0		118.0	68.9	75.6	80	1.32	0.256	98.6	0.103
4008203	11/03/2004	6.5													
4008204	11/03/2004	6.3	245.1	113.9	232.5	51.2		102.5	76.3	79.1	76				
4008207	11/03/2004	6.4	242.0	115.3	220.9	54.3		107.8	68.9	80.2	76				

P
81L
36

07-Dec-2004

Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. AL LLC
QA/QC Laboratory
Evergreen, Alabama

Nonwoven Test
Rolls

Lot Summary

Page 2 of 3

Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	Grab Tensile/Elongation ASTM D4632		M.D. Tens. (lbs)	C.D. Elong (%)	M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533 MD CD (lbs)	Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			Tens. (lbs)	Elong (%)							Permit. (sec-1)	Perm.(Kv) (cm/sec)		
4008210	11/04/2004	6.7	243.9	119.4	223.9	52.5		101.3	79.7	79.1	78			
4008213	11/04/2004	6.4	280.0	119.3	230.4	57.9		110.4	83.2	70.5	78	1.49	0.292	0.099
4008216	11/04/2004	6.3	280.0	119.3	230.4	57.9		114.6	84.9	77.8	75			
4008218	11/04/2004	6.5	236.7	125.4	209.1	60.3		99.8	88.2	73.4	79	1.37	0.250	0.136
4008220	11/04/2004	6.4	259.4	130.9	223.3	61.6								
4008228	11/04/2004	6.5												
4008230	11/04/2004	6.3	277.7	126.3	230.3	57.8		105.1	85.9	81.3	75	1.19	0.235	0.129
4008231	11/04/2004	6.4												
4008233	11/04/2004	6.6	281.7	124.3	226.3	59.6		107.7	88.3	83.5	80			
4008236	11/04/2004	6.6	248.0	131.3	231.9	64.0		104.7	79.5	75.2	79			
4008239	11/05/2004	6.6	268.0	123.8	229.3	56.7		112.9	90.5	75.8	81			
4008242	11/05/2004	6.5	266.1	124.3	220.4	59.3		104.6	88.2	95.0	79			
4008244	11/05/2004	6.4	274.7	125.0	213.5	59.3								
4008245	11/05/2004	6.6	260.5	118.7	219.2	61.8		102.9	78.3	70.7	83	1.53	0.311	0.142
4008246	11/05/2004	6.6												
4008247	11/05/2004	6.4	252.0	122.7	196.1	58.3								
4008248	11/05/2004	6.2	256.4	128.2	218.5	62.8		107.3	66.9	68.7	78	1.46	0.297	0.152
4008249	11/05/2004	6.7												
4008251	11/05/2004	6.6	264.6	123.7	220.5	57.2		97.3	78.7	79.5	82			
4008254	11/05/2004	6.4	263.3	123.6	224.3	60.1		100.1	73.9	78.7	81			
4008257	11/06/2004	6.4	283.3	128.9	232.4	63.7		102.9	86.6	79.5	81			
4008260	11/06/2004	6.4	283.4	135.3	237.2	62.8		101.6	112.5	100.2	81			
4008263	11/06/2004	6.5	273.1	139.8	210.1	63.0		98.3	113.3	105.9	81			
4008266	11/06/2004	6.2	260.3	149.4	219.9	71.1		108.9	110.4	100.3	77	1.53	0.288	0.141
4008269	11/06/2004	6.4	232.9	144.0	206.3	66.7		94.8	82.4	79.8	81	1.50	0.294	0.151
4008270	11/06/2004	6.4	239.2	146.7	235.4	63.8								
4008271	11/06/2004	6.6	248.5	130.3	204.8	59.4		97.3	86.5	77.0	82	1.40	0.282	0.116
4008274	11/06/2004	6.4	248.0	123.5	205.0	59.3		97.9	83.7	75.2	80			
4008277	11/07/2004	6.6	260.5	128.8	219.6	63.0		99.9	88.2	73.2	82			
4008280	11/07/2004	6.3	255.8	125.4	218.8	61.0		91.8	111.6	108.8	73			
4008283	11/07/2004	6.2	257.8	127.4	206.3	63.9		92.6	120.3	101.1	76			
4008286	11/07/2004	6.3	258.4	139.7	213.5	63.8		97.6	100.1	88.2	75			
4008288	11/07/2004	6.5	254.3	127.4	211.1	60.9		98.6	90.8	70.8	82	1.63	0.308	0.128
4008289	11/07/2004	6.3	255.2	121.3	212.6	59.2								

07-Dec-2004

Product Grade: UV506

Lot Number: 40056

Color: ORANG

Roll Dimensions: 14ft x 1860ft

Tenax Mfg. AL LLC
QA/QC Laboratory
Evergreen, Alabama
Nonwoven Test
Rolls
Lot Summary

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Grab Tensile/Elongation
ASTM D4632

Roll No.	Test Date	Weight ASTM D5261 (oz/yd2)	M.D.		C.D.		M. Burst ASTM D3786 (psi)	Puncture Resistance ASTM D4833 (lbs)	Trap.Tear ASTM D4533		Thickness ASTM D5199 (mils)	Hydraulic Tests ASTM D4491		Water Flow (gpm/ft2)	A.O.S. ASTM D4751 (mm)
			Tens. (lbs)	Elong (%)	Tens. (lbs)	Elong (%)			MD (lbs)	CD		Permit. (sec-1)	Perm.(Kv) (cm/sec)		
4008291	11/07/2004	6.4	245.3	111.5	212.1	59.6		99.3	87.8	75.3	80				
4008292	11/08/2004	6.4	254.7	121.9	230.6	63.2									
4008293	11/08/2004	6.3	233.2	118.5	202.7	54.4		102.4	80.8	74.3	77	1.59	0.308	119.2	0.128
4008295	11/08/2004	6.1	250.0	123.8	215.5	56.9									
Average =		6.5	250.4	126.0	213.3	60.3		100.8	81.3	78.3	78.3	1.48	0.284	110.5	0.123
Standard Deviation =		.2	16.3	8.3	11.9	3.9		6.1	13.4	11.0	2.5	.15	0.028	11.0	0.018



SECTION FOUR

GEOCOMPOSITE MQC

200 Miller Sellers Drive / Evergreen, Alabama 36401

Tel: 251.578.9003 / Fax: 251.578.6141

Web Site: <http://www.tenaxus.com>

Tenax Corporation

Traceability, Peel and Transmissivity report

PRODUCT: Tendrain 770-2
 JOB: Southeast Co. LF, FL
 Batch 9

COMPOSITE #	NET #	Top TEXTILE #	Bottom TEXTILE #	Roll length (ft)	Top Geotextile ASTM F904 Peel Adhesion lbs/in (avg. peaks)	Bottom Geotextile ASTM F904 Peel Adhesion lbs/in (avg. peaks)	ASTM F904 Peel Adhesion lbs/in (req.)	ASTM D 4716 Transmissivity* (m2/sec) Value	ASTM D 4716 Transmissivity* (m2/sec) Required	Gradient
4504320	4300605	4008181	4008186	200	3.84	3.20	1.0	7.82×10^{-3}	3.7×10^{-3}	0.02
4504321	4300605	4008181	4008277	200						
4504322	4300605	4008181	4008277	200						
4504323	4300605	4008181	4008277	200						
4504324	4300605	4008172	4008277	270						
4504325	4300606	4008172	4008277	200						
4504326	4300606	4008172	4008277	200						
4504327	4300606	4008172	4008277	200						
4504328	4300606	4008172	4008277	200						
4504329	4300606	4008172	4008277	200						
4504330	4300606	4008172	4008275	200						
4504331	4300606	4008172	4008275	200						
4504332	4300606	4008170	4008275	210						
4504333	4300607	4008170	4008275	200						
4504334	4300607	4008170	4008275	200						
4504335	4300607	4008170	4008275	200						
4504336	4300607	4008170	4008275	200						
4504337	4300607	4008170	4008275	200						
4504338	4300607	4008170	4008278	200						
4504339	4300607	4008170	4008278	200						
4504340	4300607	4008170	4008278	315						

* a confining pressure of 10,000 psf with boundary conditions of steel plate/Ottawa sand/geocomposite/60 mil HDPE/steel plate and a seating time of 100 hour

Tested by:

Checked by:

Tenax Mfg AL LLC - Roll Listing

Date: 01-19-2005

Time: 14:31:11

Page 1 of 1

Roll Number	Product Code	Description	Line	Lot Number	Production Date	Shift	Stg Area	Status	On BL	Job Number	Slit From Roll	Original Roll	Linear Ft.	Sq Ft./Yds
001	4504320	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
002	4504321	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0703	H	N	41199			200.00	2,500.00 SQF
003	4504322	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0703	H	N	41199			200.00	2,500.00 SQF
004	4504323	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
005	4504324	TDO770AA150270 TDO770-2 6oz/6oz 12.5x270		45032	12/14/2004	D	0406	H	N	41199			270.00	3,375.00 SQF
006	4504325	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
007	4504326	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0703	H	N	41199			200.00	2,500.00 SQF
008	4504327	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
009	4504328	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
010	4504329	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
011	4504330	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
012	4504331	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
013	4504332	TDO770AA150210 TDO770-2 6oz/6oz 12.5x210		45032	12/14/2004	D	0406	H	N	41199			210.00	2,625.00 SQF
014	4504333	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0703	H	N	41199			200.00	2,500.00 SQF
015	4504334	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
016	4504335	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
017	4504336	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
018	4504337	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
019	4504338	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0703	H	N	41199			200.00	2,500.00 SQF
020	4504339	TDO770AA150200 TDO770-2 6oz/6oz 12.5x200		45032	12/14/2004	D	0406	H	N	41199			200.00	2,500.00 SQF
021	4504340	TDO770AA150315 TDO770-2 6oz/6oz 12.5x315		45032	12/14/2004	D	0406	H	N	41199			315.00	3,937.50 SQF
Totals													4,395.00	54,937.50 SQF

ATTACHMENT 6-4

CQA GEOCOMPOSITE TESTING REPORT

SUMMARY SHEET

TRI/Environmental, Inc geosynthetics testing results
SCLF Capacity Expansion, Section 8 Construction

Geocomposite Test Results												
	Seat Time 1 hr Transmissivity (10 ⁻³) m ² /sec	Seat Time 1 hr Permeability (cm/s)	Seat Time 1 hr Flow Rate/Unit Weight (gpm/ft width)	Seat Time 24 hr Transmissivity (10 ⁻³) m ² /sec	Seat Time 24 hr Permeability (cm/s)	Seat Time 24 hr Flow Rate/Unit Weight (gpm/ft width)	Seat Time 100 hr Transmissivity (10 ⁻³) m ² /sec	Seat Time 100 hr Permeability (cm/s)	Seat Time 100 hr Flow Rate/Unit Weight (gpm/ft width)	Thickness mils	Side A Peel Strength lbs/in	Side B Peel Strength lbs/in
SPECIFICATION	Minimum 3.7 x 10 ⁻³			Minimum 3.7 x 10 ⁻³			Minimum 3.7 x 10 ⁻³			Min. 300	Avg 1.0	Avg 1.0
Geocomposite 4504074	6.00E-03	77	0.60	5.20E-03	67	0.52	No Data	No Data	No Data	421	2.7	1.5
Geocomposite 4504085	7.40E-03	95	0.73	6.70E-03	85	0.63	No Data	No Data	No Data	414	1.6	0.9
Geocomposite 4504124	7.50E-03	97	0.74	6.50E-03	85	0.65	5.90E-03	78	0.60	403	1.7	1.8
Geocomposite 4504203	8.70E-03	120	0.86	7.60E-03	100	0.77	No Data	No Data	No Data	419	1.7	1.0
Geocomposite 4504282	6.80E-03	90	0.66	5.90E-03	78	0.57	No Data	No Data	No Data	390	3.0	3.7
Geocomposite 4504326	4.70E-03	63	0.46	4.40E-03	57	0.41	No Data	No Data	No Data	391	1.6	2.1

Geonet Test Results			Geotextile Test Results					
	Mass/Unit Area grams	Density g/cm ³	Mass/Unit Area grams	Puncture Resistance lbs	AOS mm	Permittivity sec ⁻¹	Flow Rate gpm/ft ²	Permeability cm/s
SPECIFICATION		Min. 0.94		Minimum 56	Max. #70 (0.212)	Min. 0.5		
Geocomposite 4504074	0.342	0.956	6.74	100	0.090	1.25	94	0.31
Geocomposite 4504085	0.365	0.956	7.43	123	0.093	1.55	116	0.32
Geocomposite 4504124	0.381	0.957	7.10	121	0.090	1.60	120	0.39
Geocomposite 4504203	0.336	0.955	6.55	115	0.105	2	150	0.50
Geocomposite 4504282	0.307	0.951	6.42	185	0.090	1.77	133	0.40
Geocomposite 4504326	0.315	0.951	7.04	122	0.103	1.84	138	0.39

TEST RESULTS



March 21, 2005

Mail To:

Mr. Joseph H. O'Neill, P.E.
SCS Engineers
3012 U.S. Highway 301 N, Ste. 700
Tampa, FL 33619

email: joneill@scsengineers.com

Bill To:

<= Same

Dear Mr. O'Neill:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report for laboratory testing.

Project: Southeast County Landfill - Capacity Expansion Sect. 8

TRI Job Reference Number: E2217-46-05

Material(s) Tested: 6 Double Sided Geocomposite(s)

Test(s) Requested: Updating ==> Transmissivity with Permeability (ASTM D 4716) - GC
Thickness (ASTM D 1777) - GC
Peel Strength (GRI GC7) - GC
Mass/Unit Area (ASTM D 3776) - GN / GT
Density (ASTM D 1505) - GN
Puncture Strength (ASTM D 4833) - GT
Apparent Opening Size (ASTM D 4751) - GT
Permittivity (ASTM D 4491) - GT

If you have any questions or require any additional information, please call us at
1-800-880-8378.

Sincerely,

Sam R. Allen
Vice President and Division Manager
Geosynthetic Services Division



GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers

Project: Southeast County Landfill - Capacity Expansion Sect. 8

Material: Double Sided Geocomposite

Sample Identification: 4504074

TRI Log #: E2217-46-05

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Hydraulic Transmissivity with Permeability (ASTM D 4716)												
Compressive Load (psf):	10000											
Hydraulic Gradient:	0.02											
Seal Time (hours):	1											
Test Temperature (C)	21											
Direction Tested: machine direction												
Profile (Top to Bottom): Plate/Synthetic Soil/GC Sample/GSE 60 mil Textured HDPE Geomembrane/Plate												
Permeant: Water												
Flow Rate/Unit Width (GPM/ft width)	0.60	0.60	0.59								0.60	0.00
Hydraulic Transmissivity (m2/s)	6.0E-03	6.1E-03	6.0E-03								6.0E-03	4.6E-05
Permeability (cm/s)	5.6E+01	1.2E+02	5.5E+01								7.7E+01	3.0E+01
Seal Time (hours):												
Test Temperature (C)												
Direction Tested: machine direction												
Profile (Top to Bottom): Plate/Synthetic Soil/GC Sample/GSE 60 mil Textured HDPE Geomembrane/Plate												
Permeant: Water												
Flow Rate/Unit Width (GPM/ft width)	0.52	0.53	0.52								0.52	0.00
Hydraulic Transmissivity (m2/s)	5.2E-03	5.2E-03	5.2E-03								5.2E-03	1.3E-05
Permeability (cm/s)	4.9E+01	1.0E+02	4.8E+01								6.7E+01	2.5E+01
Thickness (ASTM D 1777)												
Thickness (mils)	400	452	411	417	415	426	419	419	440	412	421	14
Peel Strength (GRI GC7)												
A - MD Average peel strength (ppi)	2.5	4.7	2.0	2.2	2.0						2.7	1.0
A - MD Average peel strength (g/in)	1135	2134	908	999	908						1217	466
B - MD Average peel strength (ppi)	1.3	2.8	1.3	1.3	0.9						1.5	0.7
B - MD Average peel strength (g/in)	590	1271	590	590	409						690	299
Note: A and B represent a randomly assigned top and bottom of the sample												
Mass/Unit Area (ASTM D 3776)												
GEONET COMPONENT												
5 in diameter circle - mass (grams)	22.17	22.25	21.59	21.62	21.48	20.75	20.00	20.74	21.07	19.52		
Mass/unit area (lbs./sq.ft)	0.359	0.360	0.350	0.350	0.348	0.336	0.324	0.336	0.341	0.316	0.342	0.01
Density (ASTM D 1505)												
GEONET COMPONENT												
Density (g/cm3)	0.956	0.955	0.956								0.956	0.0005
MD Machine Direction												

NOTE: Geotextile had to be debonded from the geonet prior to testing. The debonding procedure may have biased test results.

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GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers

Project: Southeast County Landfill - Capacity Expansion Sect. 8

Material: Double Sided Geocomposite
Sample Identification: 4504074
TRI Log #: E2217-46-05

GEOTEXTILE COMPONENT TOP

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 3776, Option C)												
5" diameter circle (grams)	2.87	2.96	2.85	2.71	2.95	2.50	2.99	2.98	2.98	3.20		
Mass/Unit Area (oz/sq.yd)	6.68	6.88	6.63	6.30	6.86	5.82	6.95	6.93	6.93	7.44	6.74	0.41
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	107	104	94	110	119	108	81	97	79	113	100	11
	95	97	94	103	106							
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.090	0.090	0.090	0.090	0.090						0.090	0.000
US Sieve No.	170	170	170	170	170						170	
Constant Head Permittivity (ASTM D 4491, 2 in. Constant Head)												
Water Temp. (C):	20											
Correction Factor:	1											
Trial ==>	1					2						
Thickness (mils)	89	89	89	89	89	103	103	103	103	103		
Time (s)	16	16	16	16	16	23	23	23	23	23		
Flow (L)	2.32	2.48	2.48	2.48	2.48	2.68	2.68	2.68	2.68	2.68		
Permittivity (s-1)	1.41	1.51	1.51	1.51	1.51	1.13	1.13	1.13	1.13	1.13		
Flow rate (GPM/ft2)	105	113	113	113	113	85	85	85	85	85		
Permeability (cm/s)	0.32	0.34	0.34	0.34	0.34	0.30	0.30	0.30	0.30	0.30		
Trial ==>	3					4						
Thickness (mils)	105	105	105	105	105	93	93	93	93	93		
Time (s)	23	23	23	23	23	17	17	17	17	17		
Flow (L)	2.52	2.56	2.56	2.56	2.56	2.28	2.24	2.32	2.32	2.28		
Permittivity (s-1)	1.06	1.08	1.08	1.08	1.08	1.30	1.28	1.33	1.33	1.30	1.25	0.16
Flow rate (GPM/ft2)	80	81	81	81	81	97	96	99	99	97	94	12
Permeability (cm/s)	0.28	0.29	0.29	0.29	0.29	0.31	0.30	0.31	0.31	0.31	0.31	0.02
TEMPERATURE CORRECTED VALUES						Permittivity (s-1) Flow rate (GPM/ft2) Permeability (cm/s)					1.25 94 0.31	

NOTE: Geotextile had to be debonded from the geonet prior to testing. The debonding procedure may have biased test results.

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GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers

Project: Southeast County Landfill - Capacity Expansion Sect. 8

Material: Double Sided Geocomposite

Sample Identification: 4504085

TRI Log #: E2217-46-05

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Hydraulic Transmissivity with Permeability (ASTM D 4716)												
Compressive Load (psf):	10000											
Hydraulic Gradient:	0.02											
Seal Time (hours):	1											
Test Temperature (C)	21											
Direction Tested: machine direction												
Profile (Top to Bottom): Plate/Synthetic Soil/GC Sample/GSE 60 mil Textured HDPE Geomembrane/Plate												
Permeant: Water												
Flow Rate/Unit Width (GPM/ft width)	0.74	0.73	0.73								0.73	0.01
Hydraulic Transmissivity (m2/s)	7.5E-03	7.3E-03	7.4E-03								7.4E-03	5.6E-05
Permeability (cm/s)	7.3E+01	1.4E+02	6.8E+01								9.5E+01	3.5E+01
Seal Time (hours):												
Test Temperature (C)												
Direction Tested: machine direction												
Profile (Top to Bottom): Plate/Synthetic Soil/GC Sample/GSE 60 mil Textured HDPE Geomembrane/Plate												
Permeant: Water												
Flow Rate/Unit Width (GPM/ft width)	0.64	0.64	0.63								0.63	0.00
Hydraulic Transmissivity (m2/s)	6.8E-03	6.7E-03	6.7E-03								6.7E-03	4.7E-05
Permeability (cm/s)	6.3E+01	1.3E+02	5.9E+01								8.5E+01	3.4E+01
Thickness (ASTM D 1777)												
Thickness (mils)	415	404	426	405	434	407	435	405	400	407	414	12
Peel Strength (GRI GC7)												
A - MD Average peel strength (ppi)	1.2	1.3	0.9	1.2	3.3						1.6	0.9
A - MD Average peel strength (g/in)	545	590	409	545	1498						717	395
B - MD Average peel strength (ppi)	1.0	0.8	0.6	0.8	1.1						0.9	0.2
B - MD Average peel strength (g/in)	454	363	272	363	499						390	79
Note: A and B represent a randomly assigned top and bottom of the sample												
Mass/Unit Area (ASTM D 3776)												
GEONET COMPONENT												
5 in diameter circle - mass (grams)	21.40	21.42	22.07	22.11	22.82	22.79	23.32	22.76	23.75	23.15		
Mass/unit area (lbs./sq.ft)	0.347	0.347	0.358	0.358	0.370	0.369	0.378	0.369	0.385	0.375	0.365	0.01
Density (ASTM D 1505)												
GEONET COMPONENT												
Density (g/cm3)	0.956	0.956	0.956								0.956	0.0000
MD Machine Direction												

NOTE: Geotextile had to be debonded from the geonet prior to testing. The debonding procedure may have biased test results.

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GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers

Project: Southeast County Landfill - Capacity Expansion Sect. 8

Material: Double Sided Geocomposite
Sample Identification: 4504085
TRI Log #: E2217-46-05

GEOTEXTILE COMPONENT BOTTOM

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 3776, Option C)												
5" diameter circle (grams)	4.38	2.75	2.72	4.14	3.19	2.84	2.87	3.21	2.86	2.98		
Mass/Unit Area (oz/sq.yd)	10.19	6.40	6.33	9.63	7.42	6.61	6.68	7.47	6.65	6.93	7.43	1.30
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	162	192	101	99	149	106	98	108	121	139	123	27
	127	87	100	125	128							
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.090	0.090	0.090	0.090	0.106						0.093	0.006
US Sieve No.	170	170	170	170	140						140	
Constant Head Permittivity (ASTM D 4491, 2 in. Constant Head)												
Water Temp. (C):	20											
Correction Factor:	1											
Trial ==>	1					2						
Thickness (mils)	80	80	80	80	80	82	82	82	82	82		
Time (s)	16	16	16	16	16	16	16	16	16	16		
Flow (L)	2.36	2.36	2.36	2.32	2.30	2.64	2.76	2.76	2.76	2.68		
Permittivity (s-1)	1.43	1.43	1.43	1.41	1.40	1.60	1.67	1.67	1.67	1.63		
Flow rate (GPM/ft2)	107	107	107	105	104	120	125	125	125	122		
Permeability (cm/s)	0.29	0.29	0.29	0.29	0.28	0.33	0.35	0.35	0.35	0.34		
Trial ==>	3					4						
Thickness (mils)	88	88	88	88	88	79	79	79	79	79		
Time (s)	16	16	16	16	16	16	16	16	16	16		
Flow (L)	2.52	2.56	2.52	2.44	2.48	2.56	2.72	2.68	2.68	2.68		
Permittivity (s-1)	1.53	1.55	1.53	1.48	1.51	1.55	1.65	1.63	1.63	1.63	1.55	0.09
Flow rate (GPM/ft2)	114	116	114	111	113	116	124	122	122	122	116	7
Permeability (cm/s)	0.34	0.35	0.34	0.33	0.34	0.31	0.33	0.33	0.33	0.33	0.32	0.02
TEMPERATURE CORRECTED VALUES						Permittivity (s-1) Flow rate (GPM/ft2) Permeability (cm/s)					1.55 116 0.32	

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GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers

Project: Southeast County Landfill - Capacity Expansion Sect. 8

Material: Double Sided Geocomposite

Sample Identification: 4504124

TRI Log #: E2217-46-05

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Hydraulic Transmissivity with Permeability (ASTM D 4716)												
Compressive Load (psf):	10000											
Hydraulic Gradient:	0.02											
Seal Time (hours):	1											
Test Temperature (C)	21											
Direction Tested: machine direction												
Profile (Top to Bottom): Plate/Synthetic Soil/GC Sample/GSE 60 mil Textured HDPE Geomembrane/Plate												
Permeant: Water												
Flow Rate/Unit Width (GPM/ft width)	0.74	0.74	0.74								0.74	0.00
Hydraulic Transmissivity (m2/s)	7.5E-03	7.4E-03	7.5E-03								7.5E-03	3.6E-05
Permeability (cm/s)	7.3E+01	1.5E+02	7.2E+01								9.7E+01	3.5E+01
Seal Time (hours):												
24												
Test Temperature (C)												
22												
Direction Tested: machine direction												
Profile (Top to Bottom): Plate/Synthetic Soil/GC Sample/GSE 60 mil Textured HDPE Geomembrane/Plate												
Permeant: Water												
Flow Rate/Unit Width (GPM/ft width)	0.65	0.65	0.66								0.65	0.00
Hydraulic Transmissivity (m2/s)	6.4E-03	6.4E-03	6.5E-03								6.5E-03	2.8E-05
Permeability (cm/s)	6.4E+01	1.3E+02	6.4E+01								8.5E+01	2.9E+01
Seal Time (hours):												
100												
Test Temperature (C)												
22												
Direction Tested: machine direction												
Profile (Top to Bottom): Plate/Synthetic Soil/GC Sample/GSE 60 mil Textured HDPE Geomembrane/Plate												
Permeant: Water												
Flow Rate/Unit Width (GPM/ft width)	0.60	0.60	0.60								0.60	0.00
Hydraulic Transmissivity (m2/s)	6.0E-03	5.9E-03	6.0E-03								5.9E-03	1.7E-05
Permeability (cm/s)	5.9E+01	1.2E+02	5.9E+01								7.8E+01	2.7E+01
Thickness (ASTM D 1777)												
Thickness (mils)	391	417	395	398	400	407	399	404	415	408	403	8
Peel Strength (GRI GC7)												
A - MD Average peel strength (ppi)	2.1	0.8	0.8	3.6	1.1						1.7	1.1
A - MD Average peel strength (g/in)	953	363	363	1634	499						763	487
B - MD Average peel strength (ppi)	3.1	1.3	2.0	1.0	1.5						1.8	0.7
B - MD Average peel strength (g/in)	1407	590	890	454	681						804	333
Note: A and B represent a randomly assigned top and bottom of the sample												

Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers

Project: Southeast County Landfill - Capacity Expansion Sect. 8

Material: Double Sided Geocomposite

Sample Identification: 4504124

TRI Log #: E2217-46-05

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 3776)	GEONET COMPONENT											
5 in diameter circle - mass (grams)	22.13	22.26	23.88	23.09	23.96	23.09	23.87	24.03	24.08	24.57		
Mass/unit area (lbs./sq.ft)	0.359	0.361	0.387	0.374	0.388	0.374	0.387	0.389	0.390	0.398	0.381	0.01
Density (ASTM D 1505)	GEONET COMPONENT											
Density (g/cm3)	0.957	0.958	0.957								0.957	0.0005

MD Machine Direction

NOTE: Geotextile had to be debonded from the geonet prior to testing. The debonding procedure may have biased test results.

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GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers

Project: Southeast County Landfill - Capacity Expansion Sect. 8

Material: Double Sided Geocomposite

Sample Identification: 4504124

TRI Log #: E2217-46-05

GEOTEXTILE COMPONENT

TOP

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 3776, Option C)												
5" diameter circle (grams)	3.22	2.91	2.92	3.36	3.76	2.62	2.85	2.82	2.91	3.17		
Mass/Unit Area (oz/sq.yd)	7.49	6.77	6.79	7.82	8.75	6.09	6.63	6.56	6.77	7.37	7.10	0.73
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	128	133	133	80	155	144	93	103	163	96	121	27
	95	143	90	159	97							
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.090	0.090	0.090	0.090	0.090						0.090	0.000
US Sieve No.	170	170	170	170	170						170	
Constant Head Permittivity (ASTM D 4491, 2 in. Constant Head)												
Water Temp. (C):	20											
Correction Factor:	1											
Trial ==>	1					2						
Thickness (mils)	88	88	88	88	88	107	107	107	107	107		
Time (s)	15	15	15	15	15	15	15	15	15	15		
Flow (L)	2.08	2.20	2.16	2.16	2.16	2.68	2.68	2.60	2.48	2.60		
Permittivity (s-1)	1.35	1.42	1.40	1.40	1.40	1.73	1.73	1.68	1.61	1.68		
Flow rate (GPM/ft2)	101	107	105	105	105	130	130	126	120	126		
Permeability (cm/s)	0.30	0.32	0.31	0.31	0.31	0.47	0.47	0.46	0.44	0.46		
Trial ==>	3					4						
Thickness (mils)	85	85	85	85	85	98	98	98	98	98		
Time (s)	15	15	15	15	15	15	15	15	15	15		
Flow (L)	2.32	2.52	2.44	2.32	2.36	2.76	2.72	2.72	2.68	2.76		
Permittivity (s-1)	1.50	1.63	1.58	1.50	1.53	1.79	1.76	1.76	1.73	1.79	1.60	0.15
Flow rate (GPM/ft2)	112	122	118	112	114	134	132	132	130	134	120	11
Permeability (cm/s)	0.32	0.35	0.34	0.32	0.33	0.44	0.44	0.44	0.43	0.44	0.39	0.06
TEMPERATURE CORRECTED VALUES						Permittivity (s-1) Flow rate (GPM/ft2) Permeability (cm/s)					1.60 120 0.39	

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GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers

Project: Southeast County Landfill - Capacity Expansion Sect. 8

Material: Double Sided Geocomposite

Sample Identification: 4504203

TRI Log #: E2217-46-05

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Hydraulic Transmissivity with Permeability (ASTM D 4716)												
Compressive Load (psf):	10000											
Hydraulic Gradient:	0.02											
Seal Time (hours):	1											
Test Temperature (C)	21											
Direction Tested: machine direction												
Profile (Top to Bottom): Plate/Synthetic Soil/GC Sample/GSE 60 mil Textured HDPE Geomembrane/Plate												
Permeant: Water												
Flow Rate/Unit Width (GPM/ft width)	0.86	0.86	0.87								0.86	0.00
Hydraulic Transmissivity (m2/s)	8.7E-03	8.7E-03	8.8E-03								8.7E-03	2.6E-05
Permeability (cm/s)	9.2E+01	1.7E+02	9.2E+01								1.2E+02	3.7E+01
Seal Time (hours): 24												
Test Temperature (C) 22												
Direction Tested: machine direction												
Profile (Top to Bottom): Plate/Synthetic Soil/GC Sample/GSE 60 mil Textured HDPE Geomembrane/Plate												
Permeant: Water												
Flow Rate/Unit Width (GPM/ft width)	0.77	0.77	0.77								0.77	0.00
Hydraulic Transmissivity (m2/s)	7.6E-03	7.6E-03	7.6E-03								7.6E-03	1.3E-05
Permeability (cm/s)	8.2E+01	1.5E+02	8.2E+01								1.0E+02	3.2E+01
Thickness (ASTM D 1777)												
Thickness (mils)	427	420	433	416	406	419	421	408	425	411	419	8
Peel Strength (GRI GC7)												
A - MD Average peel strength (ppi)	2.1	2.1	1.4	0.7	2.3						1.7	0.6
A - MD Average peel strength (g/in)	953	953	636	318	1044						781	270
B - MD Average peel strength (ppi)	1.2	0.7	1.3	0.8	1.2						1.0	0.2
B - MD Average peel strength (g/in)	545	318	590	363	545						472	110
Note: A and B represent a randomly assigned top and bottom of the sample												
Mass/Unit Area (ASTM D 3776)												
GEONET COMPONENT												
5 in diameter circle - mass (grams)	22.61	20.37	21.86	20.03	21.23	19.85	21.28	19.11	21.12	20.05		
Mass/unit area (lbs./sq.ft)	0.366	0.330	0.354	0.324	0.344	0.322	0.345	0.310	0.342	0.325	0.336	0.02
Density (ASTM D 1505)												
GEONET COMPONENT												
Density (g/cm3)	0.955	0.954	0.955								0.955	0.0005

MD Machine Direction

NOTE: Geotextile had to be debonded from the geonet prior to testing. The debonding procedure may have biased test results.

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GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers

Project: Southeast County Landfill - Capacity Expansion Sect. 8

Material: Double Sided Geocomposite
Sample Identification: 4504203
TRI Log #: E2217-46-05

GEOTEXTILE COMPONENT BOTTOM

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 3776, Option C)												
5" diameter circle (grams)	2.74	2.69	3.02	2.43	3.04	2.71	2.69	3.06	2.64	3.13		
Mass/Unit Area (oz/sq.yd)	6.37	6.26	7.02	5.65	7.07	6.30	6.26	7.12	6.14	7.28	6.55	0.51
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	103	127	110	121	119	128	117	107	114	133	115	13
	133	126	83	107	104							
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.090	0.106	0.090	0.090	0.150						0.105	0.023
US Sieve No.	170	140	170	170	100						140	
Constant Head Permittivity (ASTM D 4491, 2 in. Constant Head)												
Water Temp. (C):	21											
Correction Factor:	0.9759											
Trial ==>	1					2						
Thickness (mils)	98	98	98	98	98	93	93	93	93	93		
Time (s)	13	13	13	13	13	13	13	13	13	13		
Flow (L)	2.28	2.40	2.44	2.44	2.44	2.56	2.68	2.60	2.60	2.52		
Permittivity (s-1)	1.70	1.79	1.82	1.82	1.82	1.91	2.00	1.94	1.94	1.88		
Flow rate (GPM/ft2)	127	134	136	136	136	143	150	145	145	141		
Permeability (cm/s)	0.42	0.45	0.45	0.45	0.45	0.45	0.47	0.46	0.46	0.44		
Trial ==>	3					4						
Thickness (mils)	90	90	90	90	90	110	110	110	110	110		
Time (s)	13	13	13	13	13	13	10	10	10	10		
Flow (L)	2.88	2.96	2.88	2.84	2.84	2.96	2.40	2.44	2.44	2.40		
Permittivity (s-1)	2.15	2.21	2.15	2.12	2.12	2.21	2.33	2.37	2.37	2.33	2.05	0.21
Flow rate (GPM/ft2)	161	165	161	159	159	165	174	177	177	174	153	15
Permeability (cm/s)	0.49	0.51	0.49	0.48	0.48	0.62	0.65	0.66	0.66	0.65	0.51	0.08
TEMPERATURE CORRECTED VALUES						Permittivity (s-1) Flow rate (GPM/ft2) Permeability (cm/s)					2.00 150 0.50	

NOTE: Geotextile had to be debonded from the geonet prior to testing. The debonding procedure may have biased test results.

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GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers
Project: Southeast County Landfill - Capacity Expansion Sect. 8

Material: Double Sided Geocomposite
Sample Identification: 4504282
TRI Log #: E2217-46-05

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Hydraulic Transmissivity with Permeability (ASTM D 4716)												
Compressive Load (psf):	10000											
Hydraulic Gradient:	0.02											
Seal Time (hours):	1											
Test Temperature (C)	20											
Direction Tested: machine direction												
Profile (Top to Bottom): Plate/Synthetic Soil/GC Sample/GSE 60 mil Textured HDPE Geomembrane/Plate												
Permeant: Water												
Flow Rate/Unit Width (GPM/ft width)	0.66	0.66	0.66								0.66	0.00
Hydraulic Transmissivity (m2/s)	6.8E-03	6.8E-03	6.8E-03								6.8E-03	1.4E-05
Permeability (cm/s)	6.8E+01	1.3E+02	6.8E+01								9.0E+01	3.2E+01
Seal Time (hours):												
24												
Test Temperature (C)												
20												
Direction Tested: machine direction												
Profile (Top to Bottom): Plate/Synthetic Soil/GC Sample/GSE 60 mil Textured HDPE Geomembrane/Plate												
Permeant: Water												
Flow Rate/Unit Width (GPM/ft width)	0.57	0.57	0.56								0.57	0.01
Hydraulic Transmissivity (m2/s)	5.9E-03	5.9E-03	5.8E-03								5.9E-03	5.8E-05
Permeability (cm/s)	5.8E+01	1.2E+02	5.8E+01								7.8E+01	2.8E+01
Thickness (ASTM D 1777)												
Thickness (mils)	392	380	397	396	388	400	393	389	378	382	390	7
Peel Strength (GRI GC7)												
A - MD Average peel strength (ppi)	3.2	2.1	3.8	2.5	3.3						3.0	0.6
A - MD Average peel strength (g/in)	1453	953	1725	1135	1498						1353	275
B - MD Average peel strength (ppi)	1.2	1.6	4.4	3.3	7.8						3.7	2.4
B - MD Average peel strength (g/in)	545	726	1998	1498	3541						1662	1077
Note: A and B represent a randomly assigned top and bottom of the sample												
Mass/Unit Area (ASTM D 3776)												
GEONET COMPONENT												
5 in diameter circle - mass (grams)	18.44	18.42	19.58	18.43	19.68	18.55	19.45	18.99	18.89	19.35		
Mass/unit area (lbs./sq.ft)	0.299	0.298	0.317	0.299	0.319	0.301	0.315	0.308	0.306	0.313	0.307	0.01
Density (ASTM D 1505)												
GEONET COMPONENT												
Density (g/cm3)	0.951	0.951	0.951								0.951	0.0000

MD Machine Direction

NOTE: Geotextile had to be debonded from the geonet prior to testing. The debonding procedure may have biased test results.

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GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers

Project: Southeast County Landfill - Capacity Expansion Sect. 8

Material: Double Sided Geocomposite
Sample Identification: 4504282
TRI Log #: E2217-46-05

GEOTEXTILE COMPONENT TOP

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 3776, Option C)												
5" diameter circle (grams)	3.36	2.41	2.73	2.58	3.02	3.07	2.84	2.54	2.48	2.56		
Mass/Unit Area (oz/sq.yd)	7.82	5.61	6.35	6.00	7.02	7.14	6.61	5.91	5.77	5.95	6.42	0.68
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	116	1145	104	116	112	109	106	105	128	97	185	257
	115	145	116	126	129							
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.090	0.090	0.090	0.090	0.090						0.090	0.000
US Sieve No.	170	170		170	170						170	
Constant Head Permittivity (ASTM D 4491, 2 in. Constant Head)												
Water Temp. (C):	20											
Correction Factor:	1											
Trial =>	1					2						
Thickness (mils)	80	80	80	80	80	89	89	89	89	89		
Time (s)	17	17	17	17	17	17	17	17	17	17		
Flow (L)	2.60	2.68	2.76	2.72	2.76	2.56	2.60	2.60	2.80	2.80		
Permittivity (s-1)	1.49	1.53	1.58	1.55	1.58	1.46	1.49	1.49	1.60	1.60		
Flow rate (GPM/ft2)	111	115	118	116	118	109	111	111	120	120		
Permeability (cm/s)	0.30	0.31	0.32	0.32	0.32	0.33	0.34	0.34	0.36	0.36		
Trial =>	3					4						
Thickness (mils)	88	88	88	88	88	95	95	95	95	95		
Time (s)	10	10	10	10	10	15	15	15	15	15		
Flow (L)	2.56	2.60	2.68	2.68	2.72	2.20	2.24	2.28	2.24	2.24		
Permittivity (s-1)	2.49	2.52	2.60	2.60	2.64	1.42	1.45	1.48	1.45	1.45	1.77	0.46
Flow rate (GPM/ft2)	186	189	195	195	198	107	108	110	108	108	133	35
Permeability (cm/s)	0.56	0.56	0.58	0.58	0.59	0.34	0.35	0.36	0.35	0.35	0.40	0.10
TEMPERATURE CORRECTED VALUES											1.77	
											133	
											0.40	

NOTE: Geotextile had to be debonded from the geonet prior to testing. The debonding procedure may have biased test results.

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GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers

Project: Southeast County Landfill - Capacity Expansion Sect. 8

Material: Double Sided Geocomposite

Sample Identification: 4504326

TRI Log #: E2217-46-05

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Hydraulic Transmissivity with Permeability (ASTM D 4716)												
Compressive Load (psf):	10000											
Hydraulic Gradient:	0.02											
Seal Time (hours):	1											
Test Temperature (C)	21											
Direction Tested: machine direction												
Profile (Top to Bottom): Plate/Synthetic Soil/GC Sample/GSE 60 mil Textured HDPE Geomembrane/Plate												
Permeant: Water												
Flow Rate/Unit Width (GPM/ft width)	0.47	0.47	0.46								0.46	0.00
Hydraulic Transmissivity (m2/s)	4.7E-03	4.7E-03	4.7E-03								4.7E-03	2.6E-05
Permeability (cm/s)	4.8E+01	9.3E+01	4.8E+01								6.3E+01	2.1E+01
Seal Time (hours):												
Test Temperature (C)												
Direction Tested: machine direction												
Profile (Top to Bottom): Plate/Synthetic Soil/GC Sample/GSE 60 mil Textured HDPE Geomembrane/Plate												
Permeant: Water												
Flow Rate/Unit Width (GPM/ft width)	0.41	0.41	0.41								0.41	0.00
Hydraulic Transmissivity (m2/s)	4.4E-03	4.3E-03	4.4E-03								4.4E-03	3.1E-05
Permeability (cm/s)	4.3E+01	8.5E+01	4.2E+01								5.7E+01	2.0E+01
Thickness (ASTM D 1777)												
Thickness (mils)	392	397	394	382	389	383	399	388	393	390	391	5
Peel Strength (GRI GC7)												
A - MD Average peel strength (ppi)	1.6	0.2	0.7	2.3	3.2						1.6	1.1
A - MD Average peel strength (g/in)	726	91	318	1044	1453						726	490
D Average peel strength (ppi)	2.1	0.1	1.1	5.1	2.1						2.1	1.7
MD Average peel strength (g/in)	953	45	499	2315	953						953	760
Note: A and B represent a randomly assigned top and bottom of the sample												
Mass/Unit Area (ASTM D 3776)												
GEONET COMPONENT												
5 in diameter circle - mass (grams)	20.08	19.45	20.20	19.25	19.69	19.04	19.71	18.72	19.24	19.29		
Mass/unit area (lbs./sq.ft)	0.325	0.315	0.327	0.312	0.319	0.308	0.319	0.303	0.312	0.312	0.315	0.01
Density (ASTM D 1505)												
GEONET COMPONENT												
Density (g/cm3)	0.951	0.950	0.951								0.951	0.0005

MD Machine Direction

NOTE: Geotextile had to be debonded from the geonet prior to testing. The debonding procedure may have biased test results.

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GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers

Project: Southeast County Landfill - Capacity Expansion Sect. 8

Material: Double Sided Geocomposite
Sample Identification: 4504326
TRI Log #: E2217-46-05

GEOTEXTILE COMPONENT BOTTOM

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 3776, Option C)												
5" diameter circle (grams)	2.81	2.84	2.79	3.05	2.78	3.08	2.80	3.06	4.19	2.87		
Mass/Unit Area (oz/sq.yd)	6.54	6.61	6.49	7.09	6.47	7.16	6.51	7.12	9.75	6.68	7.04	0.94
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	126	122	105	142	94	109	123	102	137	130	122	25
	99	118	99	201	117							
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.125	0.106	0.106	0.090	0.090						0.103	0.013
US Sieve No.	120	140	140	170	170						140	
Constant Head Permittivity (ASTM D 4491, 2 in. Constant Head)												
Water Temp. (C):	21											
Correction Factor:	0.976											
Trial ==>	1					2						
Thickness (mils)	83	83	83	83	83	92	92	92	92	92		
Time (s)	13	13	13	13	13	13	13	13	13	13		
Flow (L)	2.32	2.28	2.32	2.36	2.36	2.60	2.68	2.72	2.64	2.72		
Permittivity (s-1)	1.73	1.70	1.73	1.76	1.76	1.94	2.00	2.03	1.97	2.03		
Flow rate (GPM/ft2)	130	127	130	132	132	145	150	152	148	152		
Permeability (cm/s)	0.37	0.36	0.37	0.37	0.37	0.45	0.47	0.47	0.46	0.47		
Trial ==>	3					4						
Thickness (mils)	78	78	78	78	78	76	76	76	76	76		
Time (s)	13	13	13	13	13	13	13	13	13	13		
Flow (L)	2.20	2.48	2.48	2.44	2.48	2.56	2.68	2.76	2.72	2.72		
Permittivity (s-1)	1.64	1.85	1.85	1.82	1.85	1.91	2.00	2.06	2.03	2.03	1.89	0.13
Flow rate (GPM/ft2)	123	139	139	136	139	143	150	154	152	152	141	10
Permeability (cm/s)	0.33	0.37	0.37	0.36	0.37	0.37	0.39	0.40	0.39	0.39	0.39	0.04
TEMPERATURE CORRECTED VALUES						Permittivity (s-1) Flow rate (GPM/ft2) Permeability (cm/s)					1.84 138 0.39	

NOTE: Geotextile had to be debonded from the geonet prior to testing. The debonding procedure may have biased test results.

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ATTACHMENT 6-5

SUBBASE ACCEPTANCE FORMS

SCS ENGINEERS

CERTIFICATE OF SUB-BASE ACCEPTANCE

Installer: CSI Project name: SEVENTH L.F. SECTION 8
Address: W299 N428 PEWAWKEE Project location: HILLSBOROUGH COUNTY,
WAUKESHA, WI 53188 FL.
Owner: HILLSBOROUGH COUNTY

I, THE UNDERSIGNED, DULY AUTHORIZED REPRESENTATIVE OF CSI
(Geosynthetic Installer)
DO HEREBY ACCEPT THE AREA OF SOIL SURFACE AS DESCRIBED BELOW.

NORTH
(SKETCH OR DESCRIBE) 51-534 APPROX 106,000

WEST

EAST
BERM

SOUTH

Acceptance of the soil surface for which the geomembrane will be placed is based upon visual observations.
Acceptance of the subgrade surface considers that at the time the geomembrane is placed, the structure of the underlying soil surface, which is the responsibility of others, meets or exceeds the project specifications.

VEGAS VONGSANTH

NAME

SUPT.

TITLE

Vegas Vongsanth

SIGNATURE

8/24/05

DATE

Certification received by SCS

KURT PETERSON

NAME

LINER QA

TITLE

KA

SIGNATURE

8/26/05

DATE



**CERTIFICATE OF ACCEPTANCE OF SUBGRADE
SURFACE PREPARATION FOR GEOMEMBRANE INSTALLATION**

PROJECT NAME: 5.5 HILLSBOROUGH L.F. Sec. 8
LOCATION: Trinity, FL
Job #: 24009 Owner: W.M.
AREA ACCEPTED: Area from 1000 to 1000 ft

INSTALLER: The undersigned authorized representative of GSI certifies that he or she has visually inspected the subgrade surface of the area described above and has found the surface to be acceptable for installation of the Geomembrane materials.

GSI shall be responsible for the integrity of finished GCL and Geomembrane material until completion of the installation or demobilization from site.

This certification is based on observations of the subgrade surface conditions only. GSI has made no sub-terrain inspections or tests and makes no representations or warranties as to the conditions that may exist below the surface of the subgrade.

INSPECTOR: Dennis A. DuPont GCS Engineers

CERTIFICATE APPROVED AND ACCEPTED BY:

D. DuPont
Signature

8.1.01
Date

Title

Company

Image is of poor quality

SCS ENGINEERS

CERTIFICATE OF SUB-BASE ACCEPTANCE

Installer: GSI

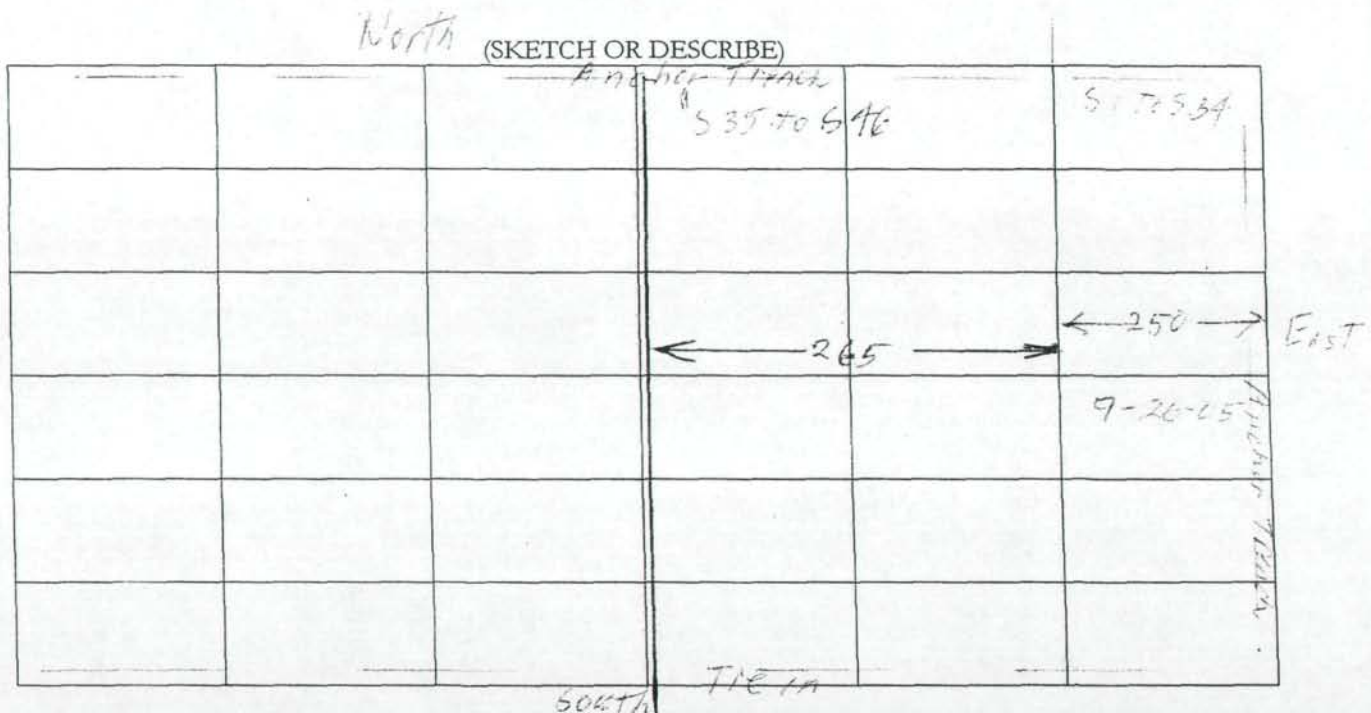
Project name: SOUTHEAST L.F. SECTION 8

Address: W 239 N 426 Pownall Rd
Waukesha, WI 53188

Project location: HILLSBOROUGH COUNTY FL.

Owner: HILLSBOROUGH COUNTY, FL

I, THE UNDERSIGNED, DULY AUTHORIZED REPRESENTATIVE OF GSI
(Geosynthetic Installer)
DO HEREBY ACCEPT THE AREA OF SOIL SURFACE AS DESCRIBED BELOW.



Acceptance of the soil surface for which the geomembrane will be placed is based upon visual observations. Acceptance of the subgrade surface considers that at the time the geomembrane is placed, the structure of the underlying soil surface, which is the responsibility of others, meets or exceeds the project specifications.

Veas JONGSARITS SUPV
NAME TITLE
Veas Jongsarits 9/27/05
SIGNATURE DATE

Certification received by SCS

KURT PETERSON RESIDENT ENG QA
NAME TITLE
Ka Peterson
SIGNATURE DATE

ATTACHMENT 6-6

MQA GEOMEMBRANE TESTING REPORT

SUMMARY SHEETS

Hillsborough County Section 8 Capacity Expansion GSE-Geomembrane Summary

Roll No.	Average Thickness (mils)	Minimum Thickness (mils)	TD Strength @ Yield (ppi)	TD Elongation @ Yield (%)	MD Strength @ Yield (ppi)	MD Elongation @ Yield (%)	TD Strength @ Break (ppi)	TD Elongation @ Break (%)	MD Strength @ Break (ppi)	MD Elongation @ Break (%)	TD Tear Resistance (lbs)	MD Tear Resistance (lbs)	Puncture Resistance (lbs)	Density (g/cc)	Carbon Black Content (%)	Carbon Black Dispersion Views in Cat 1 or Cat2
Specification	57	54	126	12	126	12	90	200	90	200	42	42	90	0.932	2 to 3	10 views; 1 non Cat 1 or 2
108108929	61	55	169	15	168	15	173	450	178	400	54	58	154	0.946	2.7	10
108108930	61	55	169	15	168	15	173	450	178	400	54	58	154	0.946	2.7	10
108108931	61	55	169	15	168	15	173	450	178	400	54	58	154	0.946	2.7	10
108108932	60	56	169	15	168	15	173	450	178	400	54	58	154	0.946	2.7	10
108108933	60	56	168	15	166	18	178	520	191	510	54	58	159	0.946	2.6	10
108108934	61	56	168	15	166	18	178	520	191	510	54	58	159	0.946	2.6	10
108108935	60	55	168	15	166	18	178	520	191	510	54	58	159	0.946	2.6	10
108108936	60	55	168	15	166	18	178	520	191	510	54	58	159	0.946	2.6	10
108108949	61	55	166	16	161	18	196	565	198	575	55	59	157	0.947	2.7	10
108108950	61	55	166	16	161	18	196	565	198	575	55	59	157	0.947	2.7	10
108108951	61	55	166	16	161	18	196	565	198	575	55	59	157	0.947	2.7	10
108108952	61	55	166	16	161	18	196	565	198	575	55	59	157	0.947	2.7	10
108108953	61	55	174	15	169	16	154	255	192	530	55	60	159	0.947	2.5	10
108109000	59	54	167	15	162	16	146	345	172	455	53	58	152	0.943	2.7	10
108109001	59	54	175	16	166	16	186	520	199	590	55	58	157	0.947	2.7	10
108109002	60	54	175	16	166	16	186	520	199	590	55	58	157	0.947	2.7	10
108109003	60	56	175	16	166	16	186	520	199	590	55	58	157	0.947	2.7	10
108109004	60	56	175	16	166	16	186	520	199	590	55	58	157	0.947	2.7	10
108109005	60	56	163	17	159	18	187	575	188	560	53	58	154	0.946	2.6	10
108109006	60	56	163	17	159	18	187	575	188	560	53	58	154	0.946	2.6	10
108109007	61	55	163	17	159	18	187	575	188	560	53	58	154	0.946	2.6	10
108109008	61	54	163	17	159	18	187	575	188	560	53	58	154	0.946	2.6	10
108109009	60	55	176	17	170	18	181	465	210	535	55	58	160	0.943	2.5	10
108109010	61	55	176	17	170	18	181	465	210	535	55	58	160	0.943	2.5	10
108109011	61	55	176	17	170	18	181	465	210	535	55	58	160	0.943	2.5	10
108109012	61	55	176	17	170	18	181	465	210	535	55	58	160	0.943	2.5	10
108109013	61	55	176	15	169	16	179	475	208	535	55	58	157	0.945	2.5	10
108109014	61	55	176	15	169	16	179	475	208	535	55	58	157	0.945	2.5	10
108109015	61	55	176	15	169	16	179	475	208	535	55	58	157	0.945	2.5	10
108109016	61	55	176	15	169	16	179	475	208	535	55	58	157	0.945	2.5	10
108109017	61	54	166	15	169	16	173	500	189	490	55	59	155	0.944	2.5	10
108109018	61	55	166	15	169	16	173	500	189	490	55	59	155	0.944	2.5	10
108109019	60	55	166	15	169	16	173	500	189	490	55	59	155	0.944	2.5	10
108109020	61	56	166	15	169	16	173	500	189	490	55	59	155	0.944	2.5	10
108109021	62	57	174	15	167	16	170	355	208	530	54	56	158	0.947	3.0	10
108109022	61	56	174	15	167	16	170	355	208	530	54	56	158	0.947	3.0	10
108109023	61	56	174	15	167	16	170	355	208	530	54	56	158	0.947	3.0	10
108109024	60	55	174	15	167	16	170	355	208	530	54	56	158	0.947	3.0	10
108109025	60	56	170	15	160	16	186	540	187	540	55	56	158	0.946	2.5	9
108109026	60	55	170	15	160	16	186	540	187	540	55	56	158	0.946	2.5	9
108109027	61	56	170	15	160	16	186	540	187	540	55	56	158	0.946	2.5	9
108109028	61	56	170	15	160	16	186	540	187	540	55	56	158	0.946	2.5	9
108109029	60	55	164	15	162	17	182	530	202	545	55	56	158	0.946	2.6	10
108109030	60	57	164	15	162	17	182	530	202	545	55	56	158	0.946	2.6	10
108109031	61	56	164	15	162	17	182	530	202	545	55	56	158	0.946	2.6	10
108109032	61	55	164	15	162	17	182	530	202	545	55	56	158	0.946	2.6	10
108109033	60	55	165	17	166	18	193	560	174	525	54	57	155	0.947	2.7	10
108109034	61	55	165	17	166	18	193	560	174	525	54	57	155	0.947	2.7	10

Hillsborough County Section 8 Capacity Expansion
GSE-Geomembrane Summary

Roll No.	Average Thickness (mils)	Minimum Thickness (mils)	TD Strength @ Yield (ppi)	TD Elongation @ Yield (%)	MD Strength @ Yield (ppi)	MD Elongation @ Yield (%)	TD Strength @ Break (ppi)	TD Elongation @ Break (%)	MD Strength @ Break (ppi)	MD Elongation @ Break (%)	TD Tear Resistance (lbs)	MD Tear Resistance (lbs)	Puncture Resistance (lbs)	Density (g/cc)	Carbon Black Content (%)	Carbon Black Dispersion Views in Cat 1 or Cat2
Specification	57	54	126	12	126	12	90	200	90	200	42	42	90	0.932	2 to 3	10 views; 1 non Cat 1 or 2
108109035	61	54	165	17	166	18	193	560	174	525	54	57	155	0.947	2.7	10
108109036	61	55	165	17	166	18	193	560	174	525	54	57	155	0.947	2.7	10
108109037	61	54	165	16	162	17	163	370	190	520	54	58	156	0.947	2.4	10
108109038	61	54	165	16	162	17	163	370	190	520	54	58	156	0.947	2.4	10
108109039	61	54	165	16	162	17	163	370	190	520	54	58	156	0.947	2.4	10
108109040	61	54	165	16	162	17	163	370	190	520	54	58	156	0.947	2.4	10
108109041	61	54	175	15	170	17	171	365	190	510	56	59	158	0.946	2.6	10
108109042	61	55	175	15	170	17	171	365	190	510	56	59	158	0.946	2.6	10
108109043	61	54	175	15	170	17	171	365	190	510	56	59	158	0.946	2.6	10
108109044	61	57	175	15	170	17	171	365	190	510	56	59	158	0.946	2.6	10
108109045	61	56	167	16	165	17	182	500	194	570	55	57	159	0.946	2.6	10

GSE Roll Allocation

Southeast County Landfill - Capacity Expansion Section 8 Construction

Bid No. C-299-04(MK)

Hillborough County, Florida

Number	GSE Roll Number	QA Tested	Pass/Fail
	1 108108929	Yes	Yes
	2 108108930		
	3 108108931		
	4 108108932		
	5 108108933		
	6 108108934		
	7 108108935		
	8 108108936		
	9 108108949	Yes	Yes
	10 108108950		
	11 108108951		
	12 108108952		
	13 108108953	Yes	Yes
	14 108109000	Yes	Yes
	15 108109001		
	16 108109002		
	17 108109003		
	18 108109004		
	19 108109005		
	20 108109006		
	21 108109007		
	22 108109008		
	23 108109009		
	24 108109010		
	25 108109011		
	26 108109012	Yes	Yes
	27 108109013		
	28 108109014		
	29 108109015		
	30 108109016		
	31 108109017		
	32 108109018		
	33 108109019		
	34 108109020	Yes	Yes
	35 108109021		
	36 108109022		
	37 108109023		
	38 108109024		
	39 108109025		
	40 108109026		
	41 108109027		
	42 108109028	Yes	Yes
	43 108109029		

GSE Roll Allocation
Southeast County Landfill - Capacity Expansion Section 8 Construction
Bid No. C-299-04(MK)
Hillborough County, Florida

Number	GSE Roll Number	QA Tested	Pass/Fail
44	108109030		
45	108109031		
46	108109032		
47	108109033		
48	108109034		
49	108109035		
50	108109036	Yes	Yes
51	108109037		
52	108109038		
53	108109039		
54	108109040	Yes	Yes
55	108109041		
56	108109042		
57	108109043		
58	108109044	Yes	Yes
59	108109045		

GSE Roll Allocation

Order 38867
 Customer GSI*
 Site S.E. Hillsborough Landfill

Roll#	Resin Lot	Product Code	Description	Mfg. Date	Length
108108929	8250206	HDT060AW00	HDT060AW00	4/4/2005	520
108108930	8250206	HDT060AW00	HDT060AW00	4/4/2005	520
108108931	8250206	HDT060AW00	HDT060AW00	4/4/2005	520
108108932	8250206	HDT060AW00	HDT060AW00	4/4/2005	520
108108933	8250206	HDT060AW00	HDT060AW00	4/4/2005	520
108108934	8250206	HDT060AW00	HDT060AW00	4/4/2005	520
108108935	8250206	HDT060AW00	HDT060AW00	4/4/2005	520
108108936	8250206	HDT060AW00	HDT060AW00	4/5/2005	520
108108949	8250206	HDT060AW00	HDT060AW00	4/5/2005	520
108108950	8250206	HDT060AW00	HDT060AW00	4/5/2005	520
108108951	8250206	HDT060AW00	HDT060AW00	4/5/2005	520
108108952	8250206	HDT060AW00	HDT060AW00	4/5/2005	520
108108953	8250206	HDT060AW00	HDT060AW00	4/5/2005	520
108109000	8250210	HDT060AW00	HDT060AW00	4/7/2005	520
108109001	8250210	HDT060AW00	HDT060AW00	4/7/2005	520
108109002	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109003	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109004	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109005	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109006	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109007	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109008	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109009	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109010	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109011	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109012	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109013	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109014	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109015	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109016	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109017	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109018	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109019	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109020	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109021	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109022	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109023	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109024	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109025	8250210	HDT060AW00	HDT060AW00	4/8/2005	520
108109026	8250210	HDT060AW00	HDT060AW00	4/9/2005	520
108109027	8250210	HDT060AW00	HDT060AW00	4/9/2005	520
108109028	8250210	HDT060AW00	HDT060AW00	4/9/2005	520
108109029	8250210	HDT060AW00	HDT060AW00	4/9/2005	520
108109030	8250210	HDT060AW00	HDT060AW00	4/9/2005	520
108109031	8250210	HDT060AW00	HDT060AW00	4/9/2005	520

To: Trevor/Toni
 From: Patty/GISE
 5 pages



Received Time Apr. 11. 10:18AM

108109032	8250210	HDT060AW00	HDT060AW00	4/9/2005	520
108109033	8250210	HDT060AW00	HDT060AW00	4/9/2005	520
108109034	8250210	HDT060AW00	HDT060AW00	4/9/2005	520
108109035	8250210	HDT060AW00	HDT060AW00	4/9/2005	520
108109036	8250210	HDT060AW00	HDT060AW00	4/9/2005	520
108109037	8250210	HDT060AW00	HDT060AW00	4/9/2005	520
108109038	8250210	HDT060AW00	HDT060AW00	4/9/2005	520
108109039	8250210	HDT060AW00	HDT060AW00	4/9/2005	520
108109040	8250210	HDT060AW00	HDT060AW00	4/9/2005	520
108109041	8250210	HDT060AW00	HDT060AW00	4/9/2005	520
108109042	8250210	HDT060AW00	HDT060AW00	4/9/2005	520
108109043	8250210	HDT060AW00	HDT060AW00	4/9/2005	520
108109044	8250210	HDT060AW00	HDT060AW00	4/9/2005	520
108109045	8250210	HDT060AW00	HDT060AW00	4/9/2005	520

TEST RESULTS



Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at HOUSTON, TEXAS

Shippers No. 49374

Page 1 of 1

Received at Houston, Texas from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which said Carrier agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all or any said property, over all or any portion said route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to the rates and contract agreed to in writing by GSE Lining Technology and Carrier. GSE Lining Technology's obligation to pay freight charges for the shipment is conditioned on (1) the existence of a separate written contract with the carrier transporting the freight and (2) the carrier's name appearing on this Bill of Lading, and other carriers must look solely to a party other than GSE Lining Technology, Inc. for payment.

Ship To: S.E. Hillsborough Landfill
C/O GSI/ ERC General Contract
15960 County Road 672
Lithia FL 33503

Date: 04/29/05

Roll Certifications Included

Branch Plant: 1500 621860

Shipping Instructions:

call Jerry P. @407-656-3900

24 hrs B4 del.

Sales Order

38867 SO

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight	Project# 516054
✓ 1	108108931	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,960.00	Freight charges are prepaid unless marked collect. Check box if collect ☐
✓ 2	108108935	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,970.00	
✓ 3	108108936	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,975.00	Customer P.O. Number: 10228-00
✓ 4	108108949	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,975.00	
✓ 5	108108950	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,965.00	If this shipment is to be delivered to consignor, consignor shall sign the following statement. Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.
✓ 6	108108951	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,970.00	
✓ 7	108109018	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,950.00	Signature of Consignor
✓ 8	108109020	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,910.00	
✓ 9	108109035	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,960.00	Local Verification Signed: X
✓ 10	108109036	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,975.00	
✓ 11	108109037	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,970.00	Pick Up # 8624RR
12	121001124	45	BX	HDROD5MM 5 mm HD Welding Rod HD Welding Rod	675.00	
Total Quantity 128,745					Total Weight: 44,255.00	Seal #
						Truckers P.O. #

Driver Requirements:

- 1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
- 2) Driver must call (281) 230-6781 when unloaded.
- 3) Driver must call and advise any delay in transit.
- 4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name: _____

Carrier Signature: _____

Date: _____



CoA Date: 03/23/2005

Certificate of Analysis

Shipped To: GSE LINING TECHNOLOGY INC HC
19103 GUNDLE ROAD
WESTFIELD TX 77090
USA

Recipient: DON BOHAC
Fax:

CPC Delivery #: 86852852
PO #: 33977
Weight: 192200 LB
Ship Date: 03/23/2005
Package: BULK
Mode: Hopper Car
Car #: PSPX006668
Seal No: 151717

Product:
MARLEX POLYETHYLENE K306 BULK

Lot Number: 8250206

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.13	g/10mi
HLMI Flow Rate	ASTM D1238	15.0	g/10mi
Density	ASTM D1505	0.937	g/cm3
Production Date		2/11/2005	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP. However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Jackie Edwards
Certification Systems Specialist

For CoA questions contact Peter Scheirman at 713-289-4799



CoA Date: 03/23/2005

Certificate of Analysis

Shipped To: GSE LINING TECHNOLOGY INC HC
19103 GUNDLE ROAD
WESTFIELD TX 77090
USA

CPC Delivery #: 86852860
PO #: 33977
Weight: 186300 LB
Ship Date: 03/23/2005
Package: BULK
Mode: Hopper Car
Car #: CHVX890241
Seal No: 155261

Recipient: DON BOHAC
Fax:

Product:
MARLEX POLYETHYLENE K306 BULK

Lot Number: 8250210

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.11	g/10mi
HLMI Flow Rate	ASTM D1238	13.6	g/10mi
Density	ASTM D1505	0.937	g/cm3
Production Date		2/11/2005	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP. However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Jackie Edwards
Certification Systems Specialist

For CoA questions contact Peter Scheirman at 713-289-4799



Lining Technology, Inc.

Roll Test Data Report

SO-Number	Project-Number	BOL-Number	Product-Name
38867	516054	49374	HDT060AW00



Report Date:

4/29/2005

*Modified

Roll No.	ASTM D 5994		ASTM D638, Type IV / D6693								ASTM D 1004		ASTM D 4833	ASTM D 1595	ASTM D 1603*	ASTM D 5596	GRI GMI 12	
	Average Thickness	Minimum Thickness	TD Strength @ Yield	MD Strength @ Yield	TD Strength @ Break	MD Strength @ Break	TD Elongation @ Yield	MD Elongation @ Yield	TD Elongation @ Break	MD Elongation @ Break	TD Tear Resistance	MD Tear Resistance	Puncture Resistance	Density	Carbon Black Content	Carbon Black Dispersion	Average Side Asperity Height	Average Side Asperity Height
	(mils)	(mils)	(psi)	(psi)	(psi)	(psi)	(%)	(%)	(%)	(%)	(lbs)	(lbs)	(lbs)	(g/cc)	(%)	Visual in Cut - Gut	(mils)	(mils)
108108931	61	55	169	168	173	178	15	15	450	400	54	58	154	0.946	2.7	10	18	18
108108935	60	55	168	166	178	191	15	18	520	510	54	58	159	0.946	2.6	10	17	16
108108936	60	55	168	166	178	191	15	18	520	510	54	58	159	0.946	2.6	10	17	16
108108949	61	55	166	161	196	198	16	18	565	575	55	59	157	0.947	2.7	10	20	20
108108950	61	55	166	161	196	198	16	18	565	575	55	59	157	0.947	2.7	10	20	20
108108951	61	55	166	161	196	198	16	18	565	575	55	59	157	0.947	2.7	10	19	20
108109018	61	55	166	169	173	189	15	16	500	490	55	59	155	0.944	2.5	10	16	19
108109020	61	56	166	169	173	189	15	16	500	490	55	59	155	0.944	2.5	10	21	20
108109035	61	54	165	166	193	174	17	18	560	525	54	57	155	0.947	2.7	10	18	15
108109036	61	55	165	166	193	174	17	18	560	525	54	57	155	0.947	2.7	10	18	15
108109037	61	54	165	162	163	190	16	17	370	520	54	58	156	0.947	2.4	10	23	18

Laboratory Manager:

Spence Adelman

20120508/187

P.1



Lining Technology, Inc.

Roll Test Data Report

Roll No. 108108931

ROLL IDENTIFICATION

Roll Number 108108931
 Product Name HDT060AW00
 Production Date 4/4/2005

RESIN INFORMATION

Lot Number 8250206
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

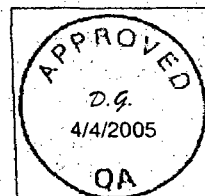
Length $\pm$ (+/- 1%) 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,960 pounds
 1,796 kilograms

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.13

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.6)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	169	(295)
- MD		every 4th	126	(221)	168	(293)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	173	(302)
- MD		every 4th	90	(158)	178	(311)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		15
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		450
- MD	(51 mm)	every 4th		150		400
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(241)
- MD		every 4th	42	(187)	58	(256)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	154	(685)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.7
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		18
Average (mils) - Side B		every 2nd		10		18

Order No. 38867
 Customer Name GSI
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified
 GSE-8.2.4-007 Rev -- 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108108935

ROLL IDENTIFICATION

Roll Number 108108935
Product Name HDT060AW00
Production Date 4/4/2005
Length $\approx$ (+/- 1%) 520 feet
158 meters
Width (Nominal) 22.5 feet
6.9 meters
Sheet Area 11,700 sq. feet
1,086 sq. meters
Weight 3,970 pounds
1,801 kilograms

RESIN INFORMATION

Lot Number 8250206
Type K306
Supplier Chevron Phillips

GSE RESIN TEST DATA

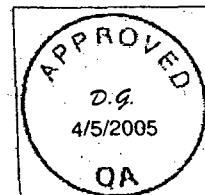
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.13

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	60	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	168	(294)
- MD		every 4th	126	(221)	166	(290)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	178	(312)
- MD		every 4th	90	(158)	191	(334)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		520
- MD	(51 mm)	every 4th		150		510
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(241)
- MD		every 4th	42	(187)	58	(256)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	159	(708)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.6
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		17
Average (mils) - Side B		every 2nd		10		16

Order No. 38867
Customer Name GSI*
Project Name S.E. Hillsborough Landfill
Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev - - 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108108936

ROLL IDENTIFICATION

Roll Number 108108936
 Product Name HDT060AW00
 Production Date 4/5/2005

RESIN INFORMATION

Lot Number 8250206
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,975 pounds
 1,803 kilograms

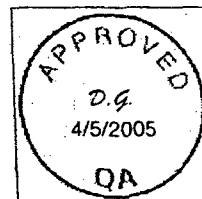
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.13

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	60	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	168	(294)
- MD		every 4th	126	(221)	166	(290)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	178	(312)
- MD		every 4th	90	(158)	191	(334)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		520
- MD	(51 mm)	every 4th		150		510
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(241)
- MD		every 4th	42	(187)	58	(256)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	159	(708)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.6
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		17
Average (mils) - Side B		every 2nd		10		16

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108108949

ROLL IDENTIFICATION

Roll Number 108108949
 Product Name HDT060AW00
 Production Date 4/5/2005

Length $\approx$ (+/- 1%) 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,975 pounds
 1,803 kilograms

RESIN INFORMATION

Lot Number 8250206
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

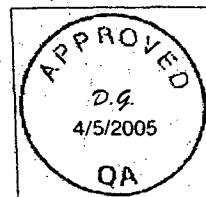
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.13

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	166	(291)
- MD		every 4th	126	(221)	161	(282)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	196	(344)
- MD		every 4th	90	(158)	198	(346)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		16
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		565
- MD	(51 mm)	every 4th		150		575
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(247)
- MD		every 4th	42	(187)	59	(261)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	157	(699)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.7
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		20
Average (mils) - Side B		every 2nd		10		20

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108108950

ROLL IDENTIFICATION

Roll Number 108108950
 Product Name HDT060AW00
 Production Date 4/5/2005

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,965 pounds
 1,799 kilograms

RESIN INFORMATION

Lot Number 8250206
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

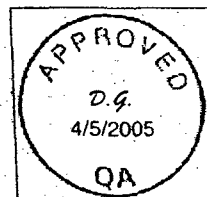
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.13

Physical Property	Test Method	Test Frequency	Customer Minimum English	Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	166	(291)
- MD		every 4th	126	(221)	161	(282)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	196	(344)
- MD		every 4th	90	(158)	198	(346)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		16
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		565
- MD	(51 mm)	every 4th		150		575
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(247)
- MD		every 4th	42	(187)	59	(261)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	157	(699)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.7
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		20
Average (mils) - Side B		every 2nd		10		20

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108108951

ROLL IDENTIFICATION

Roll Number 108108951
 Product Name HDT060AW00
 Production Date 4/5/2005

RESIN INFORMATION

Lot Number 8250206
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.13

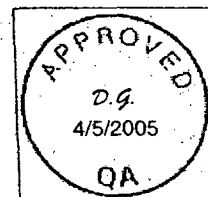
Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,970 pounds
 1,801 kilograms

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	166	(291)
- MD		every 4th	126	(221)	161	(282)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	196	(344)
- MD		every 4th	90	(158)	198	(346)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th	12		16	
- MD	(33 mm)	every 4th	12		18	
Break Elongation, % - TD	gauge length = 2.0"	every 4th	150		565	
- MD	(51 mm)	every 4th	150		575	
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(247)
- MD		every 4th	42	(187)	59	(261)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	157	(699)
Density, g/cc	ASTM D 1505					
		every 4th	0.940		0.947	
Carbon Black Content, %	ASTM D 1603*					
		every 4th	2.0		2.7	
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th	9		10	
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd	10		19	
Average (mils) - Side B		every 2nd	10		20	

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109018

ROLL IDENTIFICATION

Roll Number 108109018
 Product Name HDT060AW00
 Production Date 4/8/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

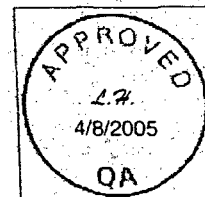
Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,950 pounds
 1,792 kilograms

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	166	(291)
- MD		every 4th	126	(221)	169	(295)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	173	(303)
- MD		every 4th	90	(158)	189	(331)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		500
- MD	(51 mm)	every 4th		150		490
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(245)
- MD		every 4th	42	(187)	59	(260)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	155	(690)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.944
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.5
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		16
Average (mils) - Side B		every 2nd		10		19

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Roll Test Data Report

Lining Technology, Inc.

Roll No. 108109020

ROLL IDENTIFICATION

Roll Number 108109020
 Product Name HDT060AW00
 Production Date 4/8/2005

Length $\approx (+/- 1\%)$ 520 feet
 158 meters

Width (Nominal) 22.5 feet
 6.9 meters

Sheet Area 11,700 sq. feet
 1,086 sq. meters

Weight 3,910 pounds
 1,774 kilograms

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

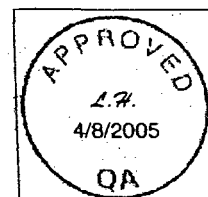
GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	56	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	166	(291)
- MD		every 4th	126	(221)	169	(295)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	173	(303)
- MD		every 4th	90	(158)	189	(331)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		500
- MD	(51 mm)	every 4th		150		490
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(245)
- MD		every 4th	42	(187)	59	(260)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	155	(690)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.944
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.5
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		21
Average (mils) - Side B		every 2nd		10		20

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified
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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109035

ROLL IDENTIFICATION

Roll Number 108109035
Product Name HDT060AW00
Production Date 4/9/2005
Length $\approx$ (+/- 1%) 520 feet
158 meters
Width (Nominal) 22.5 feet
6.9 meters
Sheet Area 11,700 sq. feet
1,086 sq. meters
Weight 3,960 pounds
1,796 kilograms

RESIN INFORMATION

Lot Number 8250210
Type K306
Supplier Chevron Phillips

GSE RESIN TEST DATA

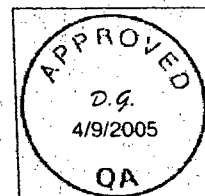
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	54	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	165	(288)
- MD		every 4th	126	(221)	166	(290)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	193	(338)
- MD		every 4th	90	(158)	174	(304)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		17
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		560
- MD	(51 mm)	every 4th		150		525
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(242)
- MD		every 4th	42	(187)	57	(255)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	155	(690)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.7
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		18
Average (mils) - Side B		every 2nd		10		15

Order No. 38867
Customer Name GSI*
Project Name S.E. Hillsborough Landfill
Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109036

ROLL IDENTIFICATION

Roll Number 108109036
 Product Name HDT060AW00
 Production Date 4/9/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Length $\approx$ (+/- 1%) 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,975 pounds
 1,803 kilograms

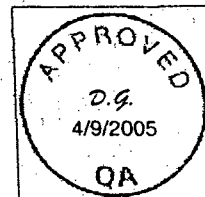
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	165	(288)
- MD		every 4th	126	(221)	166	(290)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	193	(338)
- MD		every 4th	90	(158)	174	(304)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		17
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		560
- MD	(51 mm)	every 4th		150		525
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(242)
- MD		every 4th	42	(187)	57	(255)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	155	(690)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.7
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		18
Average (mils) - Side B		every 2nd		10		15

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Roll Test Data Report

Lining Technology, Inc.

Roll No. 108109037

ROLL IDENTIFICATION

Roll Number 108109037
Product Name HDT060AW00
Production Date 4/9/2005

RESIN INFORMATION

Lot Number 8250210
Type K306
Supplier Chevron Phillips

GSE RESIN TEST DATA

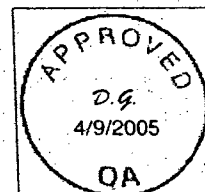
Length $\approx (+/- 1\%)$ 520 feet
158 meters
Width (Nominal) 22.5 feet
6.9 meters
Sheet Area 11,700 sq. feet
1,086 sq. meters
Weight 3,970 pounds
1,801 kilograms

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	54	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	165	(289)
- MD		every 4th	126	(221)	162	(283)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	163	(285)
- MD		every 4th	90	(158)	190	(332)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		16
- MD	(33 mm)	every 4th		12		17
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		370
- MD	(51 mm)	every 4th		150		520
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(240)
- MD		every 4th	42	(187)	58	(256)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	156	(694)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.4
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		23
Average (mils) - Side B		every 2nd		10		18

Order No. 38867
Customer Name GSI*
Project Name S.E. Hillsborough Landfill
Location Tampa, Florida

*Modified
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Changes and improvements to GSE's quality data delivery

GSE has begun to distribute our quality information in summary table format. During this transition period you will continue to receive individual Roll Test Data Reports as well as the summary tables. The information supplied is identical, just in a different format.

In the summer of 2005, GSE plans to begin supplying our quality data only in the summary format, not as individual roll data.

GSE Lining Technology Inc. has been working to develop improved ways of distributing our quality data and Roll Test Data Reports to our customer base. GSE's systems now include the capability to provide summaries of our quality data. A sample of the data for our geotextile products is below. The summary tables for other product types will vary slightly, but will follow this general format. It is GSE's intention, ultimately, to deliver our quality data electronically via our Customer Information System, eliminating paper copies entirely.



GSE Nonwoven Technology

Roll Test Data Summary - English Units

Product : 1996		Item Code: C20008002		Roll Width: 15.0 feet		Test Date: 5/17/2004								
Roll No.	Mass per Unit Area	Thickness	Grab Strength		Grab Elongation		Trap Tear Strength		Puncture Strength	Mullen Burst Strength	Apparent Opening Size	Permeability	Water Flow Rate	
	ASTM D 5261	ASTM D 5199	ASTM D 4632		ASTM D 4632		ASTM D 4533		ASTM D 4833	ASTM D 3786	ASTM D 4751	ASTM D 4491		
	(oz/yd ²)	(mils)	MD (lbs)	CD (lbs)	MD (%)	CD (%)	MD (lbs)	CD (lbs)	(lbs)	(psi)	(mm)	(set-1)	(cm/sec) (gallon/min/ft ²)	
130168266	6.7	91	196	188	94	118	113	116	117	327	0.212	2.3	0.5	170.4
130168300	6.2	95	172	190	100	120	106	115	134	354	0.212	2.3	0.5	170.4
130168308	6.9	109	202	202	105	135	110	120	127	368	0.212	2.3	0.5	170.4
130170894	7.3	106	203	253	103	121	96	125	134	390	0.212	2.0	0.5	146.6
130170913	6.1	98	212	195	91	120	70	96	112	340	0.212	2.4	0.5	176.1
130170919	6.8	101	191	212	99	135	94	105	115	394	0.212	2.2	0.5	163.0
130170923	6.8	101	191	212	99	135	94	105	115	394	0.212	2.2	0.5	163.0
130170929	6.3	95	178	179	109	123	108	124	98	346	0.212	2.4	0.5	173.6

We want to thank you in advance for your cooperation and support during this transition. If you have any questions or need additional information, please contact your GSE Sales or Customer Service representative at 800-435-2008.



Shipping Order - Packing List- Original - Not Negotiable

GSE Lining Technology, Inc. at HOUSTON, TEXAS

Shippers No. 49405

Page 1 of 1

Received at Houston, Texas from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which said Carrier agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all or any said property, over all or any portion said route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to the rates and contract agreed to in writing by GSE Lining Technology and Carrier. GSE Lining Technology's obligation to pay freight charges for the shipment is conditioned on (1) the existence of a separate written contract with the carrier transporting the freight and (2) the carrier's name appearing on this Bill of Lading, and other carriers must look solely to a party other than GSE Lining technology, Inc. for payment.

Ship To: S.E. Hillsborough Landfill
C/O GSI/ ERC General Contract
15960 County Road 672
Lithia FL 33503

Date: 04/30/05

Roll Certifications
Included

Branch Plant: 1500

621811

Shipping Instructions:

call Jerry P. @407-656-3900

24 hrs B4 del.

Sales Order

38867

SO

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight	Project# 516054
1	108108929	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,945.00	Freight charges are prepaid unless marked collect. Check box if collect ☐
2	108108930	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,965.00	
3	108108933	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,970.00	
4	108108934	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,975.00	
5	108109001	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,885.00	Customer P.O. Number: 10228-00
6	108109002	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,895.00	If this shipment is to be delivered to consignee, consignee shall sign the following statement. Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.
7	108109005	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,960.00	
8	108109009	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,930.00	
9	108109011	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,940.00	
10	108109012	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,940.00	Signature of Consignor
11	108109032	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,920.00	Local Verification Signed: X _____
12	108109033	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,935.00	
Total Quantity 140,400						Pick Up # 8627RR
Total Weight: 47,260.00						Seal #
						Truckers P.O. #

Driver Requirements:

- 1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
- 2) Driver must call (281) 230-6781 when unloaded.
- 3) Driver must call and advise any delay in transit.
- 4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name: _____

Carrier Signature: _____

Date: _____

GSE

Lining Technology, Inc

Roll Test Data Report

SO-Number	Project-Number	BOL-Number	Product-Name
38867	516054	49405	HDT060AW00



Report Date:
4/30/2005

*Modified

	ASTM D 5994		ASTM D638, Type IV / D6693								ASTM D 1004		ASTM D 4833	ASTM D 1505	ASTM D 1603*	ASTM D 5596	GRI GM 12	
	Average	Minimum	TD Strength	MD Strength	TD Strength	MD Strength	TD Elongation	MD Elongation	TD Elongation	MD Elongation	TD Tear	MD Tear	Puncture		Carbon Black	Carbon Black	Average - Side	Average - Side
	Thickness	Thickness	(q _t Yield)	(q _t Yield)	(q _t Break)	(q _t Break)	(@ Yield)	(@ Yield)	(@ Break)	(@ Break)	Resistance	Resistance	Resistance	Density	Content	Dispersion	Asperity Height ^A	Asperity Height ^B
Roll No.	(mils)	(mils)	(psi)	(psi)	(psi)	(psi)	(%)	(%)	(%)	(%)	(lbs)	(lbs)	(lbs)	(g/cc)	(%)	Views in Carl - Cut 2	(mils)	(mils)
108108929	61	55	169	168	173	178	15	15	450	400	54	58	154	0.946	2.7	10	19	18
108108930	61	55	169	168	173	178	15	15	450	400	54	58	154	0.946	2.7	10	19	18
108108933	60	56	168	166	178	191	15	18	520	510	54	58	159	0.946	2.6	10	18	18
108108934	61	56	168	166	178	191	15	18	520	510	54	58	159	0.946	2.6	10	18	18
108109001	59	54	175	166	186	199	16	16	520	590	55	58	157	0.947	2.7	10	19	14
108109002	60	54	175	166	186	199	16	16	520	590	55	58	157	0.947	2.7	10	19	14
108109005	60	56	163	159	187	188	17	18	575	560	53	58	154	0.946	2.6	10	17	14
108109009	60	55	176	170	181	210	17	18	465	535	55	58	160	0.943	2.5	10	18	15
108109011	61	55	176	170	181	210	17	18	465	535	55	58	160	0.943	2.5	10	16	16
108109012	61	55	176	170	181	210	17	18	465	535	55	58	160	0.943	2.5	10	16	16
108109032	61	55	164	162	182	202	15	17	530	545	55	56	158	0.946	2.6	10	19	16
108109033	60	55	165	166	193	174	17	18	560	525	54	57	155	0.947	2.7	10	18	17

Laboratory Manager:

Paul Allen



CoA Date: 03/23/2005

Certificate of Analysis

Shipped To: GSE LINING TECHNOLOGY INC HC
19103 GUNDLE ROAD
WESTFIELD TX 77090
USA

Recipient: DON BOHAC
Fax:

CPC Delivery #: 86852860
PO #: 33977
Weight: 186300 LB
Ship Date: 03/23/2005
Package: BULK
Mode: Hopper Car
Car #: CHVX890241
Seal No: 155261

Product:
MARLEX POLYETHYLENE K306 BULK

Lot Number: 8250210

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.11	g/10mi
HLMI Flow Rate	ASTM D1238	13.6	g/10mi
Density	ASTM D1505	0.937	g/cm3
Production Date		2/11/2005	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP.
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user
assumes all risk and liability in connection therewith.

Jackie Edwards
Certification Systems Specialist

For CoA questions contact Peter Scheirman at 713-289-4799



CoA Date: 03/23/2005

Certificate of Analysis

Shipped To: GSE LINING TECHNOLOGY INC HC
19103 GUNDLE ROAD
WESTFIELD TX 77090
USA

Recipient: DON BOHAC
Fax:

CPC Delivery #: 86852852
PO #: 33977
Weight: 192200 LB
Ship Date: 03/23/2005
Package: BULK
Mode: Hopper Car
Car #: PSPX006668
Seal No: 151717

Product:
MARLEX POLYETHYLENE K306 BULK

Lot Number: 8250206

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.13	g/10mi
HLMI Flow Rate	ASTM D1238	15.0	g/10mi
Density	ASTM D1505	0.937	g/cm3
Production Date		2/11/2005	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP. However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Jackie Edwards
Certification Systems Specialist

For CoA questions contact Peter Scheirman at 713-289-4799



Lining Technology, Inc.

Roll Test Data Report

Roll No. 108108929

ROLL IDENTIFICATION

Roll Number 108108929
 Product Name HDT060AW00
 Production Date 4/4/2005

RESIN INFORMATION

Lot Number 8250206
 Type K306
 Supplier Chevron Phillips

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,945 pounds
 1,789 kilograms

GSE RESIN TEST DATA

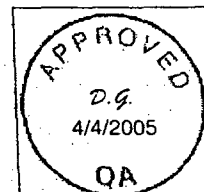
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.13

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	169	(295)
- MD		every 4th	126	(221)	168	(293)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	173	(302)
- MD		every 4th	90	(158)	178	(311)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		15
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		450
- MD	(51 mm)	every 4th		150		400
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(241)
- MD		every 4th	42	(187)	58	(256)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	154	(685)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.7
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		19
Average (mils) - Side B		every 2nd		10		18

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev - - 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108108930

ROLL IDENTIFICATION

Roll Number	108108930	
Product Name	HDT060AW00	
Production Date	4/4/2005	
Length $\approx (+/- 1\%)$	520 feet 158 meters	
Width (Nominal)	22.5 feet 6.9 meters	
Sheet Area	11,700 sq. feet 1,086 sq. meters	
Weight	3,965 pounds 1,799 kilograms	

RESIN INFORMATION

Lot Number	8250206
Type	K306
Supplier	Chevron Phillips

GSE RESIN TEST DATA

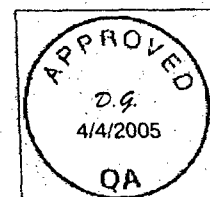
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.13

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	169	(295)
- MD		every 4th	126	(221)	168	(293)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	173	(302)
- MD		every 4th	90	(158)	178	(311)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		15
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		450
- MD	(51 mm)	every 4th		150		400
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(241)
- MD		every 4th	42	(187)	58	(256)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	154	(685)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.7
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		19
Average (mils) - Side B		every 2nd		10		18

Order No.	38867
Customer Name	GSI*
Project Name	S.E. Hillsborough Landfill
Location	Tampa, Florida

*Modified

GSE-8.2.4-007 Rev - - 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108108933

ROLL IDENTIFICATION

Roll Number 108108933
 Product Name HDT060AW00
 Production Date 4/4/2005

RESIN INFORMATION

Lot Number 8250206
 Type K306
 Supplier Chevron Phillips

Length $\pm$ (+/- 1%) 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,970 pounds
 1,801 kilograms

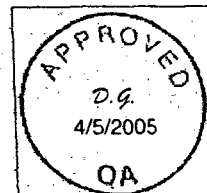
GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.13

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	60	(1.5)
Minimum		every roll	54	(1.4)	56	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	168	(294)
- MD		every 4th	126	(221)	166	(290)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	178	(312)
- MD		every 4th	90	(158)	191	(334)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		520
- MD	(51 mm)	every 4th		150		510
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(241)
- MD		every 4th	42	(187)	58	(256)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	159	(708)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.6
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		18
Average (mils) - Side B		every 2nd		10		18

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified
 GSE-8.2.4-007 Rev - - 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108108934

ROLL IDENTIFICATION

Roll Number 108108934
 Product Name HDT060AW00
 Production Date 4/4/2005

RESIN INFORMATION

Lot Number 8250206
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.13

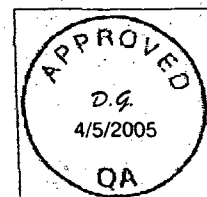
Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,975 pounds
 1,803 kilograms

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	56	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	168	(294)
- MD		every 4th	126	(221)	166	(290)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	178	(312)
- MD		every 4th	90	(158)	191	(334)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		520
- MD	(51 mm)	every 4th		150		510
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(241)
- MD		every 4th	42	(187)	58	(256)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	159	(708)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.6
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		18
Average (mils) - Side B		every 2nd		10		18

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev -- 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109001

ROLL IDENTIFICATION

Roll Number 108109001
 Product Name HDT060AW00
 Production Date 4/7/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

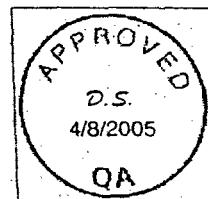
Length $\pm$ (+/- 1%) 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,885 pounds
 1,762 kilograms

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	59	(1.5)
Minimum		every roll	54	(1.4)	54	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	175	(307)
- MD		every 4th	126	(221)	166	(290)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	186	(326)
- MD		every 4th	90	(158)	199	(348)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		16
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		520
- MD	(51 mm)	every 4th		150		590
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(246)
- MD		every 4th	42	(187)	58	(256)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	157	(699)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.7
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		19
Average (mils) - Side B		every 2nd		10		14

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev - - 02/03





Roll Test Data Report

Lining Technology, Inc.

Roll No. 108109002

ROLL IDENTIFICATION

Roll Number 108109002
Product Name HDT060AW00
Production Date 4/8/2005

Length $\approx (+/- 1\%)$ 520 feet
158 meters
Width (Nominal) 22.5 feet
6.9 meters
Sheet Area 11,700 sq. feet
1,086 sq. meters
Weight 3,895 pounds
1,767 kilograms

RESIN INFORMATION

Lot Number 8250210
Type K306
Supplier Chevron Phillips

GSE RESIN TEST DATA

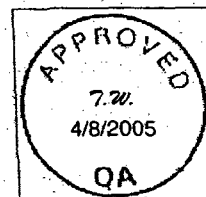
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	60	(1.5)
Minimum		every roll	54	(1.4)	54	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	175	(307)
- MD		every 4th	126	(221)	166	(290)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	186	(326)
- MD		every 4th	90	(158)	199	(348)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		16
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		520
- MD	(51 mm)	every 4th		150		590
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(246)
- MD		every 4th	42	(187)	58	(256)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	157	(699)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.7
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		19
Average (mils) - Side B		every 2nd		10		14

Order No. 38867
Customer Name GSI*
Project Name S.E. Hillsborough Landfill
Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109005

ROLL IDENTIFICATION

Roll Number 108109005
 Product Name HDT060AW00
 Production Date 4/8/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,960 pounds
 1,796 kilograms

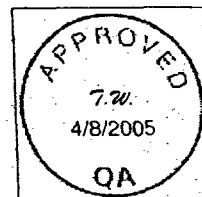
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	60	(1.5)
Minimum		every roll	54	(1.4)	56	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	163	(285)
- MD		every 4th	126	(221)	159	(279)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	187	(328)
- MD		every 4th	90	(158)	188	(329)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		17
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		575
- MD	(51 mm)	every 4th		150		560
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	53	(234)
- MD		every 4th	42	(187)	58	(257)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	154	(685)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.6
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		17
Average (mils) - Side B		every 2nd		10		14

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109009

ROLL IDENTIFICATION

Roll Number 108109009
 Product Name HDT060AW00
 Production Date 4/8/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,930 pounds
 1,783 kilograms

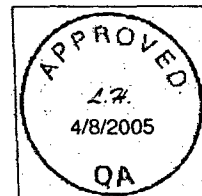
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	60	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	176	(308)
- MD		every 4th	126	(221)	170	(298)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	181	(317)
- MD		every 4th	90	(158)	210	(367)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		17
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		465
- MD	(51 mm)	every 4th		150		535
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(246)
- MD		every 4th	42	(187)	58	(258)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	160	(712)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.943
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.5
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		18
Average (mils) - Side B		every 2nd		10		15

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109011

ROLL IDENTIFICATION

Roll Number 108109011
 Product Name HDT060AW00
 Production Date 4/8/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

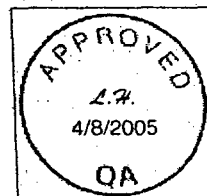
Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,940 pounds
 1,787 kilograms

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	176	(308)
- MD		every 4th	126	(221)	170	(298)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	181	(317)
- MD		every 4th	90	(158)	210	(367)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		17
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		465
- MD	(51 mm)	every 4th		150		535
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(246)
- MD		every 4th	42	(187)	58	(258)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	160	(712)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.943
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.5
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		16
Average (mils) - Side B		every 2nd		10		16

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev -- 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109012

ROLL IDENTIFICATION

Roll Number 108109012
 Product Name HDT060AW00
 Production Date 4/8/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,940 pounds
 1,787 kilograms

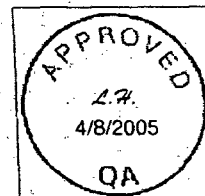
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	176	(308)
- MD		every 4th	126	(221)	170	(298)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	181	(317)
- MD		every 4th	90	(158)	210	(367)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		17
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		465
- MD	(51 mm)	every 4th		150		535
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(246)
- MD		every 4th	42	(187)	58	(258)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	160	(712)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.943
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.5
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		16
Average (mils) - Side B		every 2nd		10		16

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109032

ROLL IDENTIFICATION

Roll Number 108109032
 Product Name HDT060AW00
 Production Date 4/9/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,920 pounds
 1,778 kilograms

GSE RESIN TEST DATA

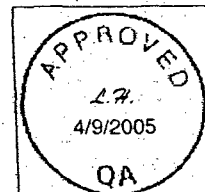
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	164	(288)
- MD		every 4th	126	(221)	162	(284)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	182	(319)
- MD		every 4th	90	(158)	202	(354)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		17
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		530
- MD	(51 mm)	every 4th		150		545
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(243)
- MD		every 4th	42	(187)	56	(251)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	158	(703)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.6
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		19
Average (mils) - Side B		every 2nd		10		16

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev - - 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109033

ROLL IDENTIFICATION

Roll Number 108109033
 Product Name HDT060AW00
 Production Date 4/9/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

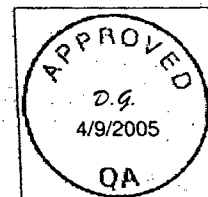
Length $\pm$ (+/- 1%) 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,935 pounds
 1,785 kilograms

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	60	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	165	(288)
- MD		every 4th	126	(221)	166	(290)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	193	(338)
- MD		every 4th	90	(158)	174	(304)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		17
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		560
- MD	(51 mm)	every 4th		150		525
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(242)
- MD		every 4th	42	(187)	57	(255)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	155	(690)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.7
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		18
Average (mils) - Side B		every 2nd		10		17

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev -- 02/03





Shipping Order - Packing List- Original - Not Negotiable

GSE Lining Technology, Inc.

at HOUSTON, TEXAS

Shippers No. 49392

Page 1 of 1

Received at Houston, Texas from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which said Carrier agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all or any said property, over all or any portion said route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to the rates and contract agreed to in writing by GSE Lining Technology and Carrier. GSE Lining Technology's obligation to pay freight charges for the shipment is conditioned on (1) the existence of a separate written contract with the carrier transporting the freight and (2) the carrier's name appearing on this Bill of Lading, and other carriers must look solely to a party other than GSE Lining Technology, Inc. for payment.

Ship To: S.E. Hillsborough Landfill
C/O GSI/ ERC General Contract
15960 County Road 672
Lithia FL 33503

Date: 04/29/05

Roll Certifications
Included

Branch Plant: 1500 621811

Shipping Instructions:

call Jerry P. @407-656-3900

24 hrs B4 del.

Sales Order

38867 SO

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight	Project# 516054
1	108108932	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,980.00	Freight charges are prepaid unless marked collect. Check box if collect ☐
2	108108952	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,985.00	
3	108108953	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,980.00	
4	108109000	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,890.00	
5	108109004	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,955.00	Customer P.O. Number: 10228-00
	108109008	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,950.00	If this shipment is to be delivered to consignor, consignor shall sign the following statement. Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.
7	108109015	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,945.00	
8	108109016	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,950.00	
9	108109017	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,955.00	
10	108109019	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,945.00	Signature of Consignor
11	108109022	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,930.00	Local Verification Signed: X
12	108109039	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,960.00	
Total Quantity 140,400					Total Weight: 47,425.00	Pick Up # 8626RR
						Seal #
						Truckers P.O. #

Driver Requirements:

- 1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
- 2) Driver must call (281) 230-6781 when unloaded.
- 3) Driver must call and advise any delay in transit.
- 4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name: _____

Carrier Signature: _____

Date: _____



Lining Technology, Inc

Roll Test Data Report

SO-Number	Project-Number	BOL-Number	Product-Name
38867	516054	49392	HDT060AW00



Report Date:

4/29/2005

*Modified

Roll No.	ASTM D 594		ASTM D638, Type IV / D6693								ASTM D 1004		ASTM D 4833	ASTM D 1505	ASTM D 1603*	ASTM D 5596	Grit GM 12	
	Average Thickness	Minimum Thickness	TD Strength @ Yield	MD Strength @ Yield	TD Strength @ Break	MD Strength @ Break	TD Elongation @ Yield	MD Elongation @ Yield	TD Elongation @ Break	MD Elongation @ Break	TD Tear Resistance	MD Tear Resistance	Puncture Resistance	Density	Carbon Black Content	Carbon Black Dispersion	Average Side A Asperity Height	Average Side B Asperity Height
	(mils)	(mils)	(psi)	(psi)	(psi)	(psi)	(%)	(%)	(%)	(%)	(lbs)	(lbs)	(lbs)	(g/cc)	(%)	Views in Cat 1 - Cut 2	(mils)	(mils)
108108932	60	56	169	168	173	178	15	15	450	400	54	58	154	0.946	2.7	10	18	18
108108952	61	55	166	161	196	198	16	18	565	575	55	59	157	0.947	2.7	10	19	20
108108953	61	55	174	169	154	192	15	16	255	530	55	60	159	0.947	2.5	10	19	19
108109000	59	54	167	162	146	172	15	16	345	455	53	58	152	0.943	2.7	10	18	13
108109004	60	56	175	166	186	199	16	16	520	590	55	58	157	0.947	2.7	10	19	13
108109008	61	54	163	159	187	188	17	18	575	560	53	58	154	0.946	2.6	10	16	13
108109015	61	55	176	169	179	208	15	16	475	535	55	58	157	0.945	2.5	10	17	16
108109016	61	55	176	169	179	208	15	16	475	535	55	58	157	0.945	2.5	10	17	16
108109017	61	54	166	169	173	189	15	16	500	490	55	59	155	0.944	2.5	10	16	19
108109019	60	55	166	169	173	189	15	16	500	490	55	59	155	0.944	2.5	10	21	20
108109022	61	56	174	167	170	208	15	16	355	530	54	56	158	0.947	3.0	10	20	16
108109039	61	54	165	162	163	190	16	17	370	520	54	58	156	0.947	2.4	10	18	16

Laboratory Manager:



CoA Date: 03/23/2005

Certificate of Analysis

Shipped To: GSE LINING TECHNOLOGY INC HC
19103 GUNDLE ROAD
WESTFIELD TX 77090
USA

CPC Delivery #: 86852852
PO #: 33977
Weight: 192200 LB
Ship Date: 03/23/2005
Package: BULK
Mode: Hopper Car
Car #: PSPX006668
Seal No: 151717

Recipient: DON BOHAC
Fax:

Product:
MARLEX POLYETHYLENE K306 BULK

Lot Number: 8250206

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.13	g/10mi
HLMI Flow Rate	ASTM D1238	15.0	g/10mi
Density	ASTM D1505	0.937	g/cm3
Production Date		2/11/2005	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP. However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Jackie Edwards
Certification Systems Specialist

For CoA questions contact Peter Scheirman at 713-289-4799



CoA Date: 03/23/2005

Certificate of Analysis

Shipped To: GSE LINING TECHNOLOGY INC HC
19103 GUNDLE ROAD
WESTFIELD TX 77090
USA

Recipient: DON BOHAC
Fax:

CPC Delivery #: 86852860
PO #: 33977
Weight: 186300 LB
Ship Date: 03/23/2005
Package: BULK
Mode: Hopper Car
Car #: CHVX890241
Seal No: 155261

Product:
MARLEX POLYETHYLENE K306 BULK

Lot Number: 8250210

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.11	g/10mi
HLMI Flow Rate	ASTM D1238	13.6	g/10mi
Density	ASTM D1505	0.937	g/cm3
Production Date		2/11/2005	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP. However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Jackie Edwards
Certification Systems Specialist

For CoA questions contact Peter Scheirman at 713-289-4799



Lining Technology, Inc.

Roll Test Data Report

Roll No. 108108932

ROLL IDENTIFICATION

Roll Number 108108932
 Product Name HDT060AW00
 Production Date 4/4/2005

RESIN INFORMATION

Lot Number 8250206
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Length $\pm$ (+/- 1%) 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,980 pounds
 1,805 kilograms

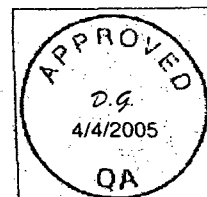
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.13

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	60	(1.5)
Minimum		every roll	54	(1.4)	56	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	169	(295)
- MD		every 4th	126	(221)	168	(293)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	173	(302)
- MD		every 4th	90	(158)	178	(311)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		15
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		450
- MD	(51 mm)	every 4th		150		400
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(241)
- MD		every 4th	42	(187)	58	(256)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	154	(685)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.7
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		18
Average (mils) - Side B		every 2nd		10		18

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev -- 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108108952

ROLL IDENTIFICATION

Roll Number 108108952
 Product Name HDT060AW00
 Production Date 4/5/2005

RESIN INFORMATION

Lot Number 8250206
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,985 pounds
 1,808 kilograms

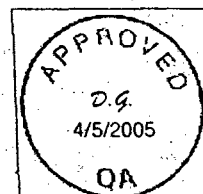
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.13

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	166	(291)
- MD		every 4th	126	(221)	161	(282)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	196	(344)
- MD		every 4th	90	(158)	198	(346)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		16
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		565
- MD	(51 mm)	every 4th		150		575
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(247)
- MD		every 4th	42	(187)	59	(261)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	157	(699)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.7
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		19
Average (mils) - Side B		every 2nd		10		20

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev -- 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108108953

ROLL IDENTIFICATION

Roll Number 108108953
 Product Name HDT060AW00
 Production Date 4/5/2005

RESIN INFORMATION

Lot Number 8250206
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,980 pounds
 1,805 kilograms

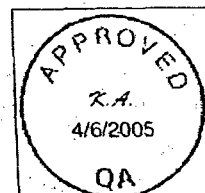
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.13

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	174	(305)
- MD		every 4th	126	(221)	169	(295)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	154	(269)
- MD		every 4th	90	(158)	192	(335)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		255
- MD	(51 mm)	every 4th		150		530
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(243)
- MD		every 4th	42	(187)	60	(267)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	159	(708)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.5
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		19
Average (mils) - Side B		every 2nd		10		19

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109000

ROLL IDENTIFICATION

Roll Number 108109000
 Product Name HDT060AW00
 Production Date 4/7/2005

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,890 pounds
 1,765 kilograms

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

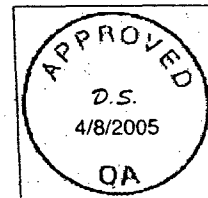
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	59	(1.5)
Minimum		every roll	54	(1.4)	54	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	167	(292)
- MD		every 4th	126	(221)	162	(284)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	146	(256)
- MD		every 4th	90	(158)	172	(302)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		345
- MD	(51 mm)	every 4th		150		455
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	53	(238)
- MD		every 4th	42	(187)	58	(260)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	152	(676)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.943
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.7
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		18
Average (mils) - Side B		every 2nd		10		13

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillisborough Landfill
 Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109004

ROLL IDENTIFICATION

Roll Number 108109004
 Product Name HDT060AW00
 Production Date 4/8/2005

Length $\approx$ (+/- 1%) 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,955 pounds
 1,794 kilograms

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

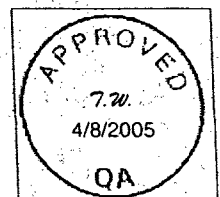
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	60	(1.5)
Minimum		every roll	54	(1.4)	56	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	175	(307)
- MD		every 4th	126	(221)	166	(290)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	186	(326)
- MD		every 4th	90	(158)	199	(348)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		16
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		520
- MD	(51 mm)	every 4th		150		590
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(246)
- MD		every 4th	42	(187)	58	(256)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	157	(699)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.7
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		19
Average (mils) - Side B		every 2nd		10		13

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev -- 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109008

ROLL IDENTIFICATION

Roll Number 108109008
 Product Name HDT060AW00
 Production Date 4/8/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,950 pounds
 1,792 kilograms

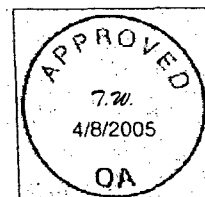
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	54	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	163	(285)
- MD		every 4th	126	(221)	159	(279)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	187	(328)
- MD		every 4th	90	(158)	188	(329)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		17
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		575
- MD	(51 mm)	every 4th		150		560
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	53	(234)
- MD		every 4th	42	(187)	58	(257)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	154	(685)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.6
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		16
Average (mils) - Side B		every 2nd		10		13

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev -- 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109015

ROLL IDENTIFICATION

Roll Number 108109015
 Product Name HDT060AW00
 Production Date 4/8/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

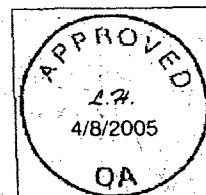
Length $\pm$ (+/- 1%) 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,945 pounds
 1,789 kilograms

Physical Property	Test Method	Test Frequency	Customer Minimum English	Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	176	(307)
- MD		every 4th	126	(221)	169	(296)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	179	(314)
- MD		every 4th	90	(158)	208	(364)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		475
- MD	(51 mm)	every 4th		150		535
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(244)
- MD		every 4th	42	(187)	58	(257)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	157	(699)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.945
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.5
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		17
Average (mils) - Side B		every 2nd		10		16

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev - - 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109016

ROLL IDENTIFICATION

Roll Number 108109016
 Product Name HDT060AW00
 Production Date 4/8/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,950 pounds
 1,792 kilograms

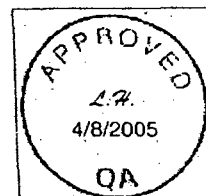
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.6)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	176	(307)
- MD		every 4th	126	(221)	169	(296)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	179	(314)
- MD		every 4th	90	(158)	208	(364)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		475
- MD	(51 mm)	every 4th		150		535
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(244)
- MD		every 4th	42	(187)	58	(257)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	157	(699)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.945
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.5
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		17
Average (mils) - Side B		every 2nd		10		16

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev - - 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109017

ROLL IDENTIFICATION

Roll Number 108109017
 Product Name HDT060AW00
 Production Date 4/8/2005

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,955 pounds
 1,794 kilograms

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

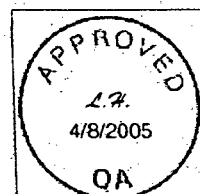
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	54	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	166	(291)
- MD		every 4th	126	(221)	169	(295)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	173	(303)
- MD		every 4th	90	(158)	189	(331)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		500
- MD	(51 mm)	every 4th		150		490
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(245)
- MD		every 4th	42	(187)	59	(260)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	155	(690)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.944
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.5
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		16
Average (mils) - Side B		every 2nd		10		19

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev - - 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109019

ROLL IDENTIFICATION

Roll Number 108109019
Product Name HDT060AW00
Production Date 4/8/2005
Length $\approx (+/- 1\%)$ 520 feet
158 meters
Width (Nominal) 22.5 feet
6.9 meters
Sheet Area 11,700 sq. feet
1,086 sq. meters
Weight 3,945 pounds
1,789 kilograms

RESIN INFORMATION

Lot Number 8250210
Type K306
Supplier Chevron Phillips

GSE RESIN TEST DATA

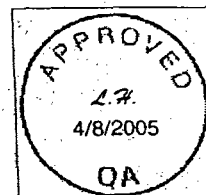
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	60	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	166	(291)
- MD		every 4th	126	(221)	169	(295)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	173	(303)
- MD		every 4th	90	(158)	189	(331)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		500
- MD	(51 mm)	every 4th		150		490
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(245)
- MD		every 4th	42	(187)	59	(260)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	155	(690)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.944
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.5
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		21
Average (mils) - Side B		every 2nd		10		20

Order No. 38867
Customer Name GSI*
Project Name S.E. Hillsborough Landfill
Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev -- 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109022

ROLL IDENTIFICATION

Roll Number 108109022
 Product Name HDT060AW00
 Production Date 4/8/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

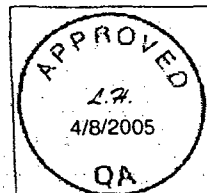
Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,930 pounds
 1,783 kilograms

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.6)
Minimum		every roll	54	(1.4)	56	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	174	(304)
- MD		every 4th	126	(221)	167	(292)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	170	(298)
- MD		every 4th	90	(158)	208	(364)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		355
- MD	(51 mm)	every 4th		150		530
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(239)
- MD		every 4th	42	(187)	56	(247)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	158	(703)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		3.0
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		20
Average (mils) - Side B		every 2nd		10		16

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev -- 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109039

ROLL IDENTIFICATION

Roll Number 108109039
 Product Name HDT060AW00
 Production Date 4/9/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

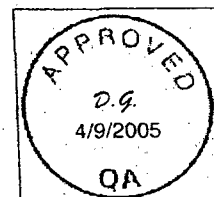
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,960 pounds
 1,796 kilograms

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	54	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	165	(289)
- MD		every 4th	126	(221)	162	(283)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	163	(285)
- MD		every 4th	90	(158)	190	(332)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		16
- MD	(33 mm)	every 4th		12		17
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		370
- MD	(51 mm)	every 4th		150		520
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(240)
- MD		every 4th	42	(187)	58	(256)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	156	(694)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.4
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		18
Average (mils) - Side B		every 2nd		10		16

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified
 GSE-8.2.4-007 Rev -- 02/03





Changes and improvements to GSE's quality data delivery

GSE has begun to distribute our quality information in summary table format. During this transition period you will continue to receive individual Roll Test Data Reports as well as the summary tables. The information supplied is identical, just in a different format.

In the summer of 2005, GSE plans to begin supplying our quality data only in the summary format, not as individual roll data.

GSE Lining Technology Inc. has been working to develop improved ways of distributing our quality data and Roll Test Data Reports to our customer base. GSE's systems now include the capability to provide summaries of our quality data. A sample of the data for our geotextile products is below. The summary tables for other product types will vary slightly, but will follow this general format. It is GSE's intention, ultimately, to deliver our quality data electronically via our Customer Information System, eliminating paper copies entirely.



Roll Test Data Summary - English Units

Product: 19W6		Item Code: C20060802		Roll Width: 13.0 feet						Test Date: 9/17/2004				
Roll No.	Mass per Unit Area	Thickness	Grab Strength		Grab Elongation		Tear Strength		Puncture Strength	Mullen Burst Strength	Apparent Opening Size	Permeability	Water Flow Rate	
	ASTM D 5261	ASTM D 5199	ASTM D 4632		ASTM D 4632		ASTM D 4533		ASTM D 4833	ASTM D 3786	ASTM D 4751	ASTM D 4491		
	(oz/yd ²)	(mils)	MD (lbs)	CD (lbs)	MD (%)	CD (%)	MD (lbs)	CD (lbs)	(lbs)	(psi)	(mm)	(sec-1)	(cm/sec)	(gallon/min/ft ²)
130168266	6.7	91	196	188	94	118	113	115	117	327	0.212	2.3	0.5	170.4
130168300	6.2	95	172	190	100	120	106	115	134	354	0.212	2.3	0.5	170.4
130168308	6.9	106	202	202	105	135	110	120	127	368	0.212	2.3	0.5	170.4
130170884	7.3	106	203	253	103	121	96	125	134	380	0.212	2.0	0.5	146.6
130170913	6.1	98	212	195	91	120	70	96	112	340	0.212	2.4	0.8	176.1
130170919	6.8	101	191	212	99	135	84	105	115	394	0.212	2.2	0.6	183.0
130170923	6.8	101	191	212	99	135	84	105	115	384	0.212	2.2	0.6	183.0
130170929	6.3	95	176	179	109	133	108	124	96	346	0.212	2.4	0.6	173.6

We want to thank you in advance for your cooperation and support during this transition. If you have any questions or need additional information, please contact your GSE Sales or Customer Service representative at 800-435-2008.



Shipping Order - Packing List - Original - NOT Negotiable

GSE Lining Technology, Inc. at HOUSTON, TEXAS

Shippers No. 49407

Page 1 of 1

Received at Houston, Texas from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which said Carrier agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all or any said property, over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to the rates and contract agreed to in writing by GSE Lining Technology and Carrier. GSE Lining Technology's obligation to pay freight charges for the shipment is conditioned on (1) the existence of a separate written contract with the carrier transporting the freight and (2) the carrier's name appearing on this Bill of Lading, and other carriers must look solely to a party other than GSE Lining Technology, Inc. for payment.

Ship To: S.E. Hillsborough Landfill
C/O GSI/ ERC General Contract
15960 County Road 672
Lithia FL 33503

Roll Certifications
Included

Date: 04/30/05

Branch Plant: 1500 621811

Shipping Instructions:

call Jerry P. @407-656-3900

24 hrs B4 del.

Sales Order

38867 SO

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight	Project# 516054
1	108109003	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,950.00	Freight charges are prepaid unless marked collect. Check box if collect ☐ Customer P.O. Number: 10228-00 If this shipment is to be delivered to consignee, consignee shall sign the following statement. Carrier may decline to deliver this shipment without payment of freight and all other lawful charges. Signature of Consignor Local Verification Signed: X Pick Up # 8628RR Seal # Truckers P.O. #
2	108109006	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,930.00	
3	108109007	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,940.00	
4	108109010	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,930.00	
5	108109013	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,955.00	
6	108109014	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,940.00	
7	108109040	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,940.00	
8	108109041	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,940.00	
9	108109042	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,955.00	
10	108109043	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,970.00	
11	108109044	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,950.00	
12	108109045	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,950.00	
Total Quantity 140,400					Total Weight: 47,350.00	

Driver Requirements:

- 1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
- 2) Driver must call (281) 230-6781 when unloaded.
- 3) Driver must call and advise any delay in transit.
- 4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name: _____

Carrier Signature: _____

Date: _____

GSE

Lining Technology, Inc

Roll Test Data Report

SO-Number	Project-Number	BOL-Number	Product-Name
38867	516054	49407	HDT060AW00



Report Date:

4/30/2005

*Modified

Roll No.	ASTM D 5994				ASTM D638, Type IV / D6693						ASTM D 1004		ASTM D 4833	ASTM D 1505	ASTM D 1603*	ASTM D 5596	GRIGM 12		
	Average	Minimum	TD Strength	MD Strength	TD Strength	MD Strength	TD Elongation	MD Elongation	TD Elongation	MD Elongation	TD Tear	MD Tear	Puncture			Carbon Black	Carbon Black	Average - Side	Average - Side
	Thickness	Thickness	@ Yield	@ Yield	@ Break	@ Break	@ Yield	@ Yield	@ Break	@ Break	Resistance	Resistance	Resistance	Density	Content	Dispersion	Asperity Height	Asperity Height	
	(mils)	(mils)	(ppi)	(ppi)	(ppi)	(ppi)	(%)	(%)	(%)	(%)	(lbs)	(lbs)	(lbs)	(g/cc)	(%)	Views in Cat1 - Cat2	(mils)	(mils)	
108109003	60	56	175	166	186	199	16	16	520	590	55	58	157	0.947	2.7	10	19	13	
108109006	60	56	163	159	187	188	17	18	575	560	53	58	154	0.946	2.6	10	17	14	
108109007	61	55	163	159	187	188	17	18	575	560	53	58	154	0.946	2.6	10	16	13	
108109010	61	55	176	170	181	210	17	18	465	535	55	58	160	0.943	2.5	10	18	15	
108109013	61	55	176	169	179	208	15	16	475	535	55	58	157	0.945	2.5	10	19	19	
108109014	61	55	176	169	179	208	15	16	475	535	55	58	157	0.945	2.5	10	19	19	
108109040	61	54	165	162	163	190	16	17	370	520	54	58	156	0.947	2.4	10	18	16	
108109041	61	54	175	170	171	190	15	17	365	510	56	59	158	0.946	2.6	10	21	17	
108109042	61	55	175	170	171	190	15	17	365	510	56	59	158	0.946	2.6	10	21	17	
108109043	61	54	175	170	171	190	15	17	365	510	56	59	158	0.946	2.6	10	21	18	
108109044	61	57	175	170	171	190	15	17	365	510	56	59	158	0.946	2.6	10	21	18	
108109045	61	56	167	165	182	194	16	17	500	570	55	57	159	0.946	2.6	10	21	17	

Laboratory Manager:

Dave Allen



CoA Date: 03/23/2005

Certificate of Analysis

Shipped To: GSE LINING TECHNOLOGY INC HC
19103 GUNDLE ROAD
WESTFIELD TX 77090
USA

Recipient: DON BOHAC

Fax:

CPC Delivery #: 86852860

PO #: 33977

Weight: 186300 LB

Ship Date: 03/23/2005

Package: BULK

Mode: Hopper Car

Car #: CHVX890241

Seal No: 155261

Product:

MARLEX POLYETHYLENE K306 BULK

Lot Number: 8250210

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.11	g/10mi
HLMI Flow Rate	ASTM D1238	13.6	g/10mi
Density	ASTM D1505	0.937	g/cm3
Production Date		2/11/2005	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP. However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Jackie Edwards
Certification Systems Specialist

For CoA questions contact Peter Scheirman at 713-289-4799



Roll Test Data Report

Lining Technology, Inc.

Roll No. 108109003

ROLL IDENTIFICATION

Roll Number 108109003
 Product Name HDT060AW00
 Production Date 4/8/2005

Length $\approx (+/- 1\%)$ 520 feet
 158 meters

Width (Nominal) 22.5 feet
 6.9 meters

Sheet Area 11,700 sq. feet
 1,086 sq. meters

Weight 3,950 pounds
 1,792 kilograms

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

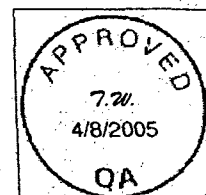
GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	60	(1.5)
Minimum		every roll	54	(1.4)	56	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	175	(307)
- MD		every 4th	126	(221)	166	(290)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	186	(326)
- MD		every 4th	90	(158)	199	(348)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		16
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		520
- MD	(51 mm)	every 4th		150		590
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(246)
- MD		every 4th	42	(187)	58	(256)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	157	(699)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.7
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		19
Average (mils) - Side B		every 2nd		10		13

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified
 GSE-8.2.4-007 Rev - - 02/03





Roll Test Data Report

Lining Technology, Inc.

Roll No. 108109006

ROLL IDENTIFICATION

Roll Number 108109006
Product Name HDT060AW00
Production Date 4/8/2005

RESIN INFORMATION

Lot Number 8250210
Type K306
Supplier Chevron Phillips

Length $\approx (+/- 1\%)$ 520 feet
158 meters
Width (Nominal) 22.5 feet
6.9 meters
Sheet Area 11,700 sq. feet
1,086 sq. meters
Weight 3,930 pounds
1,783 kilograms

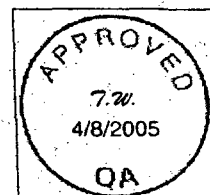
GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	60	(1.5)
Minimum		every roll	54	(1.4)	56	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	163	(285)
- MD		every 4th	126	(221)	159	(279)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	187	(328)
- MD		every 4th	90	(158)	188	(329)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		17
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		575
- MD	(51 mm)	every 4th		150		560
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	53	(234)
- MD		every 4th	42	(187)	58	(257)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	154	(685)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.6
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		17
Average (mils) - Side B		every 2nd		10		14

Order No. 38867
Customer Name GSI*
Project Name S.E. Hillsborough Landfill
Location Tampa, Florida

*Modified
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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109007

ROLL IDENTIFICATION

Roll Number 108109007
 Product Name HDT060AW00
 Production Date 4/8/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

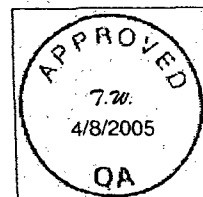
Length $\approx$ (+/- 1%) 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,940 pounds
 1,787 kilograms

Physical Property	Test Method	Test Frequency	Customer Minimum English	Minimum Metric	Test Results English	Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	163	(285)
- MD		every 4th	126	(221)	159	(279)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	187	(328)
- MD		every 4th	90	(158)	188	(329)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		17
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		575
- MD	(51 mm)	every 4th		150		560
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	53	(234)
- MD		every 4th	42	(187)	58	(257)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	154	(685)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.6
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		16
Average (mils) - Side B		every 2nd		10		13

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109010

ROLL IDENTIFICATION

Roll Number 108109010
 Product Name HDT060AW00
 Production Date 4/8/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

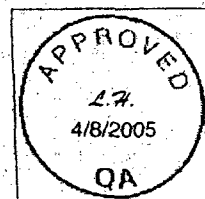
Length $\pm$ (+/- 1%) 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,930 pounds
 1,783 kilograms

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	176	(308)
- MD		every 4th	126	(221)	170	(298)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	181	(317)
- MD		every 4th	90	(158)	210	(367)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		17
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		465
- MD	(51 mm)	every 4th		150		535
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(246)
- MD		every 4th	42	(187)	58	(258)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	160	(712)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.943
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.5
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		18
Average (mils) - Side B		every 2nd		10		15

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109013

ROLL IDENTIFICATION

Roll Number 108109013
 Product Name HDT060AW00
 Production Date 4/8/2005

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,955 pounds
 1,794 kilograms

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

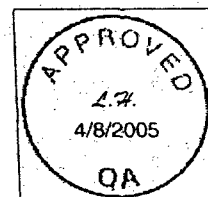
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	176	(307)
- MD		every 4th	126	(221)	169	(296)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	179	(314)
- MD		every 4th	90	(158)	208	(364)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		475
- MD	(51 mm)	every 4th		150		535
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(244)
- MD		every 4th	42	(187)	58	(257)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	157	(699)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.945
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.5
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		19
Average (mils) - Side B		every 2nd		10		19

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109014

ROLL IDENTIFICATION

Roll Number 108109014
 Product Name HDT060AW00
 Production Date 4/8/2005

Length $\pm$ (+/- 1%) 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,940 pounds
 1,787 kilograms

RESIN INFORMATION

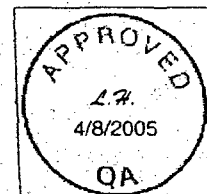
Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer Minimum English	Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	176	(307)
- MD		every 4th	126	(221)	169	(296)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	179	(314)
- MD		every 4th	90	(158)	208	(364)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		475
- MD	(51 mm)	every 4th		150		535
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(244)
- MD		every 4th	42	(187)	58	(257)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	157	(699)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.945
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.5
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		19
Average (mils) - Side B		every 2nd		10		19

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida
 *Modified
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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109040

ROLL IDENTIFICATION

Roll Number 108109040
 Product Name HDT060AW00
 Production Date 4/9/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,940 pounds
 1,787 kilograms

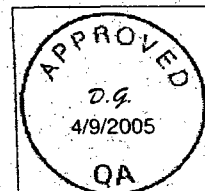
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	54	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	165	(289)
- MD		every 4th	126	(221)	162	(283)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	163	(285)
- MD		every 4th	90	(158)	190	(332)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		16
- MD	(33 mm)	every 4th		12		17
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		370
- MD	(51 mm)	every 4th		150		520
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(240)
- MD		every 4th	42	(187)	58	(256)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	156	(694)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.4
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		18
Average (mils) - Side B		every 2nd		10		16

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109041

ROLL IDENTIFICATION

Roll Number 108109041
 Product Name HDT060AW00
 Production Date 4/9/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

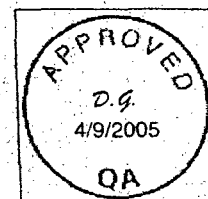
Length $\approx$ (+/- 1%) 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,940 pounds
 1,787 kilograms

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	54	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	175	(306)
- MD		every 4th	126	(221)	170	(298)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	171	(300)
- MD		every 4th	90	(158)	190	(333)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		17
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		365
- MD	(51 mm)	every 4th		150		510
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	56	(247)
- MD		every 4th	42	(187)	59	(260)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	158	(703)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.6
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		21
Average (mils) - Side B		every 2nd		10		17

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109042

ROLL IDENTIFICATION

Roll Number 108109042
 Product Name HDT060AW00
 Production Date 4/9/2005
 Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,955 pounds
 1,794 kilograms

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

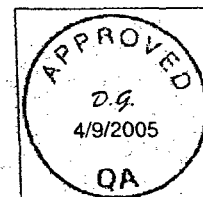
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	175	(306)
- MD		every 4th	126	(221)	170	(298)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	171	(300)
- MD		every 4th	90	(158)	190	(333)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		17
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		365
- MD	(51 mm)	every 4th		150		510
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	56	(247)
- MD		every 4th	42	(187)	59	(260)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	158	(703)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.6
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		21
Average (mils) - Side B		every 2nd		10		17

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109043

ROLL IDENTIFICATION

Roll Number 108109043
Product Name HDT060AW00
Production Date 4/9/2005
Length $\approx (+/- 1\%)$ 520 feet
158 meters
Width (Nominal) 22.5 feet
6.9 meters
Sheet Area 11,700 sq. feet
1,086 sq. meters
Weight 3,970 pounds
1,801 kilograms

RESIN INFORMATION

Lot Number 8250210
Type K306
Supplier Chevron Phillips

GSE RESIN TEST DATA

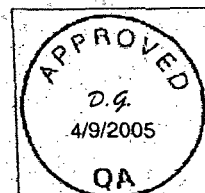
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer Minimum		Test Results	
			English	Metric	English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	54	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	175	(306)
- MD		every 4th	126	(221)	170	(298)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	171	(300)
- MD		every 4th	90	(158)	190	(333)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th	12		15	
- MD	(33 mm)	every 4th	12		17	
Break Elongation, % - TD	gauge length = 2.0"	every 4th	150		365	
- MD	(51 mm)	every 4th	150		510	
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	56	(247)
- MD		every 4th	42	(187)	59	(260)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	158	(703)
Density, g/cc	ASTM D 1505					
		every 4th	0.940		0.946	
Carbon Black Content, %	ASTM D 1603*					
		every 4th	2.0		2.6	
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th	9		10	
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd	10		21	
Average (mils) - Side B		every 2nd	10		18	

Order No. 38867
Customer Name GSI*
Project Name S.E. Hillsborough Landfill
Location Tampa, Florida

*Modified

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Roll Test Data Report

Lining Technology, Inc.

Roll No. 108109045

ROLL IDENTIFICATION

Roll Number 108109045
 Product Name HDT060AW00
 Production Date 4/9/2005

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,950 pounds
 1,792 kilograms

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

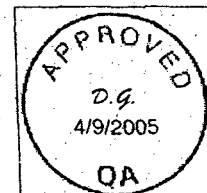
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.6)
Minimum		every roll	54	(1.4)	56	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	167	(293)
- MD		every 4th	126	(221)	165	(288)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	182	(319)
- MD		every 4th	90	(158)	194	(339)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		16
- MD	(33 mm)	every 4th		12		17
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		500
- MD	(51 mm)	every 4th		150		570
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(247)
- MD		every 4th	42	(187)	57	(252)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	159	(708)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.6
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		21
Average (mils) - Side B		every 2nd		10		17

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev -- 02/03





Changes and improvements to GSE's quality data delivery

GSE has begun to distribute our quality information in summary table format. During this transition period you will continue to receive individual Roll Test Data Reports as well as the summary tables. The information supplied is identical, just in a different format.

In the summer of 2005, GSE plans to begin supplying our quality data only in the summary format, not as individual roll data.

GSE Lining Technology Inc. has been working to develop improved ways of distributing our quality data and Roll Test Data Reports to our customer base. GSE's systems now include the capability to provide summaries of our quality data. A sample of the data for our geotextile products is below. The summary tables for other product types will vary slightly, but will follow this general format. It is GSE's intention, ultimately, to deliver our quality data electronically via our Customer Information System, eliminating paper copies entirely.



Roll Test Data Summary - English Units

Product: NWS		Item Code: CEC060802		Roll Width: 15.0 feet		Test Date: 5/17/2004								
Roll No.	Mass per Unit Area	Thickness	Grab Strength		Grab Elongation		Tear Strength		Puncture Strength	Mullen Burst Strength	Apparent Opening Size	Permeability	Water Flow Rate	
	ASTM D 5261 (oz/yd ²)	ASTM D 5199 (mils)	ASTM D 4632		ASTM D 4632		ASTM D 4533		ASTM D 4833	ASTM D 3786	ASTM D 4751	ASTM D 4491		
			MD (lbs)	CD (lbs)	MD (%)	CD (%)	MD (lbs)	CD (lbs)	(lbs)	(psi)	(mm)	(sec-1)	(cm/sec) (gallons/min/ft ²)	
130168266	6.7	91	196	188	94	118	113	116	117	327	0.212	2.3	0.5	170.4
130168300	6.2	95	172	199	100	139	106	115	134	354	0.212	2.3	0.5	170.4
130168308	6.9	109	202	202	105	135	110	120	127	368	0.212	2.3	0.5	170.4
130170894	7.3	106	203	253	103	121	95	125	134	390	0.212	2.0	0.5	146.6
130170913	6.1	98	212	195	91	120	70	96	112	340	0.212	2.4	0.8	176.1
130170919	6.8	101	191	212	99	135	94	105	115	394	0.212	2.2	0.6	163.0
130170923	6.8	101	191	212	99	135	94	105	115	394	0.212	2.2	0.6	163.0
130170929	6.3	95	176	179	109	133	108	124	98	346	0.212	2.4	0.5	173.6

We want to thank you in advance for your cooperation and support during this transition. If you have any questions or need additional information, please contact your GSE Sales or Customer Service representative at 800-435-2008.



Shipping Order - Packing List - Original - NOT Negotiable

GSE Lining Technology, Inc. at HOUSTON, TEXAS

Shippers No. 49364

Page 1 of 1

Received at Houston, Texas from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which said Carrier agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all or any said property, over all or any portion and route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to the rates and contract agreed to in writing by GSE Lining Technology and Carrier. GSE Lining Technology's obligation to pay freight charges for the shipment is conditioned on (1) the existence of a separate written contract with the carrier for transporting the freight and (2) the carrier's name appearing on this Bill of Lading, and other carriers must look solely to a party other than GSE Lining Technology, Inc. for payment.

Ship To: S.E. Hillsborough Landfill
C/O GSI/ ERC General Contract
15960 County Road 672
Lithia FL 33503

Date: 04/29/05

Roll Certifications
Included

Branch Plant: 1500 621811

Shipping Instructions:

call Jerry P. @407-656-3900

24 hrs B4 del.

Sales Order

38867 SO

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight	Project# 516054
✓ 1	108109021	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,930.00	Freight charges are prepaid unless marked collect. Check box if collect ☐
✓ 2	108109023	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,925.00	
✓ 3	108109024	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,900.00	Customer P.O. Number: 10228-00
✓ 4	108109025	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,920.00	
✓ 5	108109026	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,925.00	If this shipment is to be delivered to consignee, consignee shall sign the following statement. Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.
✓ 6	108109027	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,910.00	
✓ 7	108109028	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,935.00	Signature of Consignor
✓ 8	108109029	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,940.00	
✓ 9	108109030	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,925.00	Local Verification Signed: X _____
✓ 10	108109031	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,930.00	
✓ 11	108109034	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,945.00	Pick Up # 8625RR
✓ 12	108109038	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,965.00	
Total Quantity 140,400					Total Weight: 47,150.00	Seal #
						Truckers P.O. #

Driver Requirements:

- 1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
- 2) Driver must call (281) 230-6781 when unloaded.
- 3) Driver must call and advise any delay in transit.
- 4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name: _____

Carrier Signature: _____

Date: _____



CoA Date: 03/23/2005

Certificate of Analysis

Shipped To: GSE LINING TECHNOLOGY INC HC
19103 GUNDLE ROAD
WESTFIELD TX 77090
USA

Recipient: DON BOHAC
Fax:

CPC Delivery #: 86852860
PO #: 33977
Weight: 186300 LB
Ship Date: 03/23/2005
Package: BULK
Mode: Hopper Car
Car #: CHVX890241
Seal No: 155261

Product:
MARLEX POLYETHYLENE K306 BULK

Lot Number: 8250210

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.11	g/10mi
HLMI Flow Rate	ASTM D1238	13.6	g/10mi
Density	ASTM D1505	0.937	g/cm3
Production Date		2/11/2005	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP. However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Jackie Edwards
Certification Systems Specialist

For CoA questions contact Peter Scheirman at 713-289-4799



Lining Technology, Inc.

Roll Test Data Report

SO-Number	Project-Number	BOL-Number	Product-Name
38867	516054	49364	HDT060AW00


 Report Date:
4/29/2005

*Modified

Roll No.	ASTM D 5994		ASTM D638, Type IV / D6691								ASTM D 1004		ASTM D 4833	ASTM D 1505	ASTM D 1603*	ASTM D 5596	GR1 GM 12	
	Average	Minimum	TD Strength	MD Strength	TD Strength	MD Strength	TD Elongation	MD Elongation	TD Elongation	MD Elongation	TD Tear	MD Tear	Puncture		Carbon Black	Carbon Black	Average - Side	Average - Side
	Thickness	Thickness	@ Yield	@ Yield	@ Break	@ Break	@ Yield	@ Yield	@ Break	@ Break	Resistance	Resistance	Resistance	Density	Content	Dispersion	Asperity Height	Asperity Height
	(mils)	(mils)	(psi)	(psi)	(psi)	(psi)	(%)	(%)	(%)	(%)	(lbs)	(lbs)	(lbs)	(g/cc)	(%)	Views in Carl -	(mils)	(mils)
																Cell		
108109021	62	57	174	167	170	208	15	16	355	530	54	56	158	0.947	3.0	10	20	16
108109023	61	56	174	167	170	208	15	16	355	530	54	56	158	0.947	3.0	10	19	17
108109024	60	55	174	167	170	208	15	16	355	530	54	56	158	0.947	3.0	10	19	17
108109025	60	56	170	160	186	187	15	16	540	540	55	56	158	0.946	2.5	9	21	17
108109026	60	55	170	160	186	187	15	16	540	540	55	56	158	0.946	2.5	9	21	17
108109027	61	56	170	160	186	187	15	16	540	540	55	56	158	0.946	2.5	9	21	17
108109028	61	56	170	160	186	187	15	16	540	540	55	56	158	0.946	2.5	9	21	17
108109029	60	55	164	162	182	202	15	17	530	545	55	56	158	0.946	2.6	10	21	17
108109030	60	57	164	162	182	202	15	17	530	545	55	56	158	0.946	2.6	10	21	17
108109031	61	56	164	162	182	202	15	17	530	545	55	56	158	0.946	2.6	10	19	16
108109034	61	55	165	166	193	174	17	18	560	525	54	57	155	0.947	2.7	10	18	17
108109038	61	54	165	162	163	190	16	17	370	520	54	58	156	0.947	2.4	10	23	18

Laboratory Manager:



Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109021

ROLL IDENTIFICATION

Roll Number 108109021
 Product Name HDT060AW00
 Production Date 4/8/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,930 pounds
 1,783 kilograms

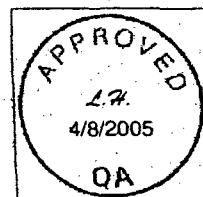
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	62	(1.6)
Minimum		every roll	54	(1.4)	57	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	174	(304)
- MD		every 4th	126	(221)	167	(292)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	170	(298)
- MD		every 4th	90	(158)	208	(364)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		355
- MD	(51 mm)	every 4th		150		530
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(239)
- MD		every 4th	42	(187)	56	(247)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	158	(703)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		3.0
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		20
Average (mils) - Side B		every 2nd		10		16

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev -- 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109023

ROLL IDENTIFICATION

Roll Number 108109023
 Product Name HDT060AW00
 Production Date 4/8/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,925 pounds
 1,780 kilograms

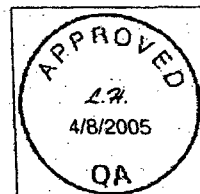
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.6)
Minimum		every roll	54	(1.4)	56	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	174	(304)
- MD		every 4th	126	(221)	167	(292)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	170	(298)
- MD		every 4th	90	(158)	208	(364)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		355
- MD	(51 mm)	every 4th		150		530
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(239)
- MD		every 4th	42	(187)	56	(247)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	158	(703)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		3.0
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		19
Average (mils) - Side B		every 2nd		10		17

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev - - 02/03





Roll Test Data Report

Lining Technology, Inc.

Roll No. 108109024

ROLL IDENTIFICATION

Roll Number 108109024
Product Name HDT060AW00
Production Date 4/8/2005

Length $\approx$ (+/- 1%) 520 feet
158 meters
Width (Nominal) 22.5 feet
6.9 meters
Sheet Area 11,700 sq. feet
1,086 sq. meters
Weight 3,900 pounds
1,769 kilograms

RESIN INFORMATION

Lot Number 8250210
Type K306
Supplier Chevron Phillips

GSE RESIN TEST DATA

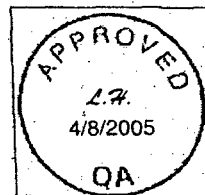
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer Minimum English	Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	60	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	174	(304)
- MD		every 4th	126	(221)	167	(292)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	170	(298)
- MD		every 4th	90	(158)	208	(364)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		355
- MD	(51 mm)	every 4th		150		530
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(239)
- MD		every 4th	42	(187)	56	(247)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	158	(703)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		3.0
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		19
Average (mils) - Side B		every 2nd		10		17

Order No. 38867
Customer Name GSI*
Project Name S.E. Hillsborough Landfill
Location Tampa, Florida

*Modified

GSE-8.2.4-007 Rev - - 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109025

ROLL IDENTIFICATION

Roll Number 108109025
 Product Name HDT060AW00
 Production Date 4/8/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

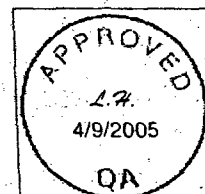
Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,920 pounds
 1,778 kilograms

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	60	(1.5)
Minimum		every roll	54	(1.4)	56	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	170	(297)
- MD		every 4th	126	(221)	160	(280)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	186	(326)
- MD		every 4th	90	(158)	187	(328)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		540
- MD	(51 mm)	every 4th		150		540
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(243)
- MD		every 4th	42	(187)	56	(249)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	158	(703)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.5
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		9
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		21
Average (mils) - Side B		every 2nd		10		17

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified
 GSE-8.2.4-007 Rev - - 02/03





Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109026

ROLL IDENTIFICATION

Roll Number 108109026
 Product Name HDT060AW00
 Production Date 4/9/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Length $\approx$ (+/- 1%) 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,925 pounds
 1,780 kilograms

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	60	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	170	(297)
- MD		every 4th	126	(221)	160	(280)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	186	(326)
- MD		every 4th	90	(158)	187	(328)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		540
- MD	(51 mm)	every 4th		150		540
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(243)
- MD		every 4th	42	(187)	56	(249)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	158	(703)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.5
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		9
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		21
Average (mils) - Side B		every 2nd		10		17

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109027

ROLL IDENTIFICATION

Roll Number 108109027
 Product Name HDT060AW00
 Production Date 4/9/2005

Length $\approx$ (+/- 1%) 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,910 pounds
 1,774 kilograms

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

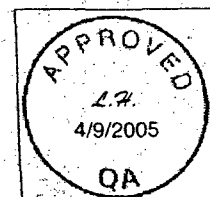
GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	56	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	170	(297)
- MD		every 4th	126	(221)	160	(280)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	186	(326)
- MD		every 4th	90	(158)	187	(328)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		540
- MD	(51 mm)	every 4th		150		540
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(243)
- MD		every 4th	42	(187)	56	(249)
Puncture Resistance, lb. (N)	ASTM D 4833	every 4th	90	(401)	158	(703)
Density, g/cc	ASTM D 1505	every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*	every 4th		2.0		2.5
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		9
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		21
Average (mils) - Side B		every 2nd		10		17

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified
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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109028

ROLL IDENTIFICATION

Roll Number 108109028
 Product Name HDT060AW00
 Production Date 4/9/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

Length $\approx (+/- 1\%)$ 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,935 pounds
 1,785 kilograms

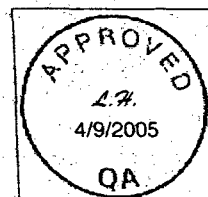
GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	56	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	170	(297)
- MD		every 4th	126	(221)	160	(280)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	186	(326)
- MD		every 4th	90	(158)	187	(328)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		16
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		540
- MD	(51 mm)	every 4th		150		540
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(243)
- MD		every 4th	42	(187)	56	(249)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	158	(703)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.5
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		9
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		21
Average (mils) - Side B		every 2nd		10		17

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified
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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109029

ROLL IDENTIFICATION

Roll Number 108109029
 Product Name HDT060AW00
 Production Date 4/9/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

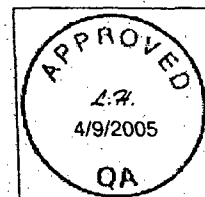
Length $\approx$ (+/- 1%) 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,940 pounds
 1,787 kilograms

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	60	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	164	(288)
- MD		every 4th	126	(221)	162	(284)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	182	(319)
- MD		every 4th	90	(158)	202	(354)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		17
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		530
- MD	(51 mm)	every 4th		150		545
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(243)
- MD		every 4th	42	(187)	56	(251)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	158	(703)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.6
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		21
Average (mils) - Side B		every 2nd		10		17

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109030

ROLL IDENTIFICATION

Roll Number 108109030
 Product Name HDT060AW00
 Production Date 4/9/2005

RESIN INFORMATION

Lot Number 8250210
 Type K306
 Supplier Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

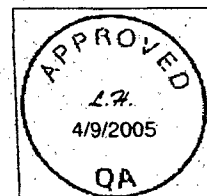
Length $\approx$ (+/- 1%) 520 feet
 158 meters
 Width (Nominal) 22.5 feet
 6.9 meters
 Sheet Area 11,700 sq. feet
 1,086 sq. meters
 Weight 3,925 pounds
 1,780 kilograms

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	60	(1.5)
Minimum		every roll	54	(1.4)	57	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	164	(288)
- MD		every 4th	126	(221)	162	(284)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	182	(319)
- MD		every 4th	90	(158)	202	(354)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		17
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		530
- MD	(51 mm)	every 4th		150		545
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(243)
- MD		every 4th	42	(187)	56	(251)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	158	(703)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.6
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		21
Average (mils) - Side B		every 2nd		10		17

Order No. 38867
 Customer Name GSI*
 Project Name S.E. Hillsborough Landfill
 Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109031

ROLL IDENTIFICATION

Roll Number 108109031
Product Name HDT060AW00
Production Date 4/9/2005
Length $\approx (+/- 1\%)$ 520 feet
158 meters
Width (Nominal) 22.5 feet
6.9 meters
Sheet Area 11,700 sq. feet
1,086 sq. meters
Weight 3,930 pounds
1,783 kilograms

RESIN INFORMATION

Lot Number 8250210
Type K306
Supplier Chevron Phillips

GSE RESIN TEST DATA

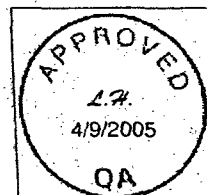
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer Minimum		Test Results	
			English	Metric	English	Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	56	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	164	(288)
- MD		every 4th	126	(221)	162	(284)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	182	(319)
- MD		every 4th	90	(158)	202	(354)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		15
- MD	(33 mm)	every 4th		12		17
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		530
- MD	(51 mm)	every 4th		150		545
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	55	(243)
- MD		every 4th	42	(187)	56	(251)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	158	(703)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.946
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.6
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		19
Average (mils) - Side B		every 2nd		10		16

Order No. 38867
Customer Name GSI*
Project Name S.E. Hillsborough Landfill
Location Tampa, Florida

*Modified

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Lining Technology, Inc.

Roll Test Data Report

Roll No. 108109034

ROLL IDENTIFICATION

Roll Number 108109034
Product Name HDT060AW00
Production Date 4/9/2005
Length $\approx (+/- 1\%)$ 520 feet
158 meters
Width (Nominal) 22.5 feet
6.9 meters
Sheet Area 11,700 sq. feet
1,086 sq. meters
Weight 3,945 pounds
1,789 kilograms

RESIN INFORMATION

Lot Number 8250210
Type K306
Supplier Chevron Phillips

GSE RESIN TEST DATA

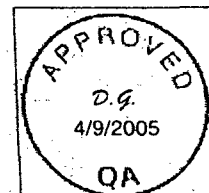
Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Physical Property	Test Method	Test Frequency	Customer English	Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	57	(1.4)	61	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638, Type IV / D6693					
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	165	(288)
- MD		every 4th	126	(221)	166	(290)
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	193	(338)
- MD		every 4th	90	(158)	174	(304)
Yield Elongation, % - TD	gauge length = 1.3"	every 4th		12		17
- MD	(33 mm)	every 4th		12		18
Break Elongation, % - TD	gauge length = 2.0"	every 4th		150		560
- MD	(51 mm)	every 4th		150		525
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	42	(187)	54	(242)
- MD		every 4th	42	(187)	57	(255)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	90	(401)	155	(690)
Density, g/cc	ASTM D 1505					
		every 4th		0.940		0.947
Carbon Black Content, %	ASTM D 1603*					
		every 4th		2.0		2.7
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th		9		10
Asperity Height	GRI GM 12					
Average (mils) - Side A		every 2nd		10		18
Average (mils) - Side B		every 2nd		10		17

Order No. 38867
Customer Name GSI*
Project Name S.E. Hillsborough Landfill
Location Tampa, Florida

*Modified

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Roll No. 108109038

RESIN INFORMATION

Lot Number	8250210
Type	K306
Supplier	Chevron Phillips

GSE RESIN TEST DATA

<u>Property</u>	<u>Test Method</u>	<u>Results</u>
Density, g/cc	ASTM D 1505	0.937
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.11

Test Method

*Test
Frequency*

Customer Minimum	
English	Metric

Test Results

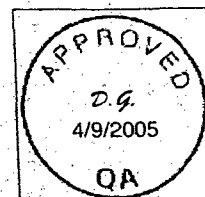
English	Metric
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Thickness, mil (mm)	ASTM D 5994						
Average		every roll	57	(1.4)	61	(1.6)	
Minimum		every roll	54	(1.4)	54	(1.4)	
Tensile Properties:	ASTM D638, Type IV / D6693						
Yield Strength, ppi (N/cm) - TD		every 4th	126	(221)	165	(289)	
- MD		every 4th	126	(221)	162	(283)	
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	163	(285)	
- MD		every 4th	90	(158)	190	(332)	
Yield Elongation, % - TD	gauge length = 1.3"	every 4th	12		16		
- MD	(33 mm)	every 4th	12		17		
Break Elongation, % - TD	gauge length = 2.0"	every 4th	150		370		
- MD	(51 mm)	every 4th	150		520		
Tear Resistance, lb. (N)	ASTM D 1004						
- TD		every 4th	42	(187)	54	(240)	
- MD		every 4th	42	(187)	58	(256)	
Puncture Resistance, lb. (N)	ASTM D 4833	every 4th	90	(401)	156	(694)	
Density, g/cc	ASTM D 1505	every 4th	0.940		0.947		
Carbon Black Content, %	ASTM D 1603*	every 4th	2.0		2.4		
Carbon Black Dispersion	ASTM D 5596	every 4th	9		10		
Views in Cat1 - Cat2							
Asperity Height	GRI GM 12						
Average (mils) - Side A		every 2nd	10		23		
Average (mils) - Side B		every 2nd	10		18		

Order No.	38867
Customer Name	GSI*
Project Name	S.E. Hillsborough Landfill
Location	Tampa, Florida

*Modified

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Changes and improvements to GSE's quality data delivery

GSE has begun to distribute our quality information in summary table format. During this transition period you will continue to receive individual Roll Test Data Reports as well as the summary tables. The information supplied is identical, just in a different format.

In the summer of 2005, GSE plans to begin supplying our quality data only in the summary format, not as individual roll data.

GSE Lining Technology Inc. has been working to develop improved ways of distributing our quality data and Roll Test Data Reports to our customer base. GSE's systems now include the capability to provide summaries of our quality data. A sample of the data for our geotextile products is below. The summary tables for other product types will vary slightly, but will follow this general format. It is GSE's intention, ultimately, to deliver our quality data electronically via our Customer Information System, eliminating paper copies entirely.



GSE Nonwoven Technology

Roll Test Data Summary - English Units

Product : NWS		Item Code: GSC000002		Roll Width: 15.0 feet		Test Date: 5/17/2004							
Roll No.	Mass per Unit Area	Thickness	Grab Strength		Grab Elongation		Tear Tear Strength		Puncture Strength	Nullen Burst Strength	Apparent Opening Size	Permeability	Water Flow Rate
	ASTM D 5261	ASTM D 5199	ASTM D 4632		ASTM D 4632		ASTM D 4533		ASTM D 4833	ASTM D 3786	ASTM D 4751	ASTM D 4491	
	(oz/yd ²)	(mils)	MD (lbs)	CD (lbs)	MD (%)	CD (%)	MD (lbs)	CD (lbs)	(lbs)	(psi)	(mm)	(sec-1)	(cm/sec) (gallon/min/ft ²)
130168266	6.7	91	196	188	94	118	113	116	117	327	0.212	2.3	0.5
130168300	6.2	95	172	190	100	139	106	115	134	354	0.212	2.3	0.5
130168308	6.9	100	202	202	105	135	110	120	127	368	0.212	2.3	0.5
130170884	7.3	106	203	253	103	121	96	125	134	390	0.212	2.0	0.5
130170913	6.1	88	212	196	91	120	70	96	112	340	0.212	2.4	0.8
130170919	6.8	101	191	212	99	135	94	105	115	394	0.212	2.2	0.6
130170923	6.8	101	191	212	99	135	94	106	115	394	0.212	2.2	0.6
130170925	6.3	95	178	179	109	133	138	124	96	346	0.212	2.4	0.6

We want to thank you in advance for your cooperation and support during this transition. If you have any questions or need additional information, please contact your GSE Sales or Customer Service representative at 800-435-2008.

ATTACHMENT 6-7

CQA GEOMEMBRANE TESTING REPORT

SUMMARY SHEET

TRI/Environmental, Inc geosynthetics testing results
SCLF Capacity Expansion, Section 8 Construction

60 MIL TEXTURED HDPE GEOMEMBRANE

No.	Roll #	Resin Lot	Product Code	Description	Mfg. Date
1	108108929	8250206	HDT060AW00	HDT060AW00	4/4/2005
2	108108949	8250206	HDT060AW00	HDT060AW00	4/5/2005
3	108108953	8250206	HDT060AW00	HDT060AW00	4/5/2005
4	108109000	8250210	HDT060AW00	HDT060AW00	4/7/2005
5	108109012	8250210	HDT060AW00	HDT060AW00	4/8/2005
6	108109020	8250210	HDT060AW00	HDT060AW00	4/8/2005
7	108109028	8250210	HDT060AW00	HDT060AW00	4/9/2005
8	108109036	8250210	HDT060AW00	HDT060AW00	4/9/2005
9	108109040	8250210	HDT060AW00	HDT060AW00	4/9/2005
10	108109044	8250210	HDT060AW00	HDT060AW00	4/9/2005

TRI/Environmental, Inc geosynthetics testing results
SCLF Capacity Expansion, Section 8 Construction

60 MIL TEXTURED HDPE GEOMEMBRANE TEST RESULTS

SPECIFICATION	SHEET								
	Thickness mil	Density g/cc	Yield Stress lb/in width	Yield Elongation percent	Break Stress lb/in width	Break Elongation percent	Puncture Resistance lbs	Carbon Black Content percent	Carbon Black Dispersion Category
	ASTM D 5994 60 ± 5%	ASTM D 1505 >0.940	ASTM D 638 126	Type IV Dumbbell 12	2" Gage Length 90	2.0 in/min. 200	ASTM D 4833 90	ASTM D 1603 2.0 - 3.0	ASTM D 5596 1 or 2
108108929	62	0.947	MD = 179 TD = 188	MD = 21 TD = 16	MD = 188 TD = 159	MD = 459 TD = 391	149	2.55	Met Spec
108108949	62	0.947	MD = 186 TD = 192	MD = 17 TD = 16	MD = 183 TD = 196	MD = 456 TD = 537	147	2.68	Met Spec
108108953	62	0.948	MD = 183 TD = 189	MD = 19 TD = 18	MD = 198 TD = 174	MD = 446 TD = 457	152	2.65	Met Spec
108109000	61	0.947	MD = 171 TD = 186	MD = 17 TD = 17	MD = 202 TD = 162	MD = 522 TD = 445	144	2.6	Met Spec
108109012	61	0.947	MD = 181 TD = 175	MD = 20 TD = 22	MD = 203 TD = 176	MD = 494 TD = 492	146	2.67	Met Spec
108109020	61	0.948	MD = 181 TD = 186	MD = 17 TD = 16	MD = 212 TD = 166	MD = 541 TD = 399	146	2.61	Met Spec
108109028	60	0.947	MD = 174 TD = 186	MD = 18 TD = 17	MD = 196 TD = 183	MD = 494 TD = 465	144	2.49	Met Spec
108109036	61	0.945	MD = 180 TD = 188	MD = 18 TD = 17	MD = 205 TD = 173	MD = 511 TD = 442	150	2.51	Met Spec
108109040	61	0.946	MD = 181 TD = 185	MD = 17 TD = 17	MD = 208 TD = 156	MD = 532 TD = 330	145	2.57	Met Spec
108109044	60	0.946	MD = 177 TD = 181	MD = 13 TD = 17	MD = 204 TD = 159	MD = 517 TD = 398	150	2.66	Met Spec

Legend:
MD = Machine Direction
TD = Transverse Direction
NA = Not Available

TEST RESULTS



TRI/ENVIRONMENTAL, INC.

A Texas Research International Company

April 14, 2005

Mail To:

Mr. Joe O'Neill
SCS Engineers
3012 U.S. Highway North 301
Suite 700
Tampa, FL 33619

email: joneill@scsengineers.com

Bill To:

<= Same

Dear Mr. O'Neill:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	S.E. County Landfill - Hillsborough, FL
TRI Job Reference Number:	E2217-77-10
Material(s) Tested:	5 GSE 60 mil Textured HDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Density (ASTM D 1505) Carbon Content (ASTM D 1603, mod.) Carbon Dispersion (ASTM D 5596) Tensile (ASTM D 638/GRI GM13) Puncture Strength (ASTM D 4833)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Sam R. Allen
Vice President and Division Manager
Geosynthetic Services Division

GEOMEMBRANE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. County Landfill - Hillsborough, FL

Material: GSE 60 mil Textured HDPE Geomembrane

Sample Identification: 108108929

TRI Log #: E2217-77-10

PARAMETER	TEST REPLICATE NUMBER										STD.	
	1	2	3	4	5	6	7	8	9	10	MEAN	DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	62	63	60	60	61	62	64	63	60	60	62 60	1 << min.
Density (ASTM D 1505)												
Density (g/cm3)	0.947	0.947	0.948								0.947	0.0005
Carbon Black Content (ASTM D 1603, mod.)												
% Carbon Black	2.53	2.56									2.55	0.02
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	2	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)												
MD Yield Strength (ppi)	178	179	177	183	178						179	2
TD Yield Strength (ppi)	185	183	195	188	188						188	4
MD Break Strength (ppi)	214	143	177	203	202						188	25
TD Break Strength (ppi)	127	133	191	164	179						159	25
MD Yield Elongation (%)	20	22	22	19	22						21	1
TD Yield Elongation (%)	17	16	17	17	15						16	1
MD Break Elongation (%)	558	271	440	499	525						459	101
TD Break Elongation (%)	164	315	518	473	486						391	134
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	156	158	154	152	147	146	149	153	147	147	149	4
	153	145	145	144	144							

MD Machine Direction TD Transverse Direction NA Not Available

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TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

GEOMEMBRANE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. County Landfill - Hillsborough, FL

Material: GSE 60 mil Textured HDPE Geomembrane

Sample Identification: 108108949

TRI Log #: E2217-77-10

PARAMETER	TEST REPLICATE NUMBER										STD.	
	1	2	3	4	5	6	7	8	9	10	MEAN	DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	65	61	60	62	63	60	61	64	60	60	62 60	2 << min.
Density (ASTM D 1505)												
Density (g/cm3)	0.947	0.947	0.947								0.947	0.0000
Carbon Black Content (ASTM D 1603, mod.)												
% Carbon Black	2.69	2.67									2.68	0.01
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	2	1	1	1							
Rating - 2nd field view	1	1	1	2	1							
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)												
MD Yield Strength (ppi)	184	186	185	189	187						186 192	2 4
TD Yield Strength (ppi)	190	197	193	192	186							
MD Break Strength (ppi)	163	172	168	219	193						183 196	21 17
TD Break Strength (ppi)	221	186	208	171	196							
MD Yield Elongation (%)	17	17	17	17	19						17 16	1 0
TD Yield Elongation (%)	16	17	17	16	16							
MD Break Elongation (%)	419	439	425	531	464						456 537	41 53
TD Break Elongation (%)	614	480	569	474	549							
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	149	152	152	146	146	148	143	146	147	144	147	3
	145	142	150	150	146							

MD Machine Direction TD Transverse Direction NA Not Available

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**TRI/ENVIRONMENTAL, INC.***A Texas Research International Company***GEOMEMBRANE TEST RESULTS**

TRI Client: SCS Engineers

Project: S.E. County Landfill - Hillsborough, FL

Material: GSE 60 mil Textured HDPE Geomembrane**Sample Identification: 108108953****TRI Log #: E2217-77-10**

PARAMETER	TEST REPLICATE NUMBER										STD.	
	1	2	3	4	5	6	7	8	9	10	MEAN	DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	60	60	64	61	62	64	61	64	62	61	62 60	2 << min.
Density (ASTM D 1505)												
Density (g/cm3)	0.947	0.948	0.948								0.948	0.0005
Carbon Black Content (ASTM D 1603, mod.)												
% Carbon Black	2.65	2.64									2.65	0.00
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	2	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)												
MD Yield Strength (ppi)	194	174	181	185	180						183	7
TD Yield Strength (ppi)	191	192	187	187	186						189	2
MD Break Strength (ppi)	230	204	211	211	134						198	33
TD Break Strength (ppi)	189	147	193	144	199						174	24
MD Yield Elongation (%)	18	18	19	19	19						19	0
TD Yield Elongation (%)	18	18	18	17	17						18	0
MD Break Elongation (%)	544	525	538	541	81						446	182
TD Break Elongation (%)	536	250	530	419	549						457	113
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	158	174	158	153	150	154	150	153	145	144	152	7
	142	149	154	147	151							

MD Machine Direction TD Transverse Direction NA Not Available

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TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

GEOMEMBRANE TEST RESULTS

TRI Client: SCS Engineers
Project: S.E. County Landfill - Hillsborough, FL

Material: GSE 60 mil Textured HDPE Geomembrane
Sample Identification: 108109000
TRI Log #: E2217-77-10

PARAMETER	TEST REPLICATE NUMBER										STD.	
	1	2	3	4	5	6	7	8	9	10	MEAN	DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	61	64	59	62	60	60	62	61	61	63	61 59	1 << min.
Density (ASTM D 1505)												
Density (g/cm3)	0.947	0.947	0.947								0.947	0.0000
Carbon Black Content (ASTM D 1603, mod.)												
% Carbon Black	2.59	2.60									2.60	0.01
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)												
MD Yield Strength (ppi)	175	174	172	164	168						171	4
TD Yield Strength (ppi)	183	186	182	191	189						186	3
MD Break Strength (ppi)	211	208	210	174	206						202	14
TD Break Strength (ppi)	140	180	124	187	180						162	25
MD Yield Elongation (%)	17	17	17	15	17						17	1
TD Yield Elongation (%)	17	16	16	17	17						17	0
MD Break Elongation (%)	539	540	554	424	553						522	49
TD Break Elongation (%)	409	500	315	505	494						445	74
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	146	150	152	150	148	141	147	144	141	142	144	4
	140	147	140	139	140							
MD Machine Direction TD Transverse Direction NA Not Available												

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TRI/ENVIRONMENTAL, INC.
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GEOMEMBRANE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. County Landfill - Hillsborough, FL

Material: GSE 60 mil Textured HDPE Geomembrane

Sample Identification: 108109012

TRI Log #: E2217-77-10

PARAMETER	TEST REPLICATE NUMBER										STD.	
	1	2	3	4	5	6	7	8	9	10	MEAN	DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	60	59	63	62	58	63	62	61	63	60	61 58	2 << min.
Density (ASTM D 1505)												
Density (g/cm3)	0.948	0.947	0.947								0.947	0.0005
Carbon Black Content (ASTM D 1603, mod.)												
% Carbon Black	2.67	2.66									2.67	0.01
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	2	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)												
MD Yield Strength (ppi)	189	170	177	191	176						181 175	8 4
TD Yield Strength (ppi)	175	176	169	181	172							
MD Break Strength (ppi)	149	202	209	227	227						203 176	29 24
TD Break Strength (ppi)	134	170	193	203	180							
MD Yield Elongation (%)	20	20	20	19	19						20 22	0 1
TD Yield Elongation (%)	23	23	21	21	23							
MD Break Elongation (%)	194	555	539	568	613						494 492	152 62
TD Break Elongation (%)	383	478	551	550	499							
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	152	150	146	147	145	144	142	141	143	142	146	3
	150	145	146	147	148							

MD Machine Direction TD Transverse Direction NA Not Available

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TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

April 14, 2005

Mail To:

Mr. Joe O'Neill
SCS Engineers
3012 U.S. Highway North 301
Suite 700
Tampa, FL 33619

email: joneill@scsengineers.com

Bill To:

<= Same

Dear Mr. O'Neill:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	S.E. County Landfill - Hillsborough, FL
TRI Job Reference Number:	E2217-78-01
Material(s) Tested:	5 GSE 60 mil Textured HDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Density (ASTM D 1505) Carbon Content (ASTM D 1603, mod.) Carbon Dispersion (ASTM D 5596) Tensile (ASTM D 638/GRI GM13) Puncture Strength (ASTM D 4833)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Sam R. Allen
Vice President and Division Manager
Geosynthetic Services Division



TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

GEOMEMBRANE TEST RESULTS

TRI Client: SCS Engineers
Project: S.E. County Landfill - Hillsborough, FL

Material: GSE 60 mil Textured HDPE Geomembrane
Sample Identification: 108109020
TRI Log #: E2217-78-01

PARAMETER	TEST REPLICATE NUMBER										STD.	
	1	2	3	4	5	6	7	8	9	10	MEAN	DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	64	59	62	59	60	61	61	63	62	62	61 59	2 << min.
Density (ASTM D 1505)												
Density (g/cm3)	0.948	0.948	0.948								0.948	0.0000
Carbon Black Content (ASTM D 1603, mod.)												
% Carbon Black	2.61	2.60									2.61	0.01
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	2	1	1	2							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)												
MD Yield Strength (ppi)	182	179	179	177	186						181 186	3 2
TD Yield Strength (ppi)	186	188	185	182	187							
MD Break Strength (ppi)	208	234	197	209	213						212 166	12 32
TD Break Strength (ppi)	135	178	124	185	209							
MD Yield Elongation (%)	17	17	17	17	19						17 16	1 1
TD Yield Elongation (%)	16	16	16	14	17							
MD Break Elongation (%)	529	603	501	548	524						541 399	34 153
TD Break Elongation (%)	225	473	209	504	585							
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	145	151	146	146	151	149	151	147	149	149	146	4
	149	146	140	138	140							

MD Machine Direction TD Transverse Direction

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TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

GEOMEMBRANE TEST RESULTS

TRI Client: SCS Engineers
Project: S.E. County Landfill - Hillsborough, FL

Material: GSE 60 mil Textured HDPE Geomembrane
Sample Identification: 108109028
TRI Log #: E2217-78-01

PARAMETER	TEST REPLICATE NUMBER										STD.	
	1	2	3	4	5	6	7	8	9	10	MEAN	DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	58	57	60	61	59	59	61	62	61	63	60 57	2 << min.
Density (ASTM D 1505)												
Density (g/cm3)	0.947	0.947	0.946								0.947	0.0005
Carbon Black Content (ASTM D 1603, mod.)												
% Carbon Black	2.46	2.51									2.49	0.02
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	1	2	1							
Rating - 2nd field view	1	2	2	1	2							
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)												
MD Yield Strength (ppi)	179	171	179	169	174						174	4
TD Yield Strength (ppi)	185	186	183	184	191						186	3
MD Break Strength (ppi)	198	206	191	175	210						196	12
TD Break Strength (ppi)	167	181	224	141	201						183	28
MD Yield Elongation (%)	17	17	19	16	19						18	1
TD Yield Elongation (%)	17	17	16	16	17						17	0
MD Break Elongation (%)	490	538	459	445	539						494	39
TD Break Elongation (%)	468	476	634	215	530						465	138
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	147	145	147	151	144	142	142	146	143	145	144	4
	145	148	138	138	140							
MD Machine Direction TD Transverse Direction												

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GEOMEMBRANE TEST RESULTS

TRI Client: SCS Engineers
Project: S.E. County Landfill - Hillsborough, FL

Material: GSE 60 mil Textured HDPE Geomembrane
Sample Identification: 108109036
TRI Log #: E2217-78-01

PARAMETER	TEST REPLICATE NUMBER										STD.	
	1	2	3	4	5	6	7	8	9	10	MEAN	DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	62	61	58	60	61	59	63	61	61	62	61 58	1 << min.
Density (ASTM D 1505)												
Density (g/cm3)	0.945	0.945	0.946								0.945	0.0005
Carbon Black Content (ASTM D 1603, mod.)												
% Carbon Black	2.51	2.50									2.51	0.00
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	2	1	2	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)												
MD Yield Strength (ppi)	172	177	189	183	177						180	6
TD Yield Strength (ppi)	186	192	188	187	186						188	2
MD Break Strength (ppi)	192	178	224	251	182						205	28
TD Break Strength (ppi)	206	132	190	163	173						173	25
MD Yield Elongation (%)	19	17	19	17	19						18	1
TD Yield Elongation (%)	18	18	18	16	16						17	1
MD Break Elongation (%)	481	426	549	623	474						511	68
TD Break Elongation (%)	575	188	525	449	473						442	134
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	149	151	144	149	153	149	148	147	150	155	150	3
	153	156	150	151	148							

MD Machine Direction TD Transverse Direction

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TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

GEOMEMBRANE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. County Landfill - Hillsborough, FL

Material: GSE 60 mil Textured HDPE Geomembrane

Sample Identification: 108109040

TRI Log #: E2217-78-01

PARAMETER	TEST REPLICATE NUMBER										STD.	
	1	2	3	4	5	6	7	8	9	10	MEAN	DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	59	61	63	60	60	58	62	63	62	61	61 58	2 << min.
Density (ASTM D 1505)												
Density (g/cm3)	0.946	0.947	0.946								0.946	0.0005
Carbon Black Content (ASTM D 1603, mod.)												
% Carbon Black	2.60	2.53									2.57	0.03
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	2	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)												
MD Yield Strength (ppi)	191	178	181	177	178						181 185	5 3
TD Yield Strength (ppi)	182	189	184	184	188							
MD Break Strength (ppi)	194	204	233	206	204						208 156	13 31
TD Break Strength (ppi)	184	128	131	135	204							
MD Yield Elongation (%)	16	17	17	17	16						17 17	0 0
TD Yield Elongation (%)	17	17	16	16	17							
MD Break Elongation (%)	456	529	611	535	528						532 330	49 189
TD Break Elongation (%)	530	163	305	91	559							
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	144 149	143 152	148 147	144 144	144 148	147	143	142	144	140	145	3

MD Machine Direction TD Transverse Direction

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**TRI/ENVIRONMENTAL, INC.**

A Texas Research International Company

GEOMEMBRANE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. County Landfill - Hillsborough, FL

Material: GSE 60 mil Textured HDPE Geomembrane

Sample Identification: 108109044

TRI Log #: E2217-78-01

PARAMETER	TEST REPLICATE NUMBER										STD.	
	1	2	3	4	5	6	7	8	9	10	MEAN	DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	60	61	62	58	60	59	60	62	59	63	60 58	1 << min.
Density (ASTM D 1505)												
Density (g/cm3)	0.946	0.945	0.946								0.946	0.0005
Carbon Black Content (ASTM D 1603, mod.)												
% Carbon Black	2.69	2.63									2.66	0.03
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)												
MD Yield Strength (ppi)	178	180	168	174	185						177 181	6 5
TD Yield Strength (ppi)	174	178	181	187	185							
MD Break Strength (ppi)	172	232	210	193	214						204	20
TD Break Strength (ppi)	140	157	203	161	136						159	24
MD Yield Elongation (%)	19*	19	14	17	17						13	7
TD Yield Elongation (%)	16	17	17	17	17						17	0
MD Break Elongation (%)	424	583	543	498	539						517	54
TD Break Elongation (%)	245	406	569	448	321						398	110
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	150	152	147	152	149	149	147	147	150	149	150	2
	150	154	152	155	149							

MD Machine Direction TD Transverse Direction

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ATTACHMENT 6-8

SCS' GEOMEMBRANE & GEOCOMPOSITE PLACEMENT LOGS

SCS ENGINEERS

SHEET

of 3

PROJECT TITLE

SELF Section 8

PROJECT NO.

09200020:35

DATE

8/26/05

Secondary

GEOMEMBRANE PLACEMENT LOG

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICKNESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
51	10810 8932	480	22.5	60m	N To ES	8:12	SUNNY & CLEAR
52	10810 9045	480	22	60T	N To ES	8:46	
53	10810 9042	44	22	60T	E To W	9:00	
54	10810 9042	31	22	60T	E To W	9:05	
55	10810 9042	13	92T	60T	E To W	9:10	
56	10810 9042	42	22	60T	N To S	9:15	
57	10810 9042	20	13 22	60T	N To S	9:20	
58	10810 9042	43.5	22	60T	E To W	9:23	
59	10810 9042	43.0	22	60T	E To W	9:25	
510	10810 9042	40.0	22	60T	E To W	9:28	
511	10810 9042	39.5	22	60T	E To W	9:29	
512	10810 9042	40.0	22	60T	E To W	9:32	
513	10810 9042	40.5	22	60T	E To W	9:36	
514	10810 9042	42.0	22	60T	E To W	9:38	
515	10810 9042	42.0	22	60T	E To W	9:40	
516	10810 9042	47.0	22	60T	E To W	9:45	
517	10810 9030	51.5	22	60T	E To W	9:55	
518	10810 9030	55.0	22	60T	E To W	10:00	
Page Total		1594					
Cumulative Total		1594					

PRINT NAME:

Dennis E. DePort

SIGNATURE:

Dennis E. DePort

SCS ENGINEERS

Secondary

SHEET

2

of 3

PROJECT TITLE

SELF Section 8

PROJECT NO.

09200020.35

DATE

9-26-05

GEOMEMBRANE PLACEMENT LOG

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICKNESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
S19	108109030	59.0	22	60T	E to W	1008	
S20	108109030	63.0	22	60T	E to W	1011	
S21	108109030	67.0	22	60T	E to W	1021	
S22	108109030	75.0	22	60T	E to W	1025	
S23	108109030	81.0	22	60T	E to W	1034	
S24	108109034	85.5	22	60T	E to W	1042	
S25	108109034	87.0	22	60T	E to W	1050	
S26	108109034	87.0	22	60T	E to W	1059	
S27	108109026	480	22	60T	N to S	1300	
S28	108109014	480	22	60T	N to S	1400	
S29	108109031	480	22	60T	N to S	1426	
S30	108109041	480	22	60T	N to S	1500	
S31	108109039	480	22	60T	N to S		
S32	108109026	26	13	60T	E to W	1635	1630
S33	108109026	34	9	60T	E to W	1600	
S34	108109022	480	22	60T	N to S	1635	
Page Total		3545	+ 1599				
Cumulative Total		5139					

PRINT NAME:

Dennis G. DuPont

SIGNATURE:

Dennis G. DuPont

SCS ENGINEERS

Secondary

SHEET [REDACTED]
PROJECT FILE
PROJECT NO.
DATE

3 of 3
SELF Section 8
04200020,35
7-27-05

GEOMEMBRANE PLACEMENT LOG

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICKNESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
S35	108109015	484	22	60T	N To S	0810	BEG 9/27/05
S36	108109006	484	22	60T	N To S	0830	
S37	108109029	485	22	60T	N To S	0844	
S38	108108952	485	22	60T	N To S	0905	
S39	108109016	485	22	60T	N To S	0925	
S40	108109003	485	22	60T	N To S	0947	
S41	108109093	485	22	60T	N To S	1029	
S42	108109019	490	22	60T	N To S	1105	
S43	108109013	490	22	60T	N To S	1300	
S44	108108930	490	22	60T	N To S	1320	
S45	108109004	490	22	60T	N To S	1342	
S46	108109017	490	22	60T	N To S	1605	
Page Total		5843 + 5139					
Cumulative Total		10982					

PRINT NAME:

Peppin's Gr. Defect

SIGNATURE:

Dennis G. DuPont

SCS ENGINEERS

SHEET

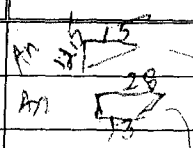
of

PROJECT TITLE

PROJECT NO.

DATE

secondary
GEOCOMPOSITE PLACEMENT LOG

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICKNESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
SG1	450 4088	15	12.5		E to W	0830	 $A = \frac{1}{2} \cdot 12.5 \cdot 20 = 125 \text{ includes } A_n$ $A = 25.5 \cdot 12.5 = 319$
SG2	450 4088	28	12.5		E to W	0833	
SG3	450 4088	38	12.5		E to W	0836	
SG4	450 4088	39	12.5		E to W	0839	
SG5	450 4088	40	12.5		E to W	0842	
SG6	450 4088	9	12.5		E to W	0845	$> \left(\frac{1}{2} \cdot 12.5 \cdot 15 \right) + (4 \cdot 12.5) = 144$ $\left(\frac{28+13}{2} \right) \cdot 12.5 + (12.5 \cdot 4) = 306$
SG7	450 4089	28	12.5		E to W	0850	
SG8	450 4089	31	12.5		E to W	0854	
SG9	450 4089	32	12.5		E to W	0858	
SG10	450 4089	33	12.5		E to W	0902	
SG11	450 4089	33	12.5		E to W	0906	Note: 50 SF in anchor
SG12	450 4089	26	12.5		E to W	0909	
SG13	450 4038	9	12.5		E to W	0912	
SG14	450 4038	33	12.5		E to W	0915	
SG15	450 4038	34	12.5		E to W	0918	
SG16	450 4038	34	12.5		E to W	0921	
SG17	450 4038	35	12.5		E to W	0925	
SG18	450 4038	31	12.5		E to W	0929	
Page Total		$485 + (14 \cdot 4) = 541 \cdot 12.5 = 6762.5 + 144 = 7213$					306 = 7213
Cumulative Total		7213 SF					

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Dennis G. Dubert
Dennis G. Dubert

SCS ENGINEERS

 SHEET
 PROJECT TITLE
 PROJECT NO.
 DATE

of

 secondary
 GEOCOMPOSITE PLACEMENT LOG

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICKNESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
SC 19	4504092	6	12.5		ETW	0935	
SC 20	4504092	36	12.5		ETW	0938	
SC 21	4504092	38	12.5		ETW	0942	
SC 22	4504092	38	12.5		ETW	0945	
SC 23	4504092	39	12.5		ETW	0948	
SC 24	4504092	187	12.5		ETW	0952	
SC 25	4504192	26	12.5		ETW	0956	
SC 26	4504192	43	12.5		ETW	0959	
SC 27	4504192	44	12.5		ETW	1003	
SC 28	4504192	48	12.5		ETW	1007	
SC 29	4504192	24	12.5		ETW	1011	
SC 30	4504188	26	12.5		ETW	1016	
SC 31	4504188	53	12.5		ETW	1020	
SC 32	4504188	54	12.5		ETW	1025	
SC 33	4504188	58	12.5		ETW	1030	
SC 34	4504188	25	12.5		ETW	1036	
SC 35	4504094	34	12.5		ETW	1046	
SC 36	4504094	64	12.5		ETW	1054	
Page Total		674 + (11.4) = 730 • 12.5 = 9125 sq ft					+ 7712
Cumulative Total		16338 SF					

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 Dennis G. DuPont
 Dennis G. DuPont

SCS ENGINEERS

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of

PROJECT TITLE

PROJECT NO.

DATE

Secondary

GEOCOMPOSITE PLACEMENT LOG

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICKNESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
SG 37	4504094	66	12.5		E To W	1100	
SG 38	4504094	30	12.5		E To W	1105	
SG 39	4504055	39	12.5		E To W	1112	
SG 40	4504055	72	12.5		E To W	1117	
SG 41	4504055	74	12.5		E To W	1122	
SG 42	4504098	75	12.5		E To W	1127	
SG 43	4504098	80	12.5		E To W	1132	
SG 44	4504098	40	12.5		E To W	1135	
SG 45	4504185	202	12.5		N To S	1300	
SG 46	4504090	200	12.5		N To S	1320	
SG 47	4504061	86	12.5		N To S	1335	
SG 48	4504061	109	12.5		N To S	1345	
SG 49	4504090	208	12.5		N To S	1355	
SG 50	4504186	180	12.5		N To S	1415	
SG 51	4504186	25	12.5		N To S	1435	
SG 52	4504201	115	12.5		N To S	1450	
SG 53	4504201	84	12.5		N To S	1510	
SG 54	4504035	206	12.5		N To S	1515	
Page Total		24913 + 1668224.725 + 16328 + next page					
Cumulative Total		41595 41063					

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SIGNATURE:

Dennis E. Dupont

Dennis E. Dupont

SCS ENGINEERS

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PROJECT TITLE
PROJECT NO.
DATE

of

secondary

GEOCOMPOSITE PLACEMENT LOG

4

SELF Section 3

00 200020.35

9-29-05

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICKNESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
5655	4504182	52	12.5		N to S	1520	on previous page at Anchor
5656	4504182	151	12.5		N to S	1535	
5657	4504183	112	12.5		N to S	1550	$(487+4) \cdot 12.5 = 6150$ 6137.5
5658	4504093	21	12.5		N to S	1605	
5659	4504310	203	12.5		N to S	1620	at anchor
5660	4504093	117	12.5		N to S	1640	
5661	4504093	115	12.5		N to S	1655	$(475+4) \cdot 12.5 = 5987.5$
5662	4504199	204	12.5		N to S	1710	
5663	4504092	43	12.5		N to S	1725	at anchor
Page Total		12125	+ 41,060				
Cumulative Total		53188					

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Dennis E. DuPont

Dennis E. DuPont

SCS ENGINEERS

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PROJECT TITLE
PROJECT NO.
DATE

of

Secondary
GEOCOMPOSITE PLACEMENT LOG5
SELF Section 8
09200020.05
9-30-05

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICKNESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
SG64	4504193	125	12.5		N to S	0815	
SG65	4504179	205	12.5		N to S	0830	$(480+4) \cdot 12.5 = 6050$
SG66	4504082	150	12.5		N to S	0845	at anchor
SG67	4504175	205	12.5		N to S	0900	
SG68	4504036	245	12.5		N to S	0910	$(480+4) \cdot 12.5 = 6050$
SG69	4504052	30	12.5		N to S	0920	at anchor
SG70	4504175	173	12.5		N to S	0930	
SG71	4504016	201	12.5		N to S	0920	$(476+4) \cdot 12.5 = 5987.5$
SG72	4504135	101	12.5		N to S	0936	
SG73	4504135	204	12.5		N to S	0950	
SG74	4504051	94	12.5		N to S	1000	$(476+4) \cdot 12.5 = 6000$
SG75	4504053	178	12.5		N to S	1008	
SG76	4504053	136	12.5		N to S	1020	
SG77	4504037	202	12.5		N to S	1025	$(479+4) \cdot 12.5 = 6037.5$
SG78	4504041	141	12.5		N to S	1035	
SG79	4504041	57	12.5		N to S	1045	
SG80	4504196	202	12.5		N to S	1055	see next page
SG81	4504015	187	12.5		N to S	1115	$(474+4) \cdot 12.5 = 6037.5$
Page Total		36,163	+ 53188				
Cumulative Total		89,351					

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Dennis G. DuPont

Dennis G. DuPont

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PROJECT TITLE
PROJECT NO.
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PROJECT TITLE
PROJECT NO.
DATE

PRINT NAME:

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ATTACHMENT 6-9

TRIAL WELDS

TRIAL WELD LOG

Secondary

PROJECT TITLE

SELF Section B

of

PROJECT NO.

09-2000-20-35

DATE _____

9/24/05

[illegible]

James C. Bulfinch

Rumie & Dubon

TRIAL WELD LOG

Secondary

DATE _____

2 of

SELF section 4

09200020.35

9-27-05

[illegible]

Dennis G. DuPont

Dennis R. Dorfort

TRIAL WELD LOG

PROJECT TITLE

PROJECT NO.

DATE _____

3 of

SFH Section 6

172000 20, 35.

9-28-05 and 9-29-05

PRINT NAME:

SIGNATURE:

ATTACHMENT 6-10

NON-DESTRUCTION SEAM TESTS

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

Secondary

SHEET

1

of

PROJECT TITLE

SELF Section E

PROJECT NO.

09200020,35

DATE

7-26-05

SEAM NO.	TECH I.D.	AIR TEST							VACUUM BOX P/F	COMMENTS
		PRESSURE (psi)			TIME			P/F		
		START	END	DROP	START	END	DURATION			
51/52	RV	30	30	—	1019	1024	5	P		
52/56	RV	30	30	—	1029	1034	5	P		
56/57	RV	30	30	—	1030	1035	5	P		
54/55	RV	30	30	—	1031	1036	5	P		
53/54	RV	30	30	—	1032	1037	5	P		
53/56	RV	30	30	—	1057	1102	5	P		
58/59A	RV	30	30	—	1058	1103	5	P		
58/59B	RV	30	30	—	1100	1105	5	P		
59/510	RV	30	30	—	1059	1104	5	P		
510/511	RV	30	30	—	1101	1106	5	P		
511/512	RV	30	30	—	1109	1114	5	P		
512/513	RV	30	30	—	1110	1115	5	P		
513/514	RV	30	30	—	1111	1116	5	P		
514/515	RV	30	30	—	1122	1127	5	P		
515/516	RV	30	30	—	1125	1130	5	P		
516/517	RV	30	30	—	1126	1131	5	P		
517/518	RV	30	30	—	1127	1132	5	P		
518/519	RV	30	30	—	1311	1316	5	P		
519/520	RV	30	30	—	1300	1305	5	P		
520/521	RV	30	30	—	1301	1306	5	P		
521/522	RV	30	30	—	1302	1307	5	P		
522/523A	RV	30	30	—	1306	1311	5	P		
522/523B	RV	30	30	—	1315	1320	5	P		

PRINT NAME:

Dennis G. DePent

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SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET

2

of

PROJECT TITLE

SELF SECTION 6

PROJECT NO.

09200020.35

DATE

9-26-05

SEAM NO.	TECH I.D.	AIR TEST							VACUUM BOX P/F	COMMENTS
		PRESSURE (psi)			TIME			P/F		
		START	END	DROP	START	END	DURATION			
523/524	RV	30	30	—	1316	1321	5	P		
524/525	RV	30	30	—	1318	1323	5	P		
525/526	RV	30	30	—	1320	1325	5	P		
52/526	RV	30	29	1	1326	1331	5	P		
52/525	RV	30	30	—	1329	1334	5	P		
52/524	RV	30	30	—	1331	1336	5	P		
52/523	RV	30	30	—	1333	1338	5	P		
52/522	RV	30	29	1	1335	1340	5	P		
52/521	RV	30	30	—	1340	1345	5	P		
52/520	RV	30	30	—	1344	1349	5	P		
52/519	RV	30	30	—	1346	1351	5	P		
52/518	RV	30	30	—	1350	1355	5	P		
52/517	RV	30	30	—	1358	1403	5	P		
52/516	RV	30	30	—	1402	1407	5	P		
52/515	RV	30	30	—	1404	1409	5	P		
52/514	RV	30	30	—	1407	1412	5	P		
52/513	RV	30	30	—	1409	1414	5	P		
52/512	RV	30	30	—	1420	1425	5	P		
52/511	RV	30	30	—	1421	1426	5	P		
52/510	RV	30	30	—	1422	1427	5	P		
52/59	RV	30	30	—	1423	1428	5	P		
52/58	RV	30	30	—	1424	1429	5	P		
52/53	RV	30	29	1	1435	1440	5	P		

PRINT NAME:

Dennis G. DuPont

SIGNATURE:

Dennis G. DuPont

NON-DESTRUCTIVE TEST LOG

PROJECT TITLE

PROJECT NO.

DATE _____

2

of

SELF Section:

09200020.35

9-26-05

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PRINT NAME:

Dennis C. DeFent

SIGNATURE:

Dennis N. DePort

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET

4

of

PROJECT TITLE

SELF Section 6

PROJECT NO.

C9200020, 35

DATE

9-27-05

SEAM NO.	TECH I.D.	AIR TEST							VACUUM BOX P/F	COMMENTS
		PRESSURE (psi)			TIME			P/F		
		START	END	DROP	START	END	DURATION			
529/530	SKip	30	30	—	1000	1005	5	P		
530/531	SKip	30	30	—	1002	1007	5	P		
531/534A	SKip	30	29	1	1013	1018	5	P		
531/534B	SKip	30	30	—	1020	1025	5	P		
534/535	SKip	30	30	—	1039	1044	5	P		
535/536	SKip	30	29	1	1040	1045	5	P		
536/537	SKip	30	30	—	1041	1046	5	P		
537/538	SKip	30	30	—	1309	1314	5	P		
538/539	SKip	30	30	—	1340	1345	5	P		
539/540A	SKip	30	30	—	1341	1346	5	P		
539/540B	RV	30	30	—	1618	1623	5	P		
540/541	SKip	30	30	—	1342	1347	5	P		
541/542A	RV	30	30	—	1455	1500	5	P		
541/542B	RV	30	30	—	1510	1515	5	P		
542/543	RV	30	30	—	1505	1510	5	P		
543/544	RV	30	30	—	1535	1540	5	P		
544/545	RV	30	30	—	1540	1545	5	P		
545/546	RV	30	30	—	1546	1551	5	P		
526/532	RV	30	30	—	1600	1605	5	P		
52/532	RV	30	30	—	1601	1606	5	P		
532/533	RV	30	30	—	1610	1615	5	P		
526/533	RV	30	30	—	1604	1609	5	P		

PRINT NAME:

Dennis G. DuPont

SIGNATURE:

Dennis G. DuPont

SCS ENGINEERS

SHEET

5

of

NON-DESTRUCTIVE TEST LOG

PROJECT TITLE

SELF

PROJECT NO.

9200020.35

DATE

9/28-9/29

SEAM NO.	TECH I.D.	AIR TEST							P/F	VACUUM BOX P/F	COMMENTS
		PRESSURE (psi)			TIME						
		START	END	DROP	START	END	DURATION				
526, T1	KC									P	
527, T1	KC									P	
528, T1	KC									P	
529, T1	KC									P	
530, T1	KC									P	
531, T1	KC									P	
532, T1	KC JB									P	
533, T1	KC									P	
534, T1	KC									P	
535, T1	KC									P	
536, T1	KC									P	
537, T1	KC									P	
538, T1	KC									P	
539, T1	KC									P	
540, T1	KC									P	
541, T1	KC									P	
542, T1	DN									P	
543, T1	KC									P	
544, T1	KC									P	
51, T1	KC									P	
52, T1	KC									P	

PRINT NAME:

KURT PETERSON

SIGNATURE:

KAP

ATTACHMENT 6-11
SEAM AND PANEL REPAIR LOGS

Secondary
GEOMEMBRANE SEAMING LOGLF Section B
09200020.35
9/26/05

SEAM NO.	LENGTH OR SIZE	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
51/52	480	JB	W45	F	4.5	8:55	82	860	SUNNY CLEAR
54/55	19.0	SS	W4	F	4.5	9:05	83	800	
57/58	20.0	SS	W4	F	4.5	9:13	83	800	
54/53	31.0	DN	W37	F	3.5	9:15	83	800	
52/56	42.0	SS	W4	F	4.5	9:15	83	800	
53/58	43.5	DN	W37	F	3.5	9:25	83	800	
58/59	43.0	DN	W37	F	4.5	9:45	83	800	77.0
59/510	40.0	SS	W4	F	4.5	9:20	83	800	
510/511	38.0	SS	W4	F	4.5	9:30	84	800	
511/512	39.5	SS	W4	F	4.5	9:40	84	800	
512/513	40.0	SS	W4	F	4.5	9:46	84	800	
513/514	40.5	SS	W4	F	4.5	9:50	84	800	
514/515	42.0	SS	W4	F	4.5	10:10	84	800	
515/516	42.0	DN	W37	F	3.5	10:10	84	800	
516/517	47.0	DN	W37	F	3.5	10:30	85	800	
517/518	51.5	JB	W45	F	4.5	10:13	84	800	
518/519	55.0	JB	W45	F	4.5	10:26	85	800	
519/520	57.0	SS	W4	F	4.5	10:20	85	800	
520/521	63.0	SS	W4	F	4.5	10:30	85	800	
Page Total			1230						
Cumulative Total			1230						

PRINT NAME:

SIGNATURE:

Dennis B. Doherty
Dennis B. Doherty

Secondary
GEOMEMBRANE SEAMING LOG

PROJECT TITLE

SELF Section 8

PROJECT NO.

9-26-05 09700020.35

DATE

9-26-05

SEAM NO.	LENGTH OR SIZE	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
521/522	67.0	SS	W4	F	4.5	10:40	85	800	
522/523	75.0	SS/AB	W4/W45	F	4.5	10:50/10:43	86	800/860	
523/524	81.0	DN	W37	F	3.5	10:55	86	800	
524/525	85.5	DN	W37	F	3.5	11:10	86	800	
525/526	87.0	SS	W4	F	4.5	11:00	86	800	
52/526	22.0	SS	W4	F	4.5	11:25	86	800	
52/525	22.0	SS	W4	F	4.5	11:30	86	800	
52/524	22.0	SS	W4	F	4.5	11:35	86	800	
52/523	22.0	SS	W4	F	4.5	11:40	86	800	
52/522	22.0	SS	W4	F	4.5	11:45	86	800	
52/521	22.0	SS	W4	F	4.5	11:50	86	800	
52/520	22.0	SS	W4	F	4.5	11:55	86	800	
52/519	22.0	SS	W4	F	4.5	12:00	86	800	
52/518	22.0	SS	W4	F	4.5	13:10	88	800	
52/517	22.0	SS	W4	F	4.5	13:15	88	800	
52/516	22.0	SS	W4	F	4.5	13:20	88	800	
52/515	22.0	SS	W4	F	4.5	13:25	88	800	
52/514	22.0	SS	W4	F	4.5	13:30	88	800	
52/513	22.0	SS	W4	F	4.5	13:35	88	800	
Page Total		703.5 + 1314							
Cumulative Total		5018							

PRINT NAME:

Dennis B. Dufont

SIGNATURE:

Dennis B. Dufont

SCS ENGINEERS

SHEET

PROJECT TITLE

PROJECT NO.

DATE _____

of

GEOMEMBRANE SEAMING LOG

SEAM NO.	LENGTH OR SIZE	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
52/512	22.0	SS	W4	F	4.5	1340	88	800	
52/511	22.0	SS	W4	F	4.5	1305	89	800	
52/510	22.0	SS	W4	F	4.5	1350	88	800	
52/59	22.0	SS	W4	F	4.5	1355	88	800	
52/58	22.0	SS	W4	F	4.5	1400	88	800	
52/53	13.0	SS	W4	F	4.5	1403	88	800	
51/527	480	JB	W45	F	4.5	1328	88	800	
527/518	480	DN	W37	F	3.5	1400	900	800	
528/529	480	SS	W4	F	4.5	1440	90	800	
529/530	480	JB	W45	F	4.5	1500	90	800	
526/533	34	DN	W37	F	3.5	1600	90	800	
526/532	26	DN	W37	F	3.5	1600	90	800	
532/533	8.5	DN	W37	F	3.5	1610	90	800	
52/532	12.5	DN	W37	F	3.5	1630	90	800	
530/531	480	SS	W4	F	4.5	1618	90	800	
531/534	480	DN	W37	F	3.5	1700	90	800	
Page Total			3084	+1230					
Cumulative Total			4314						

PRINT NAME: _____

SIGNATURE:

SCS ENGINEERS

Secondary

SHEET

PROJECT TITLE

PROJECT NO.

DATE _____

4
SELF Section 8
09700020.35
9-77-05

of 6

GEOMEMBRANE SEAMING LOG

[illegible]

PRINT NAME:

Dennis G. DuPont

SIGNATURE:

Dennis H. Doherty

SCS ENGINEERS

SHEET

of 6

Tie in Secondary GEOMEMBRANE SEAMING LOG

PROJECT TITLE

SELF

PROJECT NO.

9200020.55

DATE

9/27/05 - 9/29/05

SEAM NO.	LENGTH OR SIZE	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
526, T1	19'	JV	615	E		9:00	95	250/55	9/27/05
527, T1	22	↓	↓	↓		↓	↓	↓	
528, T1	22	↓	↓	↓		↓	↓	↓	
529, T1	12' 10'	JV JB	615 624	E		10:30	↓	250/55 250/55	9/28/05
530, T1	22	↓	↓	↓		↓	92	↓	
531, T1	22	↓	↓	↓		↓	↓	↓	
532, T1	25	↓	↓	↓		↓	↓	↓	
533, T1	37	↓	↓	↓		↓	↓	↓	
534, T1	15' 7'	JB JV	624 615	↓		9:30	↓	↓	9/28/05 9/29/05 ✓
535, T1	22	VU	615	↓		↓	91	↓	
536, T1	22	↓	↓	↓		↓	↓	↓	
537, T1	22	↓	↓	↓		↓	↓	↓	
538, T1	↓	↓	↓	↓		↓	↓	↓	
539, T1	↓	↓	↓	↓		↓	↓	↓	
540, T1	↓	↓	↓	↓		↓	89	↓	
541, T1	↓	↓	↓	↓		↓	↓	↓	
542, T1	↓	↓	↓	↓		↓	↓	↓	
543, T1	↓	↓	↓	↓		↓	↓	↓	
544, T1	↓	↓	↓	↓		↓	↓	↓	
Page Total									
Cumulative Total									

PRINT NAME:

SIGNATURE:

KAP
KURT PETERSON

GEOMEMBRANE SEAMING LOG

SHEET
PROJECT TITLE
PROJECT NO.
DATE

6 of
5628 562108
9/28 - 9/26 - 9/27

[illegible]

KURT PETERSON

14

SCS ENGINEERS

Secondary

GEOMEMBRANE REPAIR LOG

SHEET
PROJECT TITLE
PROJECT NO.
DATE1
GELF Section 6
042000 20.35
9-26-05

of 7

DATE REPAIRED	REPAIR NO.	SEAM / PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9-26-05	SR 1	52/525/526		T	1.5	VV	GE15	9/28/05	JB	
9-26-05	SR 2	52/524/525		T	1.5	VV	GE15	9/28/05	JB	
9-26-05	SR 3	52/523/524		T	1.5	VV	GE15	9/28/05	JB	
9-26-05	SR 4	52/522/523		T	1.5	VV	GE15	9/28/05	JB	
9-26-05	SR 5	52/521/522		T	1.5	VV	GE15	9/28/05	JB	
9-26-05	SR 6	52/520/521		T	1.5X2'	VV	GE15	9/28/05	JB	
9-26-05	SR 7	52/519/520		T	1.5X2'	VV	GE15	9/28/05	JB	
9-26-05	SR 8	52/518/519		T	1.5	VV	GE15	9/28/05	JB	
9-26-05	SR 9	52/517/518		T	2'	VV	GE15	9/28/05	JB	
9-26-05	SR 10	52/516/517		T	1.5	VV	GE15	9/28/05	JB	
9-26-05	SR 11	52/515/516		T	1.5	VV	GE15	9/28/05	JB	
9-26-05	SR 12	52/514/515		T	1.5	VV	GE15	9/28/05	JB	
9-26-05	SR 13	52/513/514		T	1.5	VV	GE15	9/28/05	JB	
9-26-05	SR 14	52/512/513		T	1.0	VV	GE15	9/28/05	JB	
9-26-05	SR 15	52/511/512		T	1.5	VV	GE15	9/28/05	JB	
9-26-05	SR 16	52/510/511		T	1.5	VV	GE15	9/28/05	JB	

DEFECT CODES:

AD -ANIMAL RELATED DAMAGE	DS -DESTRUCTIVE SAMPLE	IO -INSUFFICIENT OVERLAP	SS -START/STOP
B -UNDISPERSED RESIN BEAD	EE -EARTHWORK EQUIP DAMAGE	LB -LEISTER BURN	SSI -SOIL SURFACE IRREGULARITY
BO -BURN OUT	EXT -EXTENSION	MOT -MACHINE OFF TRACK	T -MULTIPLE PANEL INTERSECTION
BS -BOOT SKIRT	FB -FUSION WELDER BURN	N -NODULE	VL -VACUUM TEST LEAK
C -COUPON	FD -FACTORY DAMAGE	PTC -PRESSURE TEST CUT	WC -WRINKLE CUT
CO -CHANGE OF OVERLAP	FM -FISH MOUTH	SI -SUBGRADE IRREGULARITY	WR -WRINKLE
CR -CREASE	FS -FAILED SEAM	SL -SLAG ON TEXTURED SHEET	WS -WELDER RESTART
D -INSTALLATION DAMAGE	HT -HEAT TACK BURN	SO -SHARP OBJECT	

PRINT NAME:

SIGNATURE:

Dennis G. Dugan
Dennis G. Dugan

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

Secondary

 SHEET
 PROJECT TITLE
 PROJECT NO.
 DATE

 2 of 7
 SELF SECTION 8
 09200020.45
 7-26-05

DATE REPAIRED	REPAIR NO.	SEAM / PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9-26-05	SR 17	52/59/510		T	1.5	VV	GE15	9/28/05	JB	
9-26-05	SR 18	52/58/59		T	1.5	VV	GE15	9/28/05	JB	
9-26-05	SR 19	52/53/58		T	1.5	VV	GE15	9/28/05	JB	
9-26-05	SR 20	52/53/56		T	2'X4	VV	GE15	9/28/05	JB	
9-26-05	SR 21	52/53/54/56		T	2'X4	VV	GE15	9/28/05	JB	
9-26-05	SR 22	54/56/57		T	2.0	VV	GE15	9/28/05	JB	
9-26-05	SR 23	54/55/57		T	1.5	VV	GE15	9/28/05	JB	
9-26-05	SR 24	58 at anchor		CR	ext. ruck	VV	GE15	9/28/05	JB	EXT BETWEEN 25' & 26'
9-26-05	SR 25	58 at anchor		CR	1.0	VV	GE15	9/28/05	JB	25' & 26'
9-26-05	SR 26	58/59	10' w/ anchor	FB	2.5X4.5	VV	GE15	9/28/05	JB	
9-26-05	SR 27	521/522	at anchor	FB	3.0X5.0	VV	GE15	9/28/05	JB	REWORK
9-26-05	SR 28	522/523	10' w/ anchor	FB	1.0	VV	GE15	9/28/05	JB	
9/27/05	SR 29	517/518	6'E	SD52	2X4	VV	GE15	9/28/05	JB	
9/27/05	SR 30	52/520	10'S	SD54	2X4	VV	GE15	9/28/05	JB	
9/27/05	SR 31	525/526	5'E	SD53	2X4	VV	GE15	9/28/05	JB	
9/27	SR 32	52,32,26	T	T	2X3	VV	GE15	9/28/05	JB	

DEFECT CODES:

AD -ANIMAL RELATED DAMAGE	DS -DESTRUCTIVE SAMPLE	IO -INSUFFICIENT OVERLAP	SS -START/STOP
B -UNDISPERSED RESIN BEAD	EE -EARTHWORK EQUIP DAMAGE	LB -LEISTER BURN	SSI -SOIL SURFACE IRREGULARITY
BO -BURN OUT	EXT -EXTENSION	MOT -MACHINE OFF TRACK	T -MULTIPLE PANEL INTERSECTION
BS -BOOT SKIRT	FB -FUSION WELDER BURN	N -NODULE	VL -VACUUM TEST LEAK
C -COUPON	FD -FACTORY DAMAGE	PTC -PRESSURE TEST CUT	WC -WRINKLE CUT
CO -CHANGE OF OVERLAP	FM -FISH MOUTH	SI -SUBGRADE IRREGULARITY	WR -WRINKLE
CR -CREASE	FS -FAILED SEAM	SL -SLAG ON TEXTURED SHEET	WS -WELDER RESTART
D -INSTALLATION DAMAGE	HT -HEAT TACK BURN	SO -SHARP OBJECT	

PRINT NAME:

SIGNATURE:

 Dennis G. Pugh
 Dennis G. Pugh

SCS ENGINEERS

SHEET
PROJECT TITLE
PROJECT NO.
DATESELF Section 6
09200020.35
9-28-05
3 of 7

GEOMEMBRANE REPAIR LOG

DATE REPAIRED	REPAIR NO.	SEAM / PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9/27/05	SR 33	533, 32, 62	T	T	2x3	VV	615	9/28/05	JB	
9/27/05	SR 34	532, 32, T1	T	T	1x9	VV	615	9/28/05	JB	
9/27/05	SR 35	52, 1, T1	T	T	3x18	VV	615	9/29/05	KC	
9/28/05	SR 36	524	24425	D	12x12"	VV	615	9/29/05		
9/27/05	SR 37	526, T1	33E	D	7'x3	VV	615			
9/28/05	SR 38	518	2N 9N	D	1x1	VV	615			
9/28/05	SR 39	58, 2	11N	SDS 5	2x4	VV	615			
9/28/05	SR 40	53, 8	2'E	SDS 1	2x4	VV	615			
9/28/05	SR 41	51, 2	495	SDS 6	2x4	VV	615			
9/28/05	SR 42	51, 527	388E	C	2x4	VV	615			
9/28/05	SR 43	51, 527	445E	SDS 7	2x4	VV	615			
9/28/05	SR 44	527, 528	0-10E	LAP	3'x15	VV	615			
9/27/05	SR 45	527, 528	4645	SDS 8	2x4	VV	615	DN		
2/28/05	SR 46	527	3' 11E	C	2x2	VB	646	DN		
2/27/05	SR 47	527	3'N 8'W	CR	1x4	VV	615	DN		
2/2	SR 48	527, 28	3'E	SDS 8N	2x4	JB	645	KC		

DEFECT CODES:

AD - ANIMAL RELATED DAMAGE	DS - DESTRUCTIVE SAMPLE	IO - INSUFFICIENT OVERLAP	SS - START/STOP
B - UNDISPERSED RESIN BEAD	EE - EARTHWORK EQUIP DAMAGE	LB - LEISTER BURN	SSI - SOIL SURFACE IRREGULARITY
BO - BURN OUT	EXT - EXTENSION	MOT - MACHINE OFF TRACK	T - MULTIPLE PANEL INTERSECTION
BS - BOOT SKIRT	FB - FUSION WELDER BURN	N - NODULE	VL - VACUUM TEST LEAK
C - COUPON	FD - FACTORY DAMAGE	PTC - PRESSURE TEST CUT	WC - WRINKLE CUT
CO - CHANGE OF OVERLAP	FM - FISH MOUTH	SI - SUBGRADE IRREGULARITY	WR - WRINKLE
CR - CREASE	FS - FAILED SEAM	SL - SLAG ON TEXTURED SHEET	WS - WELDER RESTART
D - INSTALLATION DAMAGE	HT - HEAT TACK BURN	SO - SHARP OBJECT	

PRINT NAME:

SIGNATURE:

KURT PETERSON
1/16

SCS ENGINEERS

SHEET
PROJECT TITLE
PROJECT NO.
DATE

4 of 7

GEOMEMBRANE REPAIR LOG

SEIF Section
092000-0113.5
9-28-05

DATE REPAIRED	REPAIR NO.	SEAM / PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9/28/05	SR49	527,28	30 N	SDS8	2x4	JB	645	9/29/05	KC	
9/27/05	SR50	528,29	18 N	SDS9	2x4	VU	615			
9/28/05	SR51	529,30	24 N	SDS10	2x4	JB	624			
9/28/05	SR52	529,30,T1		T	2x10	JB	624			ALONE T1
9/28/05	SR53	530,31,T1		T	1x1	JB	624			
9/28/05	SR54	530,31	435	SDS11	2x4	VU	615			
9/28/05	SR55	531,34	435	SDS12	2x4	VU	615			
9/28/05	SR56	531,34	2305	C	3x2	VU	615			
9/28/05	SR57	531,34,T1		T	1x5	JB	624			
9/29/05	SR58	529	25 11E	D	2x2	VU	615	9/29/05	KC	
9/28/05	SR59	534,35,T1		T	3x9	VU	615	9/29/05	KC	
9/29/05	SR60	534	27 N 11E	D	2x2					
9/28/05	SR61	534,35	385	SDS13	2x4	VU	615	9/29/05	KC	
9/28/05	SR62	534,35	65	B0	2x2	VU	615	9/29/05	KC	
9/28/05	SR63	535,36	355	SDS14	2x4	VU	615	9/29/05	KC	
	SR64	535,36,T1		T	2x2	VU	615	9/		

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWORK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME:

SIGNATURE:

KURT PETERSON
KA

SCS ENGINEERS

SHEET
PROJECT TITLE
PROJECT NO.
DATE5 of 7
SELF SECTION 8

420002035

9/29/05

GEOMEMBRANE REPAIR LOG

DATE REPAIRED	REPAIR NO.	SEAM / PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
	SR 65	536,37,T1		T	2X2					
9/28/05	SR 66	536,37,T1	455	SDS15	2X4	VV	615	9/29/05	KC	
9/28/05	SR 67	537,38	605	SDS16	2X4	VV	615	9/29/05	KC	
9/29/05	SR 68	537,38,T1		T	2X2					
9/29/05	SR 69	538,39,T1		T	2X2					
9/28/05	SR 70	538,39	1005	SDS17	2X4	VV	615			
9/28/05	SR 71	538,39	55	C	2X5	VV	615	9/29/05	KC	
9/28/05	SR 72	539,40	55	C	1X1	VV	615	9/29/05	KC	
9/28/05	SR 73	539,40	150 N	SDS18	2X4	VV	615	9/29/05	KC	
	SR 74	539,40	140 N	CAP	2X24	VV	615			
	SR 75	539,40								
9/28/05	SR 76	539,40,T1		T	2X2	VV	615			
	SR 77	540,41,T1		T	2X2					
9/28/05	SR 78	540,41	140 N	SDS19	2X4	VV	615			
9/28/05	SR 79	540,41	55	BO	3X3	VV	615			
9/28/05	SR 80	541,42	425	SDS20	2X4	VV	615	9/29/05	KC	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWORK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME:

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KURT PETERSON
KPS

SCS ENGINEERS

SHEET
PROJECT TITLE
PROJECT NO.
DATE6 of 7
SELF SECTION 8
9200020.25
9/28 - 9/29 - 9/30

GEOMEMBRANE REPAIR LOG

DATE REPAIRED	REPAIR NO.	SEAM / PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9/28/05	SR 81	541, 42	134N	BO	1X1	VV	615	9/29/05	KC	
9/29/05	SR 82	541, 42, T1		T	2X2					
	SR 83	542, 43, T1		T	2X2					
	SR 84	542	500N	SI	1X1					
9/28/05	SR 85	542, 43	60S	SDS21	2X4	VV	615	9/29/05	KC	
	SR 86	543, 44	5S	C	2X4					
	SR 87	543, 44	58S	SDS22	2X4					
	SR 88	543, 44, T1		T	2X2					
	SR 89	541	5N	D	2X2					
9/29/05	SR 90	524, 25	12E	C	2X4	VV	615	9/29/05	KC	CAP
9/29/05	SR 91	526, 32	12E	SDSA	2X4	VV	615	9/29/05	KC	CAP 12'
	SR 92	544, 45, T1		T	2X2					
	SR 93	544, 45	65S	SDS23	2X4					
	SR 94	545, 46	20S	SDS24	2X4					
	SR 95	545, 46, T1		T	2X2					
	SR 96	527, 28	45N	C	2X4					

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWORK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME:

SIGNATURE:

KURT PETERSON
RA

SCS ENGINEERS

SHEET
PROJECT TITLE
PROJECT NO.
DATE

SELF SECTION 8
#9200020.35
9/29/05

GEOMEMBRANE REPAIR LOG

[illegible]**DEFECT CODES:**

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME:

SIGNATURE:

6-12
Front

Secondary

SHEET:

of

PROJECT TITLE:

SELF SECTION

PROJECT NO:

09200020,35

DATE:

9-26-05

PRINT NAME:

Dennis E. Dubont

SIGNATURE:

Leppin A Dept

SCS ENGINEERS

DESTRUCTIVE TEST LOG

SHEET:

2

of

PROJECT TITLE:

SE/F Section 8

PROJECT NO:

9-2 09200020.35

DATE:

9-27-05

SAMPLE NO.	SEAM I.D.	MACHINE NO.	WELD TYPE	DATE SEAMED	DATE SAMPLED	TEST STATUS			COMMENTS
						PASS/FAIL			
						INSTALLER	SCS	ARCH	
SDT 13	539/535	W37	F	9-27-05	9-28-05	P	F		
SDT 14	535/536	W4	F	9-27-05	9-28-05	P	P		
SDT 15	536/537	W45	F	9-27-05	9-28-05	P	P		
SDT 16	537/538	W4	F	9-27-05	9-28-05	P	P		
SDT 17	538/539	W45	F	9-27-05	9-28-05	P	P		
SDT 18	539/540	W37	F	9-27-05	9-28-05	P	P		
SDT 19	540/541	W4	F	9-27-05	9-28-05	P	P		
SDT 20	541/542	W45	F	9-27-05	9-28-05	P	P		
SDT 21	542/543	W4	F	9-27-05	9-28-05	P	P		
SDT 22	543/544	W45	F	9-27-05	9-28-05	P	P		
SDT 23	544/545	W37	F	9-27-05	9-28-05	P	P		
SDT 24	545/546	W4	F	9-27-05	9-28-05	P	P		
SDT 25	542, T1	G015	E	9-29-05	9-28-05	P			
SDT 84	536, 32	W37	F	9/26/05	9-28-05	P			
SDT 88	527, 28	W37	F	9/26/05	9-28-05	P			
SDT 13A	534, 35	W37	F	9/26/05	9-30-05	P			
SDT 13B	534, 35	W37	F	9/26/05	9-30-05	P			
SDT 82	527, 28 CAP	G15	E	9/29/05	9/29/05	P			

PRINT NAME:

Dennis G. Dubert

SIGNATURE:

Dennis G. Dubert

ATTACHMENT 6-12

DESTRUCTIVE TEST (PEEL & SHEAR)



#####

Mail To:

Mr. Kurt Peterson
SCS Engineers
3012 U.S. Highway 301 North, Ste. 700
Tampa, FL 33619

email: kpeterson@scsengineers.com
cc email: ddupont@scsengineers.com - Dennis DuPont
cc email: dbramlett@scsengineers.com - D. Bramlett

Bill To:

<= Same (Job #: 09200020.35)

Dear Mr. Peterson:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project: S.E. County Landfill, Hillsborough, FL

TRI Job Reference Number: E2242-85-04

Material(s) Tested: 8 Heat Fusion Weld(s)

Test(s) Requested: SAME DAY Peel and Shear
(ASTM D 6392/GRI GM19/D 4437/NSF 54)

Codes

AD	Adhesion failure (100% Peel)
BRK	Break in sheeting away from Seam edge
SE	Break in sheeting at edge of seam
AD-BRK	Break in sheeting after some adhesion failure - partial peel
SIP	Separation in the plane of the sheet (leaving the bond intact)
FTB	Film tearing bond (all non "AD" failures)
NON-FTB	100% peel

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Sam Allen
Vice President and Division Manager
Geosynthetic Services Division
www.GeosyntheticTesting.com



DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. County Landfill, Hillsborough, FL

Material: HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2242-85-04

PARAMETER		TEST REPLICATE NUMBER					MEAN
		1	2	3	4	5	
Sample ID: SDT-1							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	143	130	148	126	128	Peel A 135
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	156	138	148	139	138	Peel B 144
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		186	186	186	186	188	Shear 186
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	
Sample ID: SDT-2							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	126	132	128	131	126	Peel A 129
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	131	140	133	143	134	Peel B 136
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		184	183	184	183	184	Shear 184
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. County Landfill, Hillsborough, FL

Material: HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2242-85-04

PARAMETER		TEST REPLICATE NUMBER					MEAN
		1	2	3	4	5	
Sample ID: SDT-3							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	127	130	130	130	126	Peel A 129
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	130	130	122	124	124	Peel B 126
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		188	186	185	186	187	Shear 186
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	
Sample ID: SDT-4							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	149	137	134	144	131	Peel A 139
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	152	150	146	156	126	Peel B 146
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		178	172	178	180	179	Shear 177
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. County Landfill, Hillsborough, FL

Material: HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2242-85-04

PARAMETER		TEST REPLICATE NUMBER					MEAN
		1	2	3	4	5	
Sample ID: SDT-5							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	133	158	153	143	156	Peel A 149
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	134	138	151	146	125	Peel B 139
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		183	186	190	188	189	Shear 187
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	
Sample ID: SDT-6							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	133	129	130	128	128	Peel A 130
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	153	134	140	135	129	Peel B 138
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		187	186	188	187	190	Shear 188
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. County Landfill, Hillsborough, FL

Material: HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2242-85-04

PARAMETER		TEST REPLICATE NUMBER					MEAN
		1	2	3	4	5	
Sample ID: SDT-7							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	132	131	132	130	130	Peel A 131
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	116	120	134	116	115	Peel B 120
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	187	186	189	186	187	Shear 187
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: SDT-9							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	127	138	131	145	138	Peel A 136
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	147	126	126	121	110	Peel B 126
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	188	186	186	187	186	Shear 187
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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September 29, 2005

Mail To:

Mr. Kurt Peterson
SCS Engineers
3012 U.S. Highway 301 North, Ste. 700
Tampa, FL 33619

email: kpeterson@scsengineers.com
cc email: ddupont@scsengineers.com - Dennis DuPont
cc email: dbramlett@scsengineers.com - D. Bramlett

Bill To:

<= Same (Job #: 09200020.35)

Dear Mr. Peterson:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report for laboratory testing.

Project: **S.E. Hillsborough County Landfill, Section 8 Secondary 60 m
(Hillsborough, FL)**

TRI Job Reference Number: E2242-86-09

Material(s) Tested: 15 Heat Fusion Weld(s)

Test(s) Requested: SAME DAY Peel and Shear
(ASTM D 6392/GRI GM19/D 4437/NSF 54)

Codes

AD	Adhesion failure (100% Peel)
BRK	Break in sheeting away from Seam edge
SE	Break in sheeting at edge of seam
AD-BRK	Break in sheeting after some adhesion failure - partial peel
SIP	Separation in the plane of the sheet (leaving the bond intact)
FTB	Film tearing bond (all non "AD" failures)
NON-FTB	100% peel

If you have any questions or require any additional information, please call us at
1-800-880-8378.

Sincerely,

Melissa Hunter
Project Manager
Geosynthetic Services Division
www.GeosyntheticTesting.com



DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. Hillsborough County Landfill, Section 8 Secondary 60 m (Hillsborough, FL)

Material: HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2242-86-09

PARAMETER		TEST REPLICATE NUMBER					MEAN
		1	2	3	4	5	
Sample ID: SDS-10							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	127	127	131	128	143	Peel A 131
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	144	140	141	140	141	Peel B 141
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	190	191	191	193	190	Shear 191
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: SDS-11							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	127	135	125	131	134	Peel A 130
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	132	142	129	124	137	Peel B 133
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	188	189	190	189	189	Shear 189
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. Hillsborough County Landfill, Section 8 Secondary 60 m (Hillsborough, FL)

Material: HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2242-86-09

		TEST REPLICATE NUMBER					MEAN
PARAMETER		1	2	3	4	5	
Sample ID: SDS-12							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	125	136	125	128	126	Peel A 128
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	130	133	128	129	131	Peel B 130
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		191	189	192	189	191	Shear 190
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	
Sample ID: SDS-13							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	120	100	92	114	140	Peel A 113
	Peel Incursion (%)	100	100	100	<10	<10	
	Peel Locus of Failure Code	AD	AD	AD	SE	SE	
	Peel NSF Failure Code	NON-FTB	NON-FTB	NON-FTB	FTB	FTB	
Side B	Peel Strength (ppi)	145	127	125	123	123	Peel B 129
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		182	181	182	181	181	Shear 181
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. Hillsborough County Landfill, Section 8 Secondary 60 m (Hillsborough, FL)

Material: HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2242-86-09

		TEST REPLICATE NUMBER					MEAN
PARAMETER		1	2	3	4	5	
Sample ID: SDS-14							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	125	137	130	132	149	Peel A 135
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	126	125	129	123	123	Peel B 125
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		179	180	180	179	181	Shear 180
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	
Sample ID: SDS-15							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	123	123	123	127	128	Peel A 125
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	129	123	122	124	120	Peel B 124
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		182	181	182	182	183	Shear 182
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. Hillsborough County Landfill, Section 8 Secondary 60 m (Hillsborough, FL)

Material: HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2242-86-09

		TEST REPLICATE NUMBER					MEAN
PARAMETER		1	2	3	4	5	
Sample ID: SDS-16							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	152	137	129	141	154	Peel A 143
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	152	149	135	137	134	Peel B 141
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		186	185	185	185	186	Shear 185
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	
Sample ID: SDS-17							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	126	121	125	126	123	Peel A 124
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	123	118	131	124	123	Peel B 124
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		183	183	182	182	183	Shear 183
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. Hillsborough County Landfill, Section 8 Secondary 60 m (Hillsborough, FL)

Material: HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2242-86-09

PARAMETER		TEST REPLICATE NUMBER					MEAN
		1	2	3	4	5	
Sample ID: SDS-18							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	120	127	116	121	124	Peel A 122
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	121	130	131	128	126	Peel B 127
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		184	185	184	183	186	Shear 184
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	
Sample ID: SDS-19							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	129	135	140	146	130	Peel A 136
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	136	137	135	135	130	Peel B 135
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		179	183	186	184	185	Shear 183
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. Hillsborough County Landfill, Section 8 Secondary 60 m (Hillsborough, FL)

Material: HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2242-86-09

PARAMETER		TEST REPLICATE NUMBER					MEAN
		1	2	3	4	5	
Sample ID: SDS-20							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	129	127	134	135	134	Peel A 132
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	127	114	132	130	128	Peel B 126
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	184	182	183	184	183	Shear 183
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: SDS-21							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	147	128	148	131	127	Peel A 136
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	125	122	132	124	132	Peel B 127
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	182	178	178	180	180	Shear 180
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. Hillsborough County Landfill, Section 8 Secondary 60 m (Hillsborough, FL)

Material: HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2242-86-09

		TEST REPLICATE NUMBER					MEAN
PARAMETER		1	2	3	4	5	
Sample ID: SDS-22							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	125	121	124	124	126	Peel A 124
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	124	126	124	124	124	Peel B 124
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		183	182	182	182	184	Shear 183
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	
Sample ID: SDS-23							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	126	132	126	130	128	Peel A 128
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	138	122	128	127	131	Peel B 129
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		182	180	182	182	183	Shear 182
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. Hillsborough County Landfill, Section 8 Secondary 60 m (Hillsborough, FL)

Material: HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2242-86-09

PARAMETER		TEST REPLICATE NUMBER					MEAN
		1	2	3	4	5	
Sample ID: SDS-24							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	120	121	121	120	121	Peel A 121
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	125	120	116	125	120	Peel B 121
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		184	184	184	184	184	Shear 184
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material.

TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



#####

Mail To:

Mr. Kurt Peterson
SCS Engineers
3012 U.S. Highway 301 North, Ste. 700
Tampa, FL 33619

email: kpeterson@scsengineers.com
cc email: ddupont@scsengineers.com - Dennis DuPont
cc email: dbramlett@scsengineers.com - D. Bramlett

Bill To:

<= Same (Job #: 09200020.35)

Dear Mr. Peterson:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report for laboratory testing.

Project: **S.E. County Landfill, Hillsborough, FL**
TRI Job Reference Number: **E2242-85-04**
Material(s) Tested: **8 Heat Fusion Weld(s)**
Test(s) Requested: **SAME DAY Peel and Shear
(ASTM D 6392/GRI GM19/D 4437/NSF 54)**

Codes

AD	Adhesion failure (100% Peel)
BRK	Break in sheeting away from Seam edge
SE	Break in sheeting at edge of seam
AD-BRK	Break in sheeting after some adhesion failure - partial peel
SIP	Separation in the plane of the sheet (leaving the bond intact)
FTB	Film tearing bond (all non "AD" failures)
NON-FTB	100% peel

If you have any questions or require any additional information, please call us at
1-800-880-8378.

Sincerely,

Sam Allen
Vice President and Division Manager
Geosynthetic Services Division
www.GeosyntheticTesting.com



DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. County Landfill, Hillsborough, FL

Material: HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2242-85-04

PARAMETER		TEST REPLICATE NUMBER					MEAN
		1	2	3	4	5	
Sample ID:		SDT-1					
Weld:		Heat Fusion					
Side A	Peel Strength (ppi)	143	130	148	126	128	Peel A 135
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	156	138	148	139	138	Peel B 144
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		186	186	186	186	188	Shear 186
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	
Sample ID:		SDT-2					
Weld:		Heat Fusion					
Side A	Peel Strength (ppi)	126	132	128	131	126	Peel A 129
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	131	140	133	143	134	Peel B 136
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		184	183	184	183	184	Shear 184
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. County Landfill, Hillsborough, FL

Material: HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2242-85-04

		TEST REPLICATE NUMBER					MEAN
PARAMETER		1	2	3	4	5	
Sample ID: SDT-3							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	127	130	130	130	126	Peel A 129
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	130	130	122	124	124	Peel B 126
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		188	186	185	186	187	Shear 186
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	
Sample ID: SDT-4							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	149	137	134	144	131	Peel A 139
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	152	150	146	156	126	Peel B 146
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		178	172	178	180	179	Shear 177
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. County Landfill, Hillsborough, FL

Material: HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2242-85-04

PARAMETER		TEST REPLICATE NUMBER					MEAN
		1	2	3	4	5	
Sample ID: SDT-5							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	133	158	153	143	156	Peel A 149
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	134	138	151	146	125	Peel B 139
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		183	186	190	188	189	Shear 187
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	
Sample ID: SDT-6							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	133	129	130	128	128	Peel A 130
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	153	134	140	135	129	Peel B 138
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		187	186	188	187	190	Shear 188
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. County Landfill, Hillsborough, FL

Material: HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2242-85-04

PARAMETER		TEST REPLICATE NUMBER					MEAN
		1	2	3	4	5	
Sample ID: SDT-7							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	132	131	132	130	130	Peel A 131
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	116	120	134	116	115	Peel B 120
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		187	186	189	186	187	Shear 187
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	
Sample ID: SDT-9							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	127	138	131	145	138	Peel A 136
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	147	126	126	121	110	Peel B 126
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		188	186	186	187	186	Shear 187
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	

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September 30, 2005

Mail To:

Mr. Kurt Peterson
SCS Engineers
3012 U.S. Highway 301 North, Ste. 700
Tampa, FL 33619

email: kpeterson@scsengineers.com
cc email: ddupont@scsengineers.com - Dennis DuPont
cc email: dbramlett@scsengineers.com - D. Bramlett

Bill To:

<= Same (Job #: 09200020.35)

Dear Mr. Peterson:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report for laboratory testing.

**Project: S.E. Hillsborough County Landfill, Section 8 Secondary
(Hillsborough, FL)**

TRI Job Reference Number: E2242-88-03

**Material(s) Tested: 2 Heat Fusion Weld(s)
2 Single Extrusion Weld(s)**

**Test(s) Requested: SAME DAY Peel and Shear
(ASTM D 6392/GRI GM19/D 4437/NSF 54)**

Codes

AD	Adhesion failure (100% Peel)
BRK	Break in sheeting away from Seam edge
SE	Break in sheeting at edge of seam
AD-BRK	Break in sheeting after some adhesion failure - partial peel
SIP	Separation in the plane of the sheet (leaving the bond intact)
FTB	Film tearing bond (all non "AD" failures)
NON-FTB	100% peel

If you have any questions or require any additional information, please call us at
1-800-880-8378.

Sincerely,

Melissa Hunter
Project Manager
Geosynthetic Services Division
www.GeosyntheticTesting.com



DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. Hillsborough County Landfill, Section 8 Secondary (Hillsborough, FL)

Material: HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2242-88-03

PARAMETER		TEST REPLICATE NUMBER					MEAN
		1	2	3	4	5	
Sample ID: SDS-8A							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	122	125	128	132	128	Peel A 127
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	126	131	120	132	118	Peel B 125
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		185	185	185	185	189	Shear 186
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	
Sample ID: SDS-8B							
Weld: Heat Fusion							
Side A	Peel Strength (ppi)	147	153	133	134	125	Peel A 138
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	130	129	139	135	141	Peel B 135
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)		186	185	184	187	184	Shear 185
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Engineers

Project: S.E. Hillsborough County Landfill, Section 8 Secondary (Hillsborough, FL)

Material: HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2242-88-03

PARAMETER	TEST REPLICATE NUMBER					MEAN
	1	2	3	4	5	
Sample ID:	SDS-8C					
Weld:	Single Extrusion					
Peel Strength (ppi)	122	141	120	113	105	Peel 120
Peel Incursion (%)	<10	<10	<10	<10	<10	
Peel Locus of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)	177	178	180	176	177	Shear 178
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	SDS-25					
Weld:	Single Extrusion					
Peel Strength (ppi)	159	166	170	161	173	Peel 166
Peel Incursion (%)	<10	<10	<10	<10	<10	
Peel Locus of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear Strength (ppi)	176	173	174	176	173	Shear 174
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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ATTACHMENT 6-13

CQC - DIRECT SHEAR TESTS

ARDAMAN & ASSOCIATES
GEOCOMPOSITE/DRAINAGE SAND
(1 OF 3)



Ardaman & Associates, Inc.

Geotechnical, Environmental and
Materials Consultants

April 11, 2005
File Number 05-030

ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, Florida 34787

Attention: Mr. Nestor Reyes

Subject: Interface Resistance Between Geonet/Geotextile Composite and Shelly Lakes
Sand, Southeast Landfill Project

Gentlemen:

As requested, direct shear tests have been performed to measure the interface resistance between geonet/geotextile (colored orange) composite and Shelly Lakes sand. This report updates the previous report submitted April 1, 2005, and presents one additional direct shear test.

Soil and Geocomposite Samples

The soil sample was received March 14, 2005 in a 5-gallon bucket. The sample visually classified as brown medium to fine sand with silt and clay. The as-received moisture content (ASTM Standard D 2216) of the sample, after homogenizing, equaled 13.6%. The particle-size distribution (ASTM D 422) of the sample is presented graphically in Figure 1. Standard Proctor compaction test results (ASTM D 698) reported by Burcaw Geotechnical Group, Inc. for the sample indicated a maximum dry density of 98.7 lb/ft³ and optimum moisture content of 19.6%.

A geonet/geotextile composite sample was also received for testing on March 14, 2005. The rolled sample was not labeled with a roll number or product description, but was subsequently identified as TENAX Tendrain 770-2.

Direct Shear Tests

Three direct shear tests were performed in general accordance with ASTM Standard D 5321 "Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method" (Procedure B). Samples of the geocomposite with dimensions of 14 inches by 20 inches were clamped to the lower portion of the direct shear apparatus for testing in the machine direction. The sand was compacted in one 1-inch thick lift in the upper 12 inch by 12 inch square portion of the apparatus above the top surface of the geocomposite at a moisture content of 19.6% (Standard Proctor optimum moisture content) to a target dry density of 93.8 lb/ft³ (corresponding to 95% of the Standard Proctor maximum dry density). Normal stresses of approximately 21, 42, 84 and 110 lb/in² were applied, and the interface was submerged below water. After a minimum stabilization period of twenty four hours, the interface was sheared at a constant horizontal displacement rate of 0.04 inches/minute.

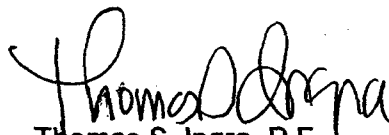
The test results are presented in the attached table. The normalized shear stress ratio (i.e., the ratio of the shear stress to the normal stress) versus horizontal displacement for the tests are plotted in Figures 2 through 5. The peak shear stress versus the normal stress are presented

in Figure 6. The Mohr-Coulomb failure envelopes at peak shear stress based on linear regression of the measured data are also plotted in Figure 6.

If you have any questions about the test results or require additional testing services, please contact us.

Very truly yours,
ARDAMAN & ASSOCIATES, INC.


Shawkat Ali, Ph.D., P.E.
Quality Control Manger


Thomas S. Ingra, P.E.
Laboratory Director
Florida Registration No. 31987

ARDAMAN & ASSOCIATES, INC. GEOSYNTHETICS LABORATORY

**INTERFACE DIRECT SHEAR TEST REPORT
ASTM STANDARD D 5321**

CLIENT: ERC GENERAL CONTRACTING

PROJECT: SE LANDFILL LINER TESTING

FILE NO.: 05-030

DATE REPORTED: PRELIMINARY: 03/28/05

FINAL: 04/01/05

REVISED: 04/11/05 (Added test 4)

UPPER MATERIAL

DESCRIPTION: BROWN FINE SAND WITH SILT & CLAY
INCOMING SAMPLE NO.: SHELLY LAKES BACKFILL SAND
LABORATORY IDENTIFICATION NO.: 05030/SOIL 2

LOWER MATERIAL

DESCRIPTION: TENAX TENDRAIN 770-2 GEOCOMPOSITE
INCOMING SAMPLE NO.: NOT LABELLED
LABORATORY IDENTIFICATION NO.: 05030/GT

METHOD:

- ☐ PROCEDURE A - GEOSYNTHETIC & GEOSYNTHETIC
☒ PROCEDURE B - SOIL & GEOSYNTHETIC

STABILIZATION PERIOD: 24 HOURS
DISPLACEMENT RATE: 0.04 INCH/MINUTE

TEST CONDITIONS: ☐ DRY ☒ SUBMERGED

Test	Soil Conditions				Normal stress, σ_n (lb/in ²)	Peak Interface Resistance			Interface Resistance at End of Test		
	Initial		Final			τ/σ_n	γ_h (inches)	ϕ_i (deg.)	τ/σ_n	γ_h (inches)	ϕ_i (deg.)
	w_c (%)	V_d (pcf)	w_c (%)	V_d (pcf)							
1	19.7	94.8	23.2	—	21.0	0.66	1.11	33.5	0.59	3.00	30.5
2	19.5	94.9	21.9	—	41.9	0.63	1.51	32.2	0.61	2.58	31.3
3	19.5	94.9	22.7	—	84.0	0.58	2.00	30.2	0.57	2.95	29.6
4	19.6	93.8	18.8	—	110.2	0.61	2.64	31.5	0.61	2.88	31.4

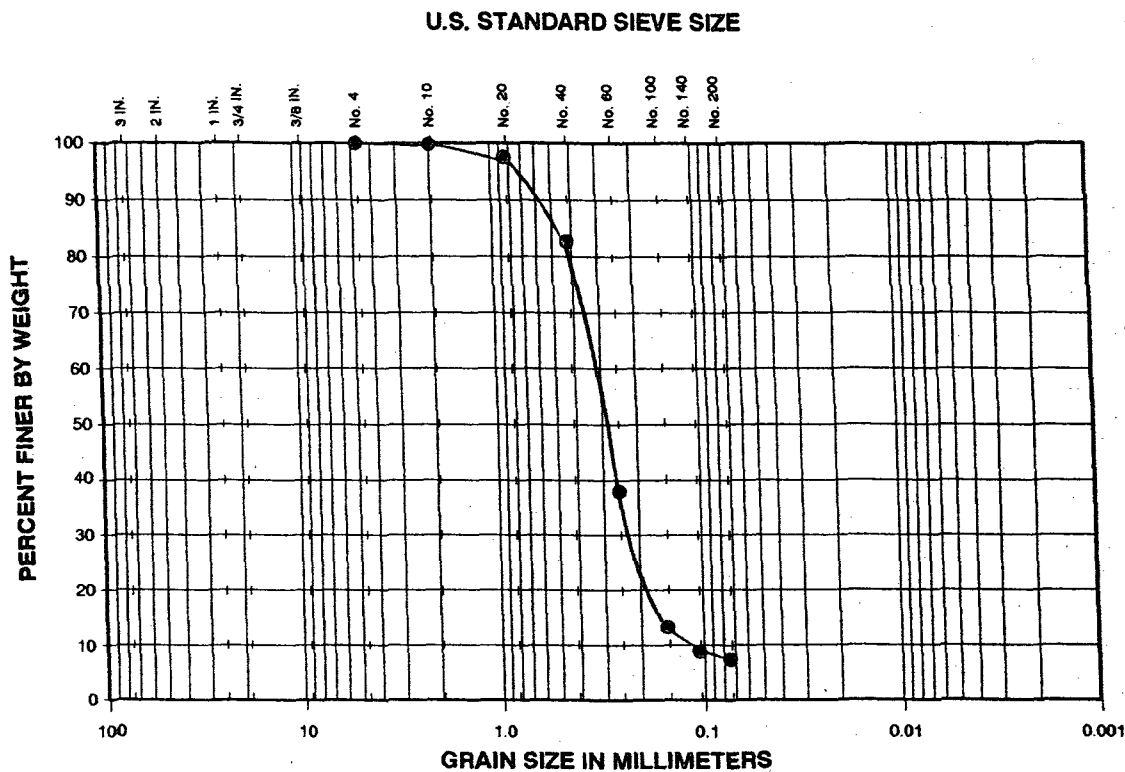
Comments: 1) Final w_c (ASTM D 2216) for sand from average of 3 specimens.
2) Tests performed using Brainard-Killman device with 5000 lb load cell, 4" DCDT and 200 psi pressure transducer. Geocomposite clamped in MD to lower 14" x 20" friction plate of device. Soil compacted in 1-inch thick lift in the upper 12" x 12" square portion of the apparatus.

The test data and all associated project information presented hereon shall be held in confidence and disclosed to other parties only with the authorization of the Client or Ardaman & Associates, Inc. Physical and electronic records of each project are kept for a minimum of 7 years. Test samples are kept in storage for at least 10 working days after mailing of the test report, prior to being discarded, unless a longer storage period is requested in writing and accepted by Ardaman & Associates, Inc.

Where: w_c = Moisture content; V_d = Dry density; σ_n = Normal stress; τ = Shear stress; γ_h = Horizontal displacement; and ϕ_i = Interface friction angle in degrees calculated assuming zero adhesion.

Checked By: SA

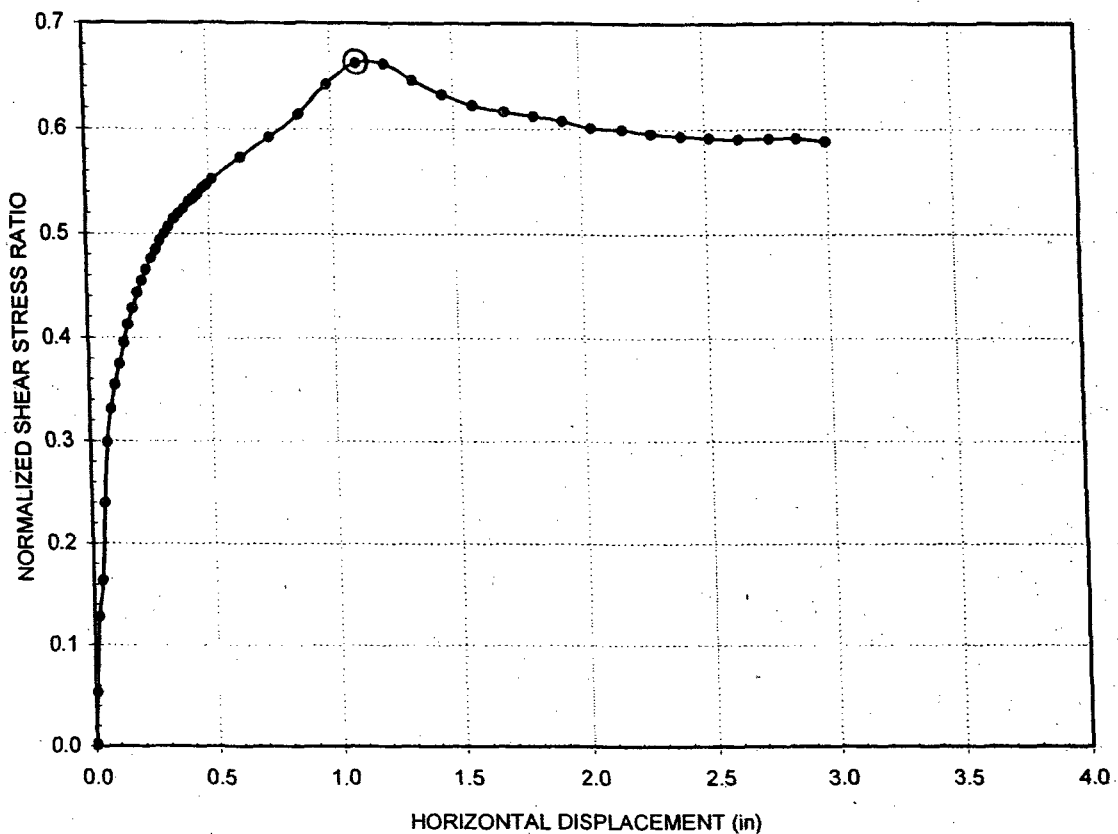
Date: 4/11/05



GRAVEL		SAND			SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE		

PARTICLE-SIZE ANALYSIS ON SHELLY LAKES SAND

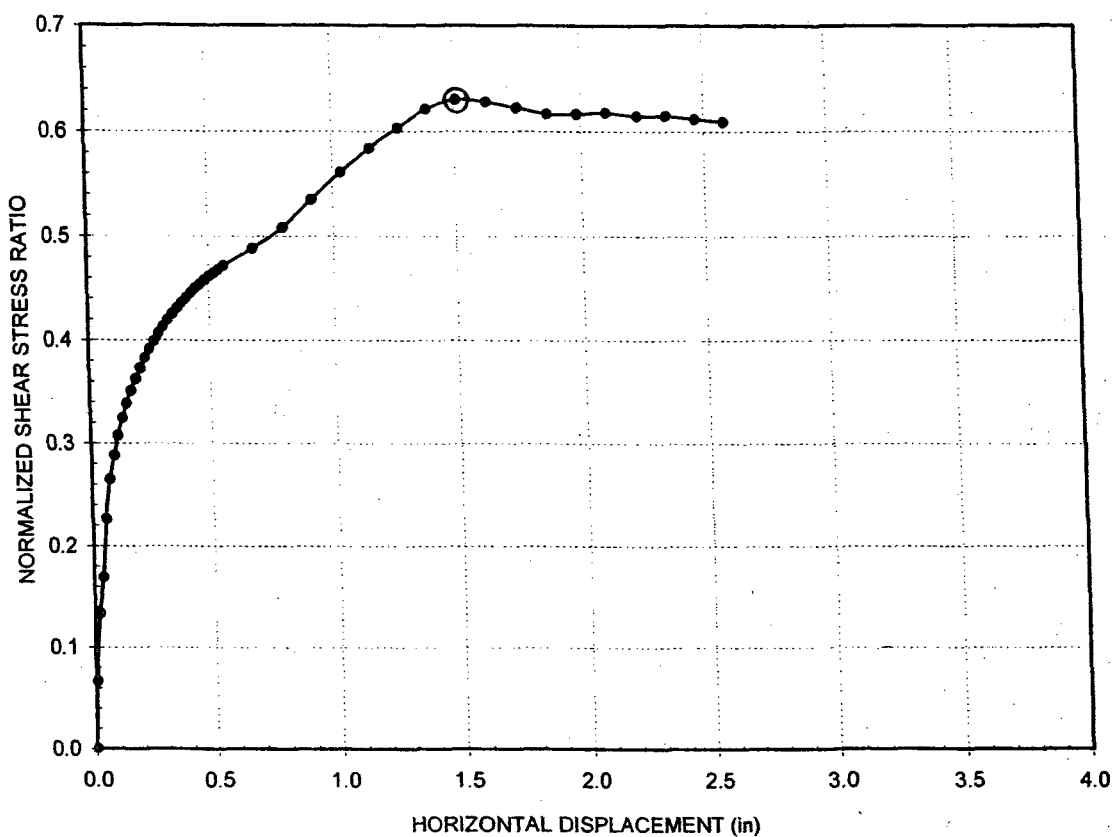
Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants			
SOUTHEAST LANDFILL LINER INTERFACE DIRECT SHEAR TESTS ERC GENERAL CONTRACTING SERVICES, INC. WINTER GARDEN, FLORIDA			
DRAWN BY: SA	CHECKED BY: SA	DATE: 03-28-05	
FILE NO.: 05-030	APPROVED BY:	FIGURE: 1	



DIRECT SHEAR TEST OF GEOCOMPOSITE AND SHELLY LAKES SAND INTERFACE

Sample Name	Geocomposite and Shelly Lakes Sand Interface
Normal Stress (lb/in ²)	21.0
Displacement Rate (in/min)	0.04
Peak Friction Angle °	33.5

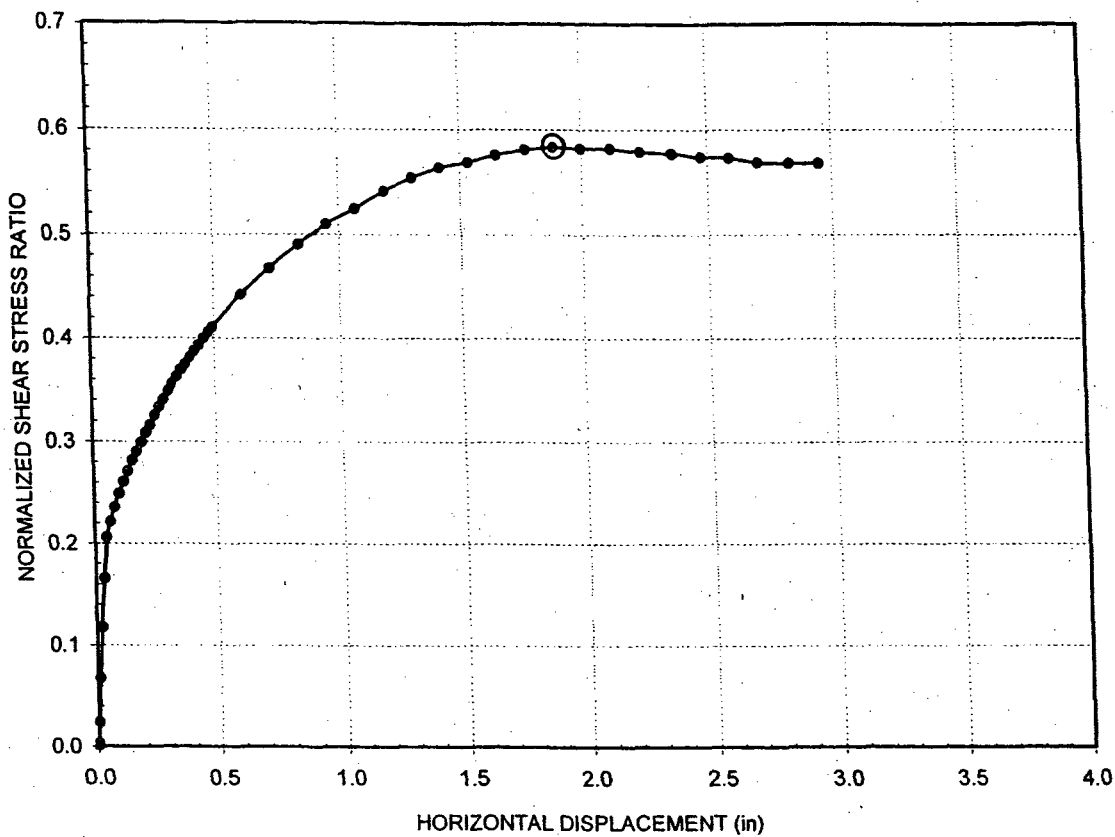
 Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants		
SOUTHEAST LANDFILL LINER INTERFACE DIRECT SHEAR TESTS ERC GENERAL CONTRACTING SERVICES, INC.		
DRAWN BY: SA	CHECKED BY: SA	DATE: 03-28-05
FILE NO.: 05-030	APPROVED BY: <i>TH</i>	FIGURE: 2



DIRECT SHEAR TEST OF GEOCOMPOSITE AND SHELLY LAKES SAND INTERFACE

Sample Name	Geocomposite and Shelly Lakes Sand Interface
Normal Stress (lb/in ²)	41.9
Displacement Rate (in/min)	0.04
Peak Friction Angle °	32.2

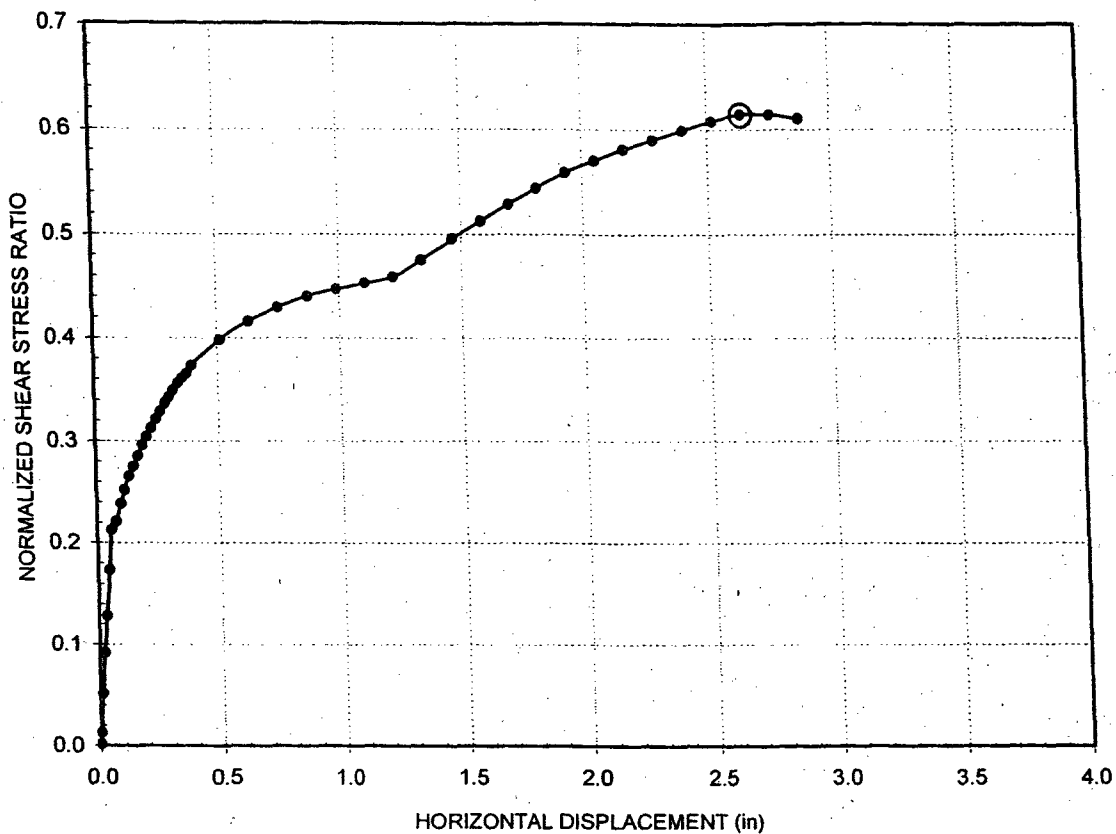
Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants		
SOUTHEAST LANDFILL LINER INTERFACE DIRECT SHEAR TESTS		
ERC GENERAL CONTRACTING		
DRAWN BY: SA	CHECKED BY: SA	DATE: 03-28-05
FILE NO.: 05-030	APPROVED BY:	FIGURE: 3



DIRECT SHEAR TEST OF GEOCOMPOSITE AND SHELLY LAKES SAND INTERFACE

Sample Name	Geocomposite and Shelly Lakes Sand Interface
Normal Stress (lb/in ²)	84.0
Displacement Rate (in/min)	0.04
Peak Friction Angle °	30.2

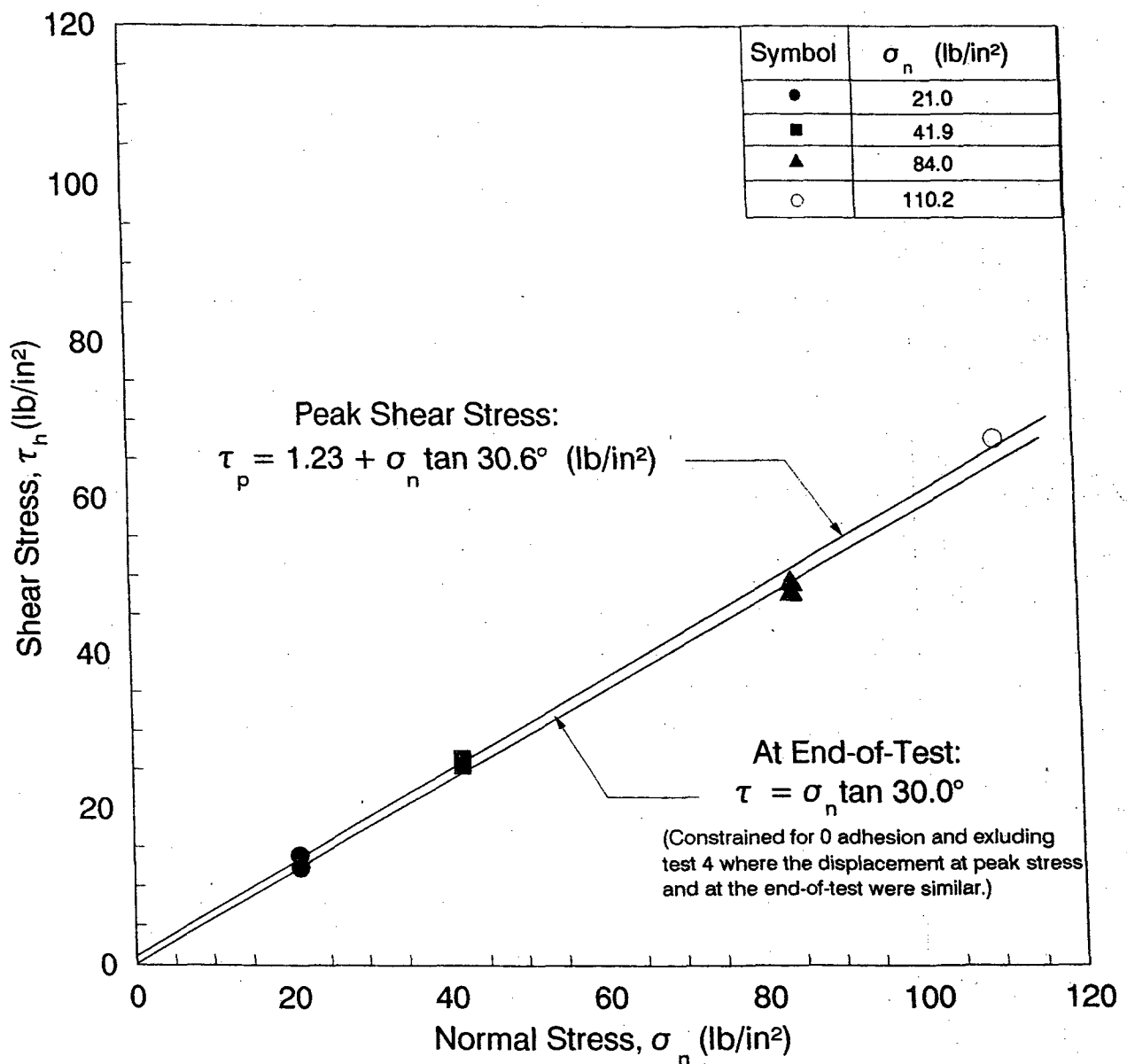
 Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants			
SOUTHEAST LANDFILL LINER INTERFACE DIRECT SHEAR TESTS			
ERC GENERAL CONTRACTING SERVICES, INC.			
DRAWN BY: SA	CHECKED BY: SA	DATE: 03-28-05	
FILE NO.: 05-030	APPROVED BY: <i>TM</i>	FIGURE: 4	



DIRECT SHEAR TEST OF GEOCOMPOSITE AND SHELLY LAKES SAND INTERFACE

Sample Name	Geocomposite and Shelly Lakes Sand Interface
Normal Stress (lb/in ²)	110.2
Displacement Rate (in/min)	0.04
Peak Friction Angle °	31.5

Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants		
SOUTHEAST LANDFILL LINER INTERFACE DIRECT SHEAR TESTS ERC GENERAL CONTRACTING SERVICES, INC.		
DRAWN BY: SA	CHECKED BY: SA	DATE: 04-11-05
FILE NO.: 05-030	APPROVED BY:	FIGURE: 5



**MOHR-COULOMB FAILURE ENVELOPE FROM
INTERFACE DIRECT SHEAR TESTS BETWEEN
GEOCOMPOSITE AND SHELLY LAKES SAND**

 Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants			
SOUTHEAST LANDFILL LINER INTERFACE DIRECT SHEAR TESTS			
ERC GENERAL CONTRACTING SERVICES, INC. WINTER GARDEN, FLORIDA			
DRAWN BY: SA	CHECKED BY: SA	DATE: 07-22-05	
FILE NO.: 05-030	APPROVED BY: 	FIGURE: 6	



Ardaman & Associates, Inc.

Geotechnical, Environmental and
Materials Consultants

May 3, 2005
File Number 05-030

ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, Florida 34787

Attention: Mr. Nestor Reyes

Subject: Consolidated Drained Triaxial Tests on Soil Sample from Southeast Landfill
Project

Gentlemen:

As requested, consolidated drained (CIDC) triaxial compression tests have been completed on a soil sample provided for testing by your firm from the Southeast Landfill project. The sample was labeled "Shelly Lakes Sand". The sample visually classified as brown medium to fine sand with silt.

Consolidated Drained Triaxial Compression Tests

Triaxial test specimens were prepared by statically compacting soil in 8-cm long by 3.6-cm diameter rigid steel molds in four equal thickness lifts. The specimens were compacted to an initial target dry density of 93.8 lb/ft³ (corresponding to 95% of the Standard Proctor maximum dry density of 98.7 lb/ft³ reported by Burcaw Geotechnical Group, Inc.) at the reported Standard Proctor optimum moisture content of 19.6%. Two cylindrical test specimens 3.6 cm in diameter and 7.1 cm in height were trimmed from the compacted soil specimens. The specimens were mounted in triaxial cells, fitted with eight vertical filter strips, and encased in latex membranes. The cell and back pressures were increased together in increments until the back-pressure equaled the test values of 7.0 and 8.0 kg/cm². The specimens were then isotropically consolidated in three increments under effective stresses of 3.90 and 5.86 kg/cm² (8,000 and 12,000 lb/ft²). Consolidation under the applied effective stresses was allowed to continue until primary consolidation was complete, and then for an additional period of up to 48 hours. After consolidation, the specimens were sheared with bottom drainage at a constant rate of axial deformation of 0.0012 cm/minute (corresponding to a strain rate of about 1.0%/hour). The strain rate was sufficiently slow to allow shear induced excess pore pressures to dissipate.

The initial, preshear and final moisture contents and dry densities of the specimens are presented in Table 1. The principal stresses, axial strains and volumetric strains at maximum stress difference, $(\sigma_1 - \sigma_3)_{max}$, and at the end of each test are presented in Table 2. The stress difference versus axial strain and volumetric strain versus axial strain are presented in Figure 1. The average effective principal stress, p' , and half principal stress difference, q , at maximum stress difference and at the end of each test are plotted in Figure 2. Mohr-Coulomb failure envelopes based on linear regression of the measured data with cohesion constrained to zero are also shown on Figure 2.

Fines Content Tests

Upon completion of testing, the fines content (i.e., percent soil by dry weight finer than the U.S. Standard No. 200 sieve size) of each specimen was determined in general accordance with ASTM Standard D 1140. The fines content of each specimen is presented in Table 2.

If you have any questions about the test results or require additional testing services, please contact us.

Very truly yours,
ARDAMAN & ASSOCIATES, INC.



Shawkat Ali, Ph.D., P.E.
Quality Control Manager



Thomas S. Ingra, P.E.
Laboratory Director
Florida Registration No. 31987

SA/TSI/sa

Table 1

CONSOLIDATED DRAINED TRIAXIAL COMPRESSION TEST SPECIMEN T DATA

Sample	Specimen	Initial Conditions					σ'_c (kg/cm ²)	u_b (kg/cm ²)	B Factor (%)	Pre-Shear Conditions			Final Conditions	
		H (cm)	D (cm)	w _c (%)	γ_d (lb/ft ³)	S (%)				ϵ_{vol} (%)	w _c (%)	γ_d (lb/ft ³)	w _c (%)	γ_d (lb/ft ³)
Shelly Lakes Sand	1	7.08	3.55	19.9	93.6	67	3.90	8.00	96	-4.9	26.3	98.5	24.9	100.8
	2	7.12	3.57	20.1	93.8	68	5.86	7.00	92	-5.3	26.0	99.0	24.3	101.8

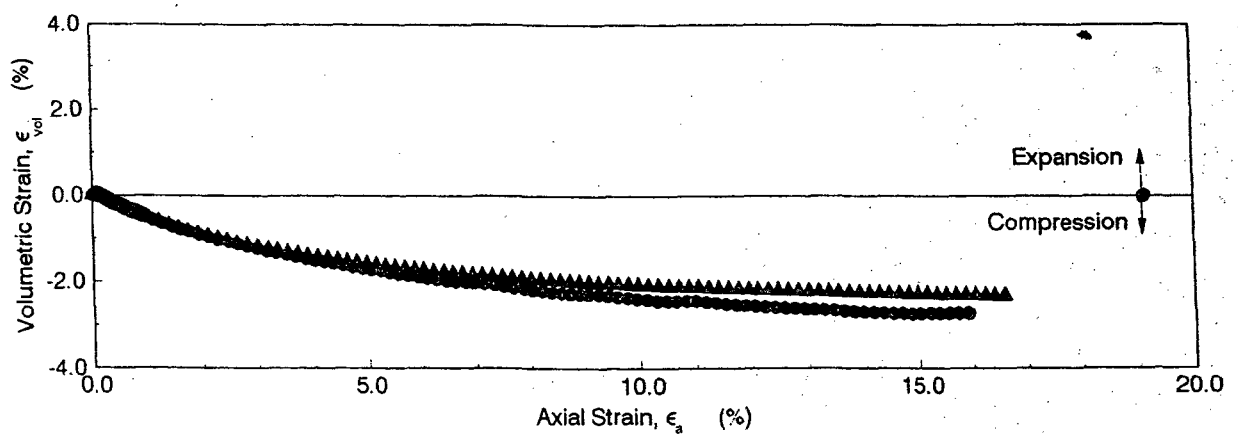
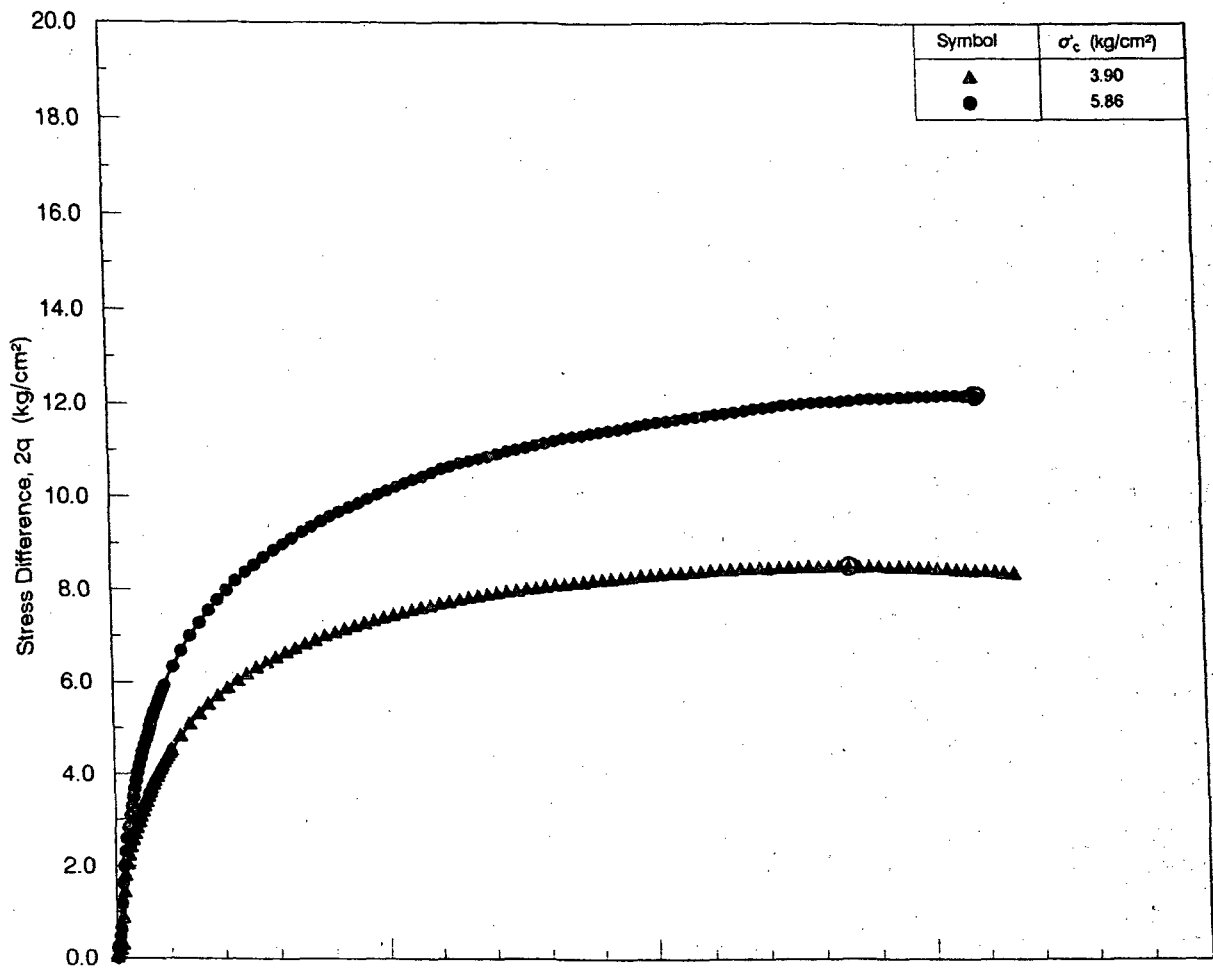
Where: H = Specimen height; D = Specimen diameter; w_c = Moisture content; γ_d = Dry density; S = Calculated degree of saturation using an assumed specific gravity of 2.70; σ'_c = Isotropic effective consolidation stress; u_b = Back-pressure; and ϵ_{vol} = Volumetric strain (positive indicates expansion and negative indicates consolidation).

Table 2

CONSOLIDATED DRAINED TRIAXIAL COMPRESSION TEST RESULTS

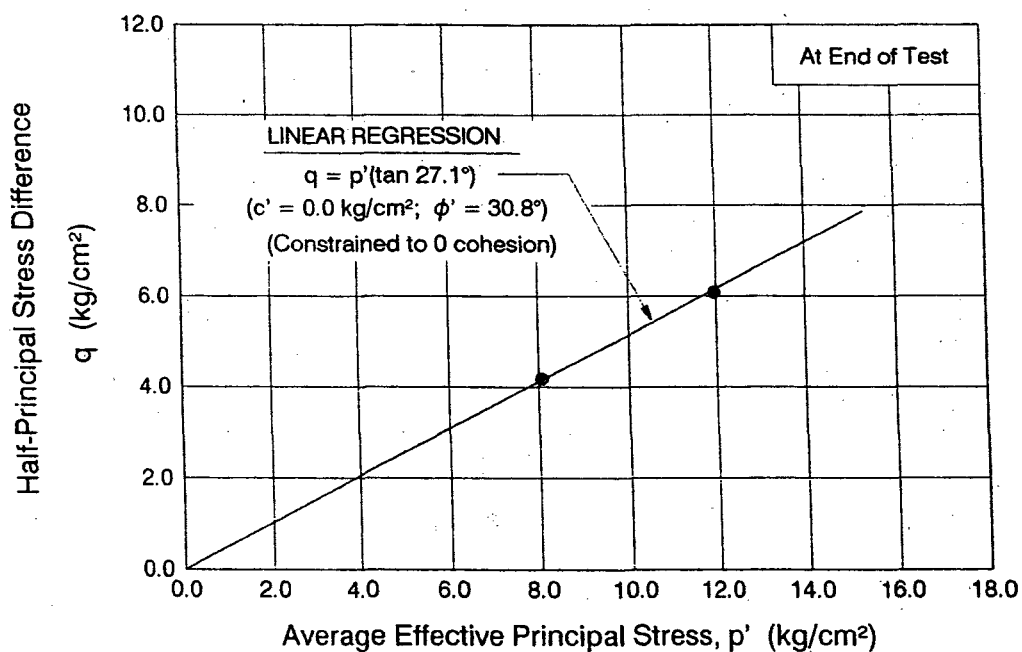
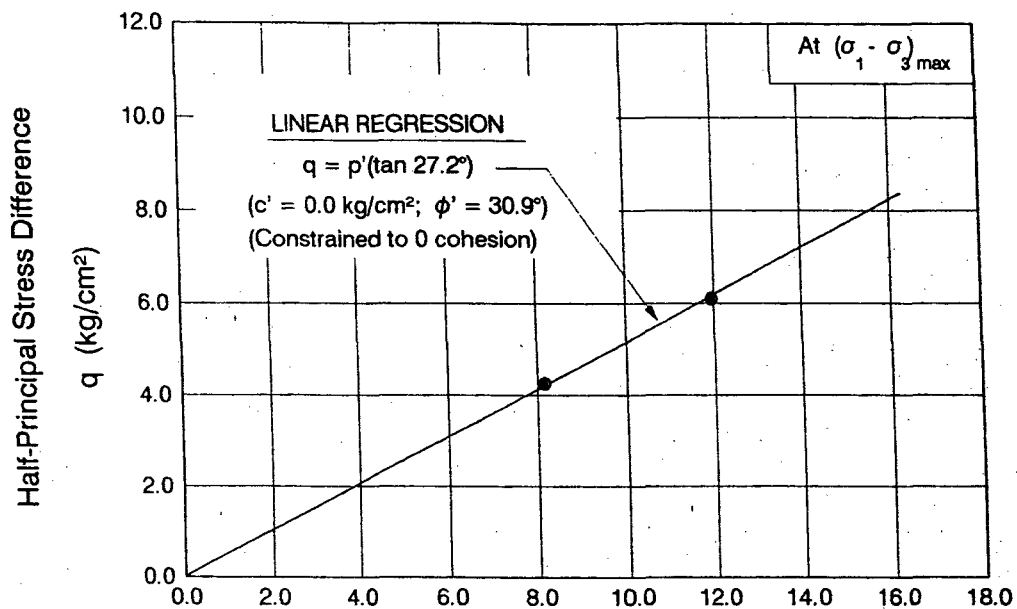
Sample	Specimen	At $(\sigma_1 - \sigma_3)_{max}$						At end of test						-200 (%)
		ϵ_a (%)	ϵ_{vol} (%)	σ_1' (kg/cm ²)	σ_3' (kg/cm ²)	p' (kg/cm ²)	q (kg/cm ²)	ϵ_a (%)	ϵ_{vol} (%)	σ_1' (kg/cm ²)	σ_3' (kg/cm ²)	p' (kg/cm ²)	q (kg/cm ²)	
Shelly Lakes Sand	1	13.5	-2.2	12.36	3.90	8.13	4.23	16.8	-2.3	12.20	3.90	8.05	4.15	7.4
	2	15.9	-2.7	18.04	5.86	11.95	6.09	15.9	-2.7	18.04	5.86	11.95	6.09	8.1

Where: ϵ_a = Axial strain; ϵ_{vol} = Volumetric strain (positive indicates expansion and negative indicates compression); σ_1' = Effective major principal stress;
 σ_3' = Effective minor principal stress; q = Half-principal stress difference $[(\sigma_1 - \sigma_3)/2]$; p' = Average effective principal stress $[(\sigma_1' + \sigma_3')/2]$; and
-200 = Fines content.



**CONSOLIDATED DRAINED TRIAXIAL COMPRESSION (CIDC)
TESTS ON COMPACTED SPECIMENS OF SHELLY LAKES SAND**

 Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants			
SOUTHEAST LANDFILL CONSOLIDATED DRAINED TRIAXIAL TESTS ERC GENERAL CONTRACTING SERVICES, INC. WINTER GARDEN, FLORIDA			
DRAWN BY: SA	CHECKED BY: SA	DATE: 04-28-05	
FILE NO.: 05-030	APPROVED BY: 	FIGURE 1	



MOHR-COULOMB FAILURE ENVELOPES FROM
CIDC TRIAXIAL COMPRESSION TESTS ON
COMPACTED SPECIMENS OF SHELLY LAKES SAND

 Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants			
SOUTHEAST LANDFILL CONSOLIDATED DRAINED TRIAXIAL TESTS ERC GENERAL CONTRACTING SERVICES, INC. WINTER GARDEN, FLORIDA			
DRAWN BY: SA	CHECKED BY: SA	DATE: 04-28-05	
FILE NO: 05-030	APPROVED BY: 	FIGURE: 2	

ARDAMAN & ASSOCIATES
GEOCOMPOSITE/GEOMEMBRANE
(2 OF 3)



Ardaman & Associates, Inc.

Geotechnical, Environmental and
Materials ConsultantsApril 11, 2005
File Number 05-030

ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, Florida 34787

Attention: Mr. Nestor Reyes

Subject: Interface Resistance Between Geonet/Geotextile Composite and Textured 60-mil HDPE
Geomembrane, Southeast Landfill Project

Gentlemen:

As requested, direct shear tests have been performed to measure the interface resistance between samples of geonet/geotextile (colored orange) composite and textured 60-mil HDPE geomembrane.

Geocomposite and Textured Geomembrane Samples

A geonet/geotextile composite sample was received on February 14, 2005. The rolled geocomposite sample was labeled TENAX Tendrain 770-2 (Rolls 4504021 and 4504095). A textured 60-mil geomembrane sample was received from GSE Lining Technology, Inc. and was labeled Roll 102115586.

Direct Shear Tests

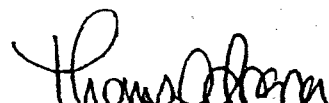
Five direct shear tests were performed in general accordance with ASTM Standard D 5321 "Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method" (Procedure A). Samples of the textured geomembrane with dimensions of 14 inches by 20 inches were clamped to the lower portion of the direct shear apparatus for testing in the machine direction. The geocomposite was bonded to the one 1-inch thick plexiglass plate in the upper 12 inch by 12 inch square portion of the apparatus. Normal stresses of approximately 10, 21, 42, 83 and 120 lb/in² were applied, and the interface was submerged below water. After a 24 hour stabilization period, the interface was sheared at a constant horizontal displacement rate of 0.04 inches/minute.

The test results are presented in the attached table. The normalized shear stress ratio (i.e., the ratio of the shear stress to the normal stress) versus horizontal displacement for the tests are plotted in Figures 1 through 5. The peak shear stress versus the normal stress are presented in Figure 6. The Mohr-Coulomb failure envelopes at peak shear stress and at the end of the test based on linear regression of the measured data are also plotted in Figure 6.

If you have any questions about the test results or require additional testing services, please contact us.

Very truly yours,
ARDAMAN & ASSOCIATES, INC.


Shawkat Ali, Ph.D., P.E.
Quality Control Manager


Thomas S. Ingra, P.E.
Laboratory Director
Florida Registration No. 31987

ARDAMAN & ASSOCIATES, INC. GEOSYNTHETICS LABORATORY

INTERFACE DIRECT SHEAR TEST REPORT
ASTM STANDARD D 5321

CLIENT: ERC General Contracting Services, Inc.

PROJECT: SE Landfill Liner Testing

FILE NO.: 05-030

DATE REPORTED: 04/11/05

METHOD:

☒ PROCEDURE A - GEOSYNTHETIC & GEOSYNTHETIC

☐ PROCEDURE B - SOIL & GEOSYNTHETIC

TEST CONDITIONS: ☐ DRY ☒ SUBMERGED

UPPER MATERIAL

DESCRIPTION: Tenax Tendrain 770-2

INCOMING SAMPLE NO.: Rolls 4504021 & 4504095

LABORATORY IDENTIFICATION NO.: 05030/GT

LOWER MATERIAL

DESCRIPTION: GSE Textured 60-mil HDPE Geomembrane

INCOMING SAMPLE NO.: Roll 102115586

LABORATORY IDENTIFICATION NO.: 05030/GM

STABILIZATION PERIOD: 24 HOURS

DISPLACEMENT RATE: 0.04 INCH/MINUTE

Test	Soil Conditions				Normal stress, σ_n (lb/in ²)	Peak Interface Resistance			Interface Resistance at End of Test		
	Initial		Final			τ/σ_n	γ_n (inches)	δ (deg.)	τ/σ_n	γ_n (inches)	δ (deg.)
	w_c (%)	γ_d (pcf)	w_c (%)	γ_d (pcf)							
1	—	—	—	—	10.1	0.46	0.23	24.6	0.29	2.81	16.1
2	—	—	—	—	21.0	0.43	0.55	23.2	0.26	2.48	14.8
3	—	—	—	—	41.8	0.41	0.23	22.5	0.22	2.97	12.6
4	—	—	—	—	83.3	0.43	0.24	23.2	0.21	2.82	11.8
5	—	—	—	—	120.4	0.39	0.24	21.4	0.20	2.98	11.4

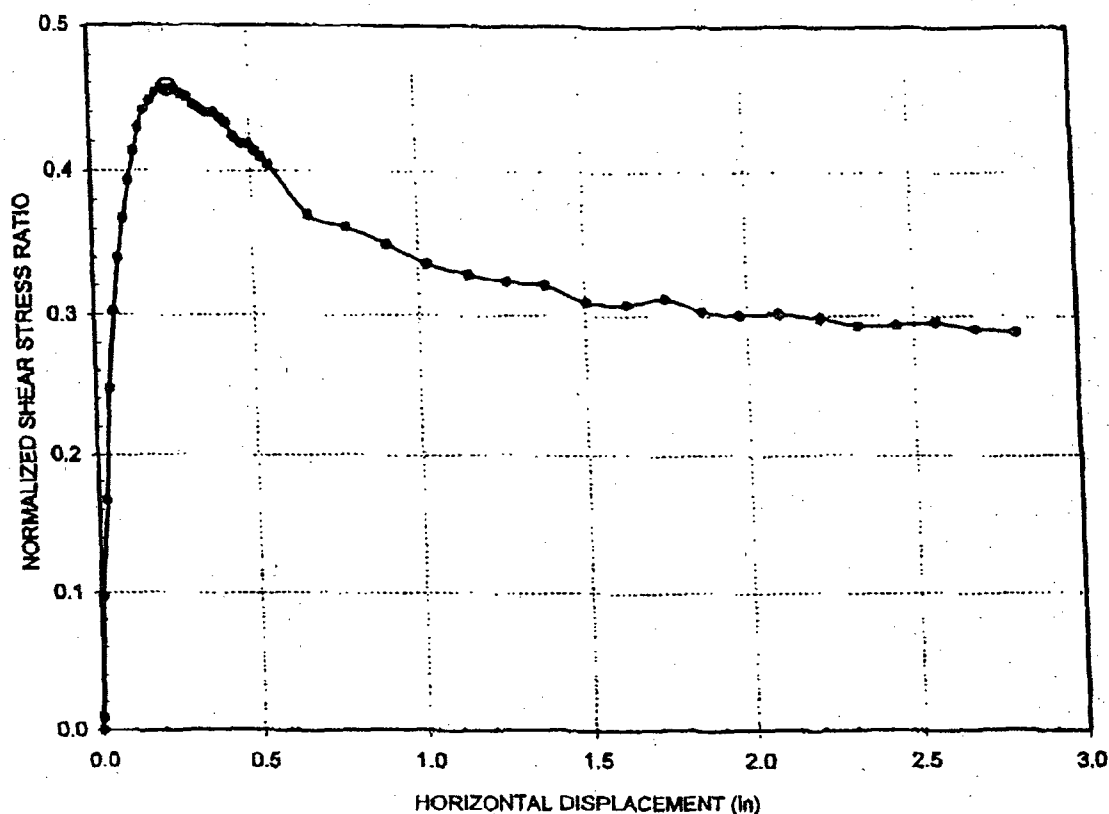
Comments: Tests performed using Brinard-Killman device with 5000 lb load cell, 4" DCCT and 200 psi pressure transducer. Textured geomembrane clamped in MD to lower 14" x 20" friction plate of device. Geocomposite bonded to 1-inch thick plate in the upper 12" x 12" square portion of the apparatus in MD.

The test data and all associated project information presented hereon shall be held in confidence and disclosed to other parties only with the authorization of the Client or Ardaman & Associates, Inc. Physical and electronic records of each project are kept for a minimum of 7 years. Test samples are kept in storage for at least 10 working days after mailing of the test report, prior to being discarded, unless a longer storage period is requested in writing and accepted by Ardaman & Associates, Inc.

Where: w_c = Moisture content; γ_d = Dry density; σ_n = Normal stress; τ = Shear stress; γ_n = Horizontal displacement; and δ = Interface friction angle in degrees calculated assuming zero adhesion.

Checked By: TM

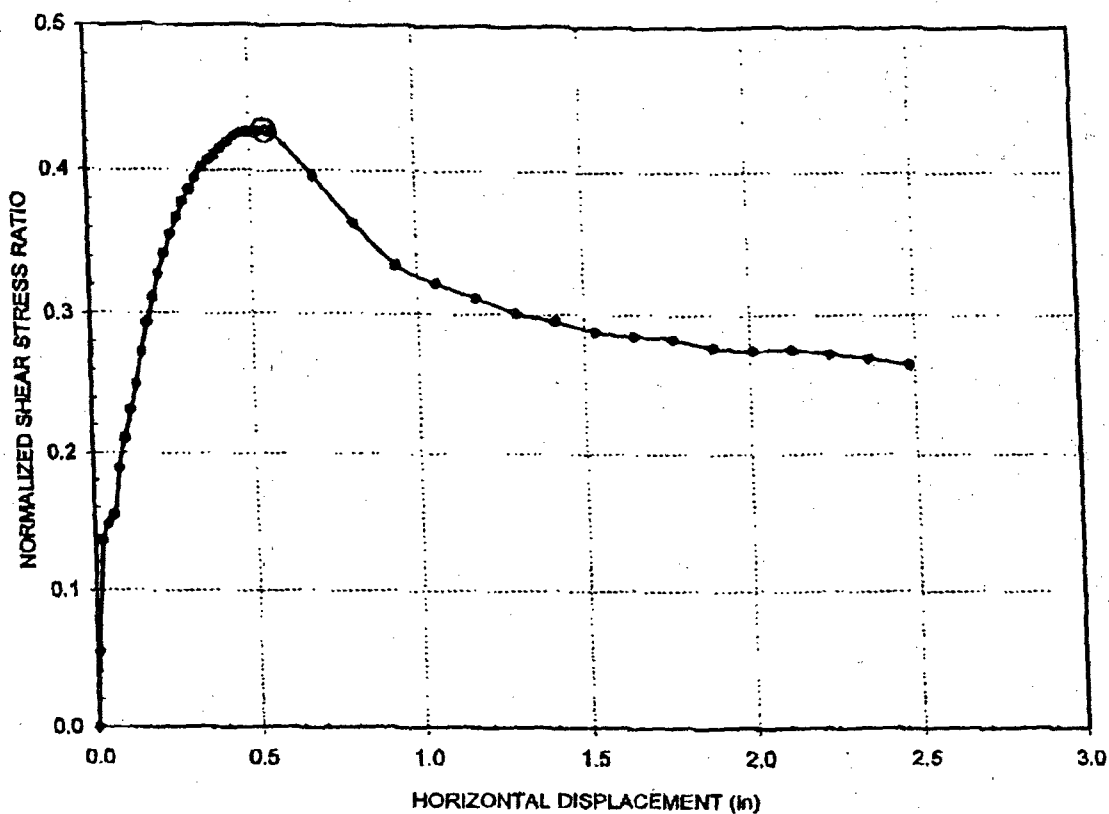
Date: 04/11/05



**DIRECT SHEAR TEST OF TENAX TENDRAIN 770-2 GEOCOMPOSITE
AND TEXTURED 60-MIL HDPE GEOMEMBRANE INTERFACE**

Normal Stress (lb/in²) 10.1
Displacement Rate (in/min) 0.04
Peak Friction Angle ° 24.6

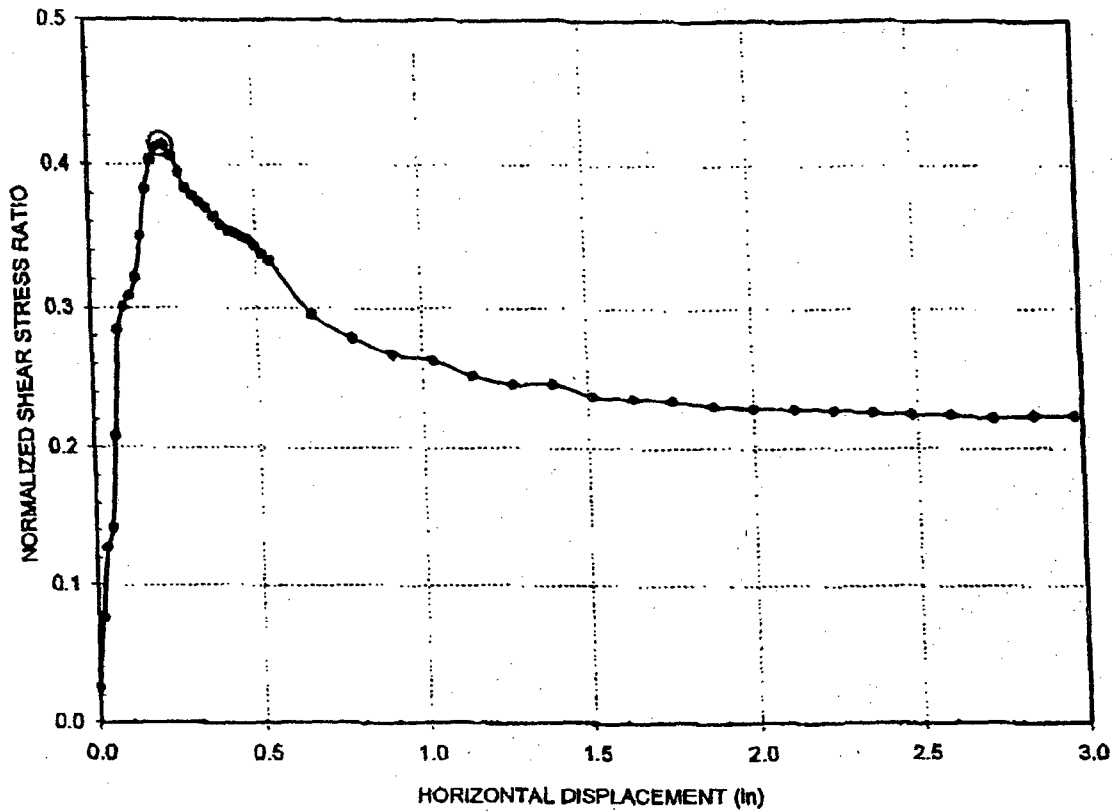
			
Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants			
SOUTHEAST LANDFILL LINER INTERFACE DIRECT SHEAR TESTS			
ERC GENERAL CONTRACTING SERVICES, INC.			
DRAWN BY	SA	CHECKED BY: SA	DATE 04.11.05
FILE NO:	05-030	APPROVED BY 	FIGURE: 1



DIRECT SHEAR TEST OF TENAX TENDRAIN 770-2 GEOCOMPOSITE AND TEXTURED 60-MIL HDPE GEOMEMBRANE INTERFACE

Normal Stress (lb/in²) 21.0
 Displacement Rate (in/min) 0.04
 Peak Friction Angle ° 23.2

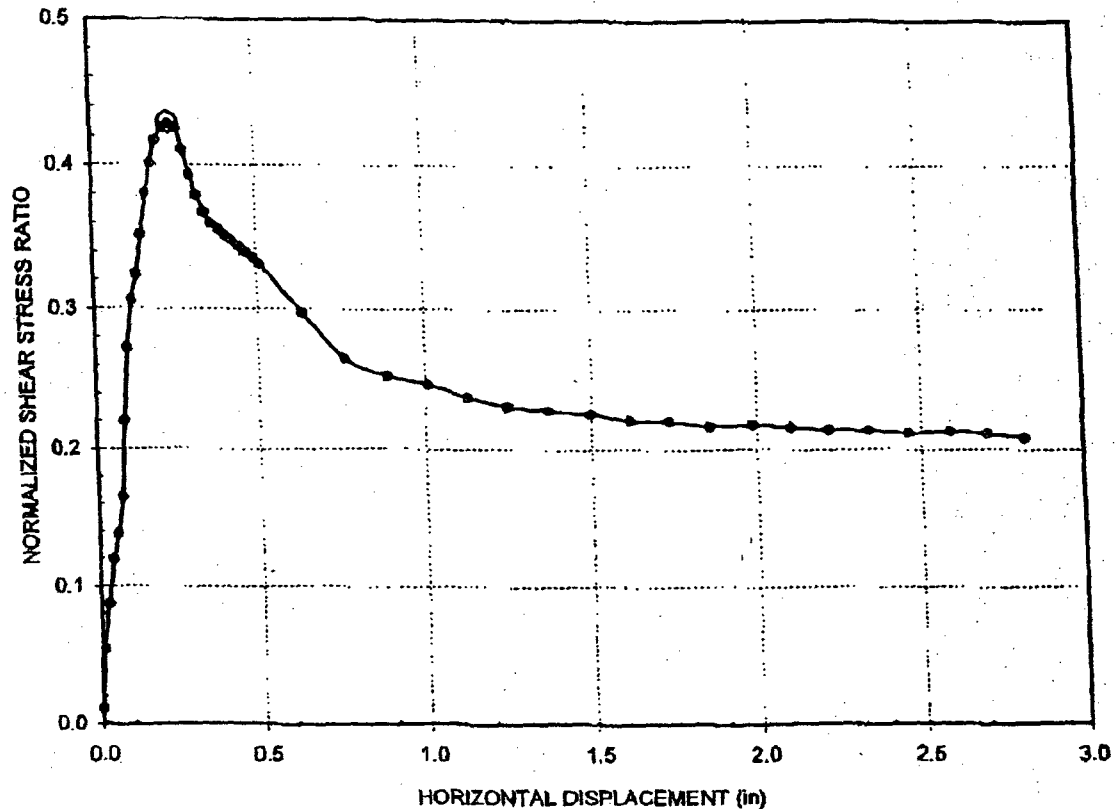
 Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants			
SOUTHEAST LANDFILL LINER INTERFACE DIRECT SHEAR TESTS ERC GENERAL CONTRACTING SERVICES, INC.			
DRAWN BY: SA	CHECKED BY: SA	DATE: 04.11.05	
FILE NO.: 85-039	APPROVED BY: 	FIGURE: 2	



DIRECT SHEAR TEST OF TENAX TENDRAIN 770-2 GEOCOMPOSITE AND TEXTURED 60-MIL HDPE GEOMEMBRANE INTERFACE

Normal Stress (lb/in²) 41.8
 Displacement Rate (in/min) 0.04
 Peak Friction Angle ° 22.5

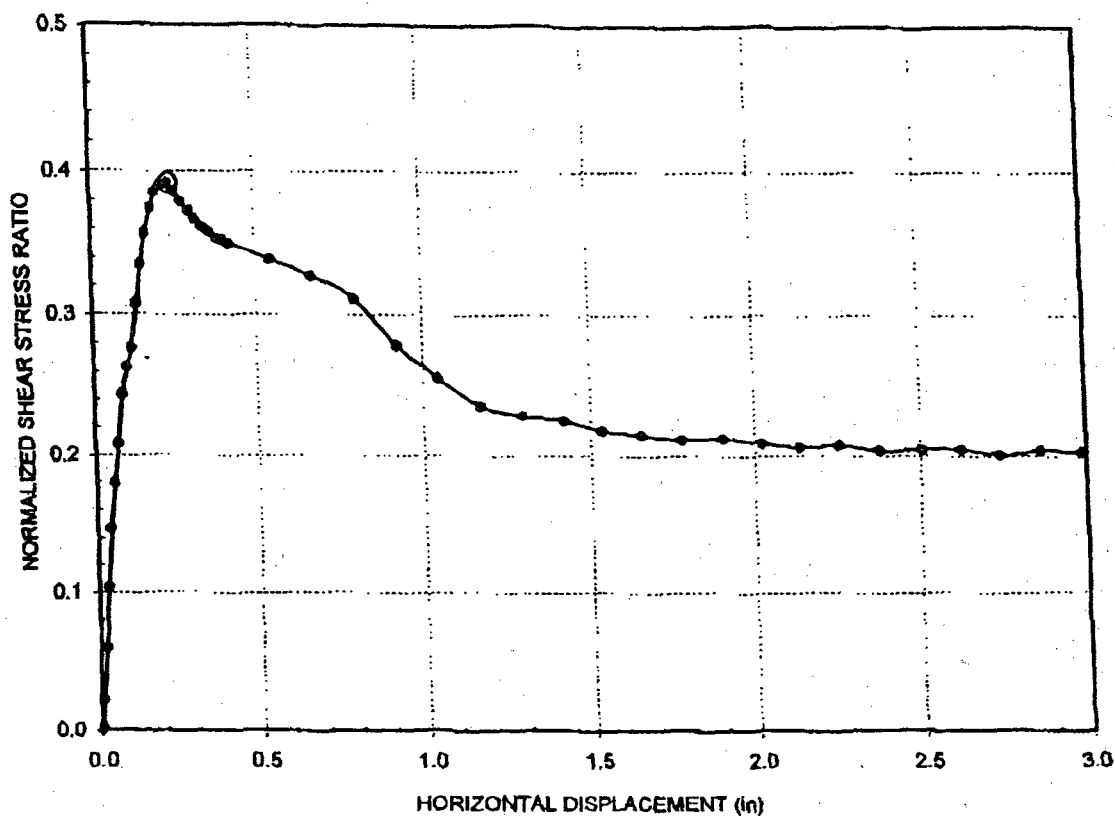
 Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants			
SOUTHEAST LANDFILL LINER INTERFACE DIRECT SHEAR TESTS			
ERC GENERAL CONTRACTING SERVICES, INC.			
DRAWN BY	SA	CHECKED BY	SA
FILE NO.	08-036	APPROVED BY.	TM
DATE 04-11-05		FIGURE 3	



DIRECT SHEAR TEST OF TENAX TENDRAIN 770-2 GEOCOMPOSITE AND TEXTURED 60-MIL HDPE GEOMEMBRANE INTERFACE

Normal Stress (lb/in²) 83.3
 Displacement Rate (in/min) 0.04
 Peak Friction Angle ° 23.2

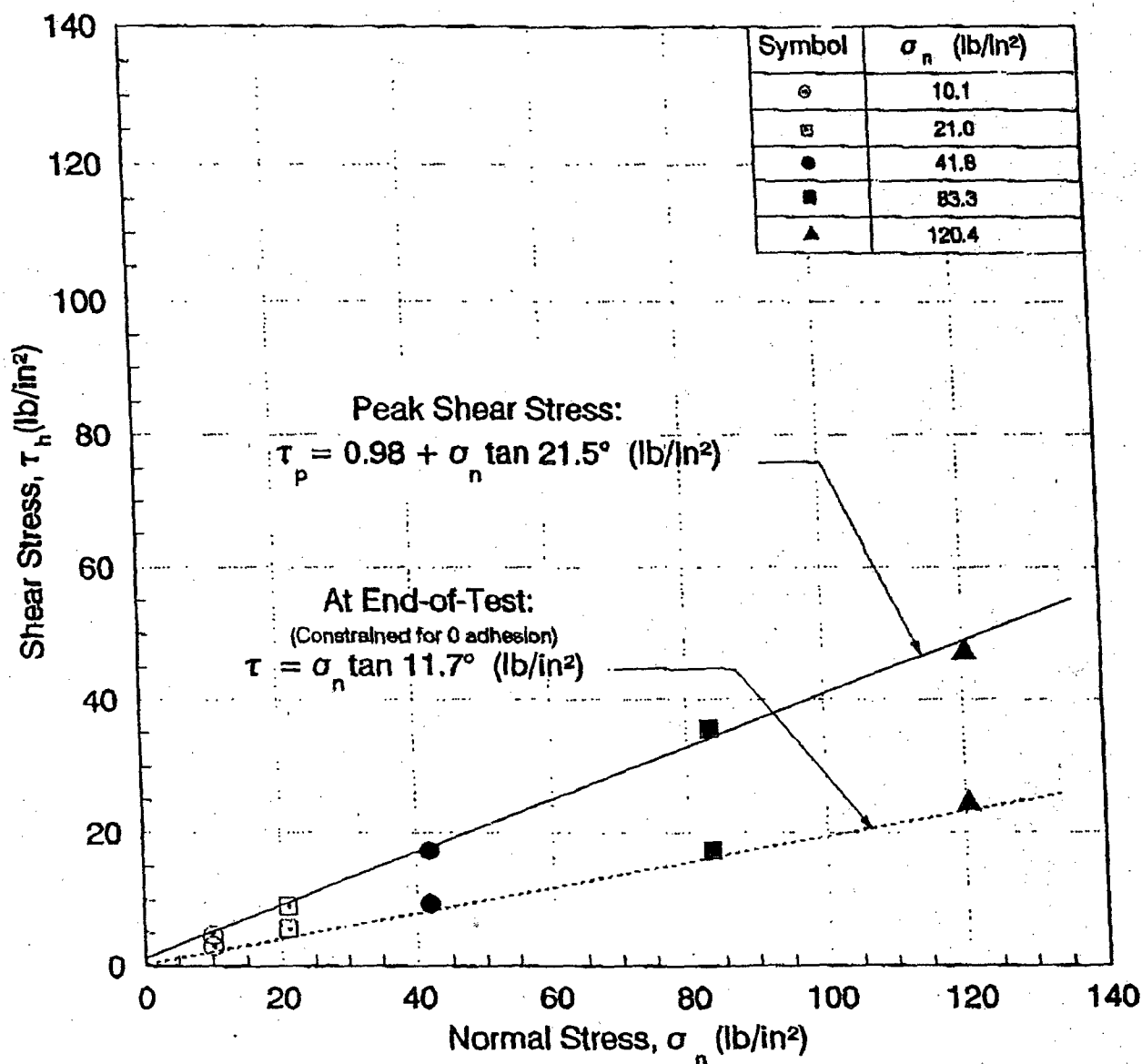
 Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants		
SOUTHEAST LANDFILL LINER INTERFACE DIRECT SHEAR TESTS		
ERC GENERAL CONTRACTING SERVICES, INC.		
DRAWN BY: SA	CHECKED BY: SA	DATE: 04-11-05
FILE NO.: 08-030	APPROVED BY: 	FIGURE: 4



DIRECT SHEAR TEST OF TENAX TENDRAIN 770-2 GEOCOMPOSITE AND TEXTURED 60-MIL HDPE GEOMEMBRANE INTERFACE

Normal Stress (lb/in²) 120.4
 Displacement Rate (in/min) 0.04
 Peak Friction Angle° 21.4

 Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants			
SOUTHEAST LANDFILL LINER INTERFACE DIRECT SHEAR TESTS			
ERC GENERAL CONTRACTING SERVICES, INC.			
DRAWN BY: SA	CHECKED BY: SA	DATE: 04-11-05	
FILE NO. 06-030	APPROVED BY: 	FIGURE 5	



**MOHR-COULOMB FAILURE ENVELOPE FROM INTERFACE
DIRECT SHEAR TESTS BETWEEN TENAX TENDRAIN 770-2
AND TEXTURED 60-MIL HDPE GEOMEMBRANE**

 Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants		
SOUTHEAST LANDFILL LINER INTERFACE DIRECT SHEAR TESTS		
ERC GENERAL CONTRACTING SERVICES, INC. WINTER GARDEN, FLORIDA		
DRAWN BY: SA	CHECKED BY: SA	DATE: 04-11-05
FILE NO.: 05-030	APPROVED BY: 	FIGURE: 6

ARDAMAND & ASSOCIATES

SUBBASE/GEOMEMBRANE

(3 OF 3)

Ardaman & Associates, Inc.Geotechnical, Environmental and
Materials ConsultantsApril 5, 2005
File Number 05-030

ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, Florida 34787

Attention: Mr. Nestor Reyes

Subject: Interface Resistance Between Textured 60-mil HDPE Geomembrane and
McKintosh Pit Clayey Sand, Southeast Landfill Project

Gentlemen:

As requested, direct shear tests have been performed to measure the interface resistance between samples of textured 60-mil HDPE geomembrane and the McKintosh Pit clayey sand.

Soil and Textured Geomembrane Samples

The soil sample was received February 22, 2005 in a 5-gallon bucket. The sample visually classified as orange clayey fine sand. The as-received moisture content (ASTM Standard D 2216) of the sample, after homogenizing, equaled 13.8%. The particle-size distribution (ASTM D 422) of the sample is presented graphically in Figure 1. A textured 60-mil geomembrane sample was received from GSE Lining Technology, Inc. and was labeled Roll 102115586.

Standard Proctor Compaction Test

A Standard Proctor compaction test was performed on the McKintosh Pit orange clayey sand in general accordance with ASTM Standard D 698 "Laboratory Compaction Characteristics of Soils Using Standard Effort (12,400 ft-lb/ft³ (600 kN-m/m³))" using procedure A and the moist preparation method. The results of the Standard Proctor compaction test are shown in Figure 2.

Direct Shear Tests

Three direct shear tests were performed in general accordance with ASTM Standard D 5321 "Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method" (Procedure B). Samples of the textured geomembrane with dimensions of 14 inches by 20 inches were clamped to the lower portion of the direct shear apparatus for testing in the machine direction. The clayey sand was compacted in one 1-inch thick lift in the upper 12 inch by 12 inch square portion of the apparatus above the top surface of the textured geomembrane at a moisture content of 16.9% (Standard Proctor optimum moisture content) to a target dry density of 105.8 lb/ft³ (corresponding to 95% of the Standard Proctor maximum dry density). As requested, normal stresses of approximately 7, 35 and 70 lb/in² were applied, and the interface was submerged below water. After a minimum stabilization period of twenty four hours, the interface was sheared at a constant horizontal displacement rate of 0.04 inches/minute.

The test results are presented in the attached table. The normalized shear stress ratio (i.e., the ratio of the shear stress to the normal stress) versus horizontal displacement for the tests are plotted in Figures 3 through 5. The peak shear stress versus the normal stress are presented

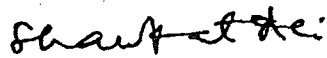
ERC General Contracting Services, Inc.
File Number 05-030

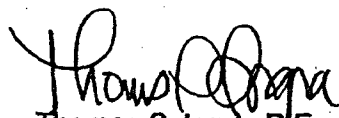
-2-

in Figure 6. The Mohr-Coulomb failure envelopes at peak shear stress and at the end of the test based on linear regression of the measured data are also plotted in Figure 6.

If you have any questions about the test results or require additional testing services, please contact us.

Very truly yours,
ARDAMAN & ASSOCIATES, INC.


Shawkat Ali, Ph.D., P.E.
Quality Control Manger


Thomas S. Ingra, P.E.
Laboratory Director
Florida Registration No. 31987

ARDAMAN & ASSOCIATES, INC. GEOSYNTHETICS LABORATORY

INTERFACE DIRECT SHEAR TEST REPORT ASTM STANDARD D 5321

CLIENT: ERC General Contracting Services, Inc.

PROJECT: SE Landfill Liner Testing

FILE NO.: 05-030

DATE REPORTED: 04/05/05

METHOD:

- ☐ PROCEDURE A - GEOSYNTHETIC & GEOSYNTHETIC
☒ PROCEDURE B - SOIL & GEOSYNTHETIC

TEST CONDITIONS: ☐ DRY ☒ SUBMERGED

UPPER MATERIAL

DESCRIPTION: Orange Clayey Sand

INCOMING SAMPLE NO.: McKintosh Pit Sample

LABORATORY IDENTIFICATION NO.: 05030/Soil 1

LOWER MATERIAL

DESCRIPTION: Textured 60-mil HDPE Geomembrane

INCOMING SAMPLE NO.: Roll 102115586

LABORATORY IDENTIFICATION NO.: 05030/GM

STABILIZATION PERIOD: 24 HOURS

DISPLACEMENT RATE: 0.04 INCH/MINUTE

Test	Soil Conditions				Normal stress, σ_n (lb/in ²)	Peak Interface Resistance			Interface Resistance at End of Test		
	Initial		Final			τ/σ_n	γ_h (inches)	ϕ_i (deg.)	τ/σ_n	γ_h (inches)	ϕ_i (deg.)
	w _c (%)	γ_d (pcf)	w _c (%)	γ_d (pcf)							
1	17.1	105.8	21.6	—	7.0	0.71	1.08	35.5	0.62	2.75	31.8
2	17.2	105.8	18.6	—	35.0	0.55	1.87	28.6	0.54	2.35	28.6
3	16.7	105.8	21.8	—	70.0	0.50	1.72	26.6	0.48	2.80	25.6

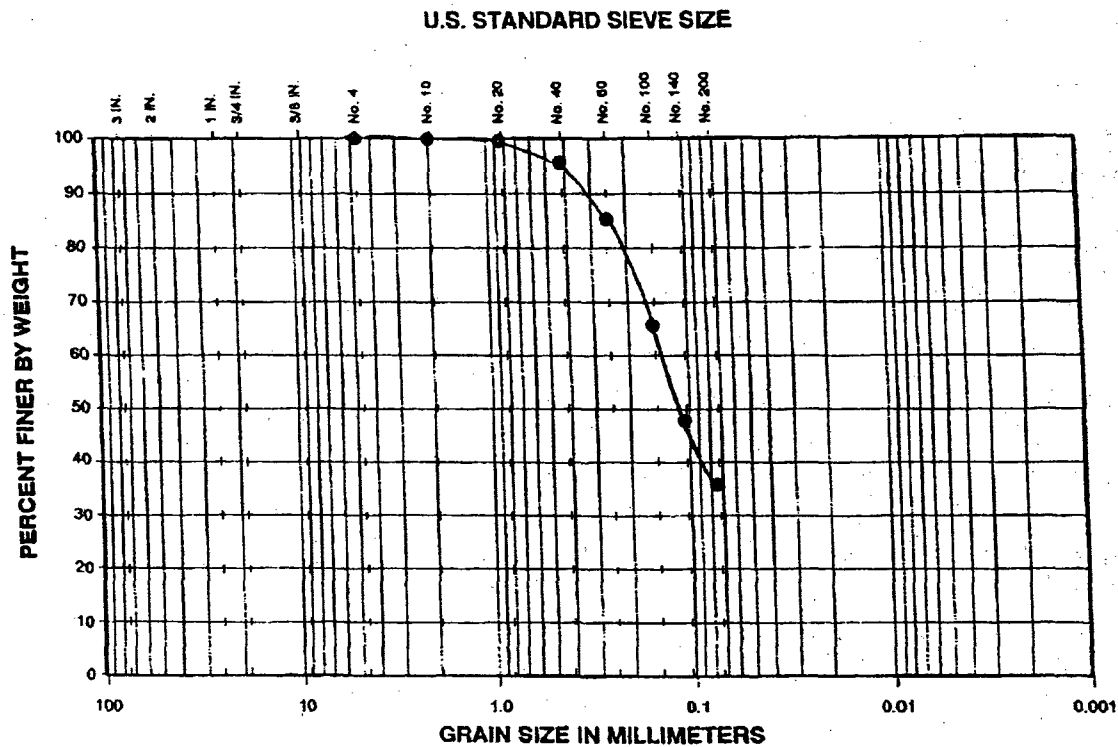
Comments: 1) Final w_c (ASTM D 2216) for clayey sand from average of 3 specimens.
2) Tests performed using Brinard-Killman device with 5000 lb load cell, 4" DCDT and 200 psi pressure transducer. Textured geomembrane clamped in MD to lower 14" x 20" friction plate of device. Soil compacted in 1-inch thick lift in the upper 12" x 12" square portion of the apparatus.

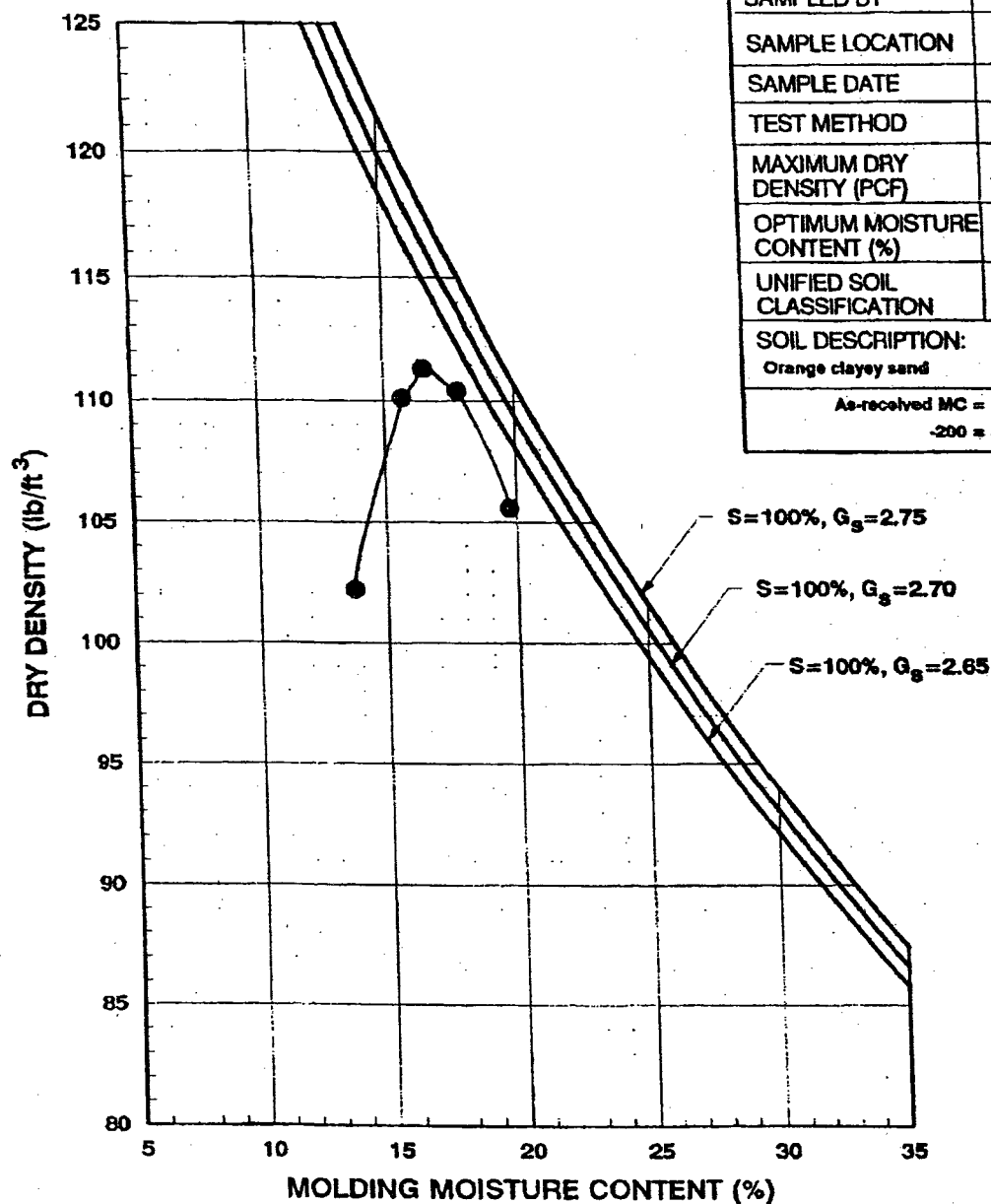
The test data and all associated project information presented hereon shall be held in confidence and disclosed to other parties only with the authorization of the Client or Ardaman & Associates, Inc. Physical and electronic records of each project are kept for a minimum of 7 years. Test samples are kept in storage for at least 10 working days after mailing of the test report, prior to being discarded, unless a longer storage period is requested in writing and accepted by Ardaman & Associates, Inc.

Where: w_c = Moisture content; γ_d = Dry density; σ_n = Normal stress; τ = Shear stress; γ_h = Horizontal displacement; and ϕ_i = Interface friction angle in degrees calculated assuming zero adhesion.

Checked By: SA

Date: 04/05/05

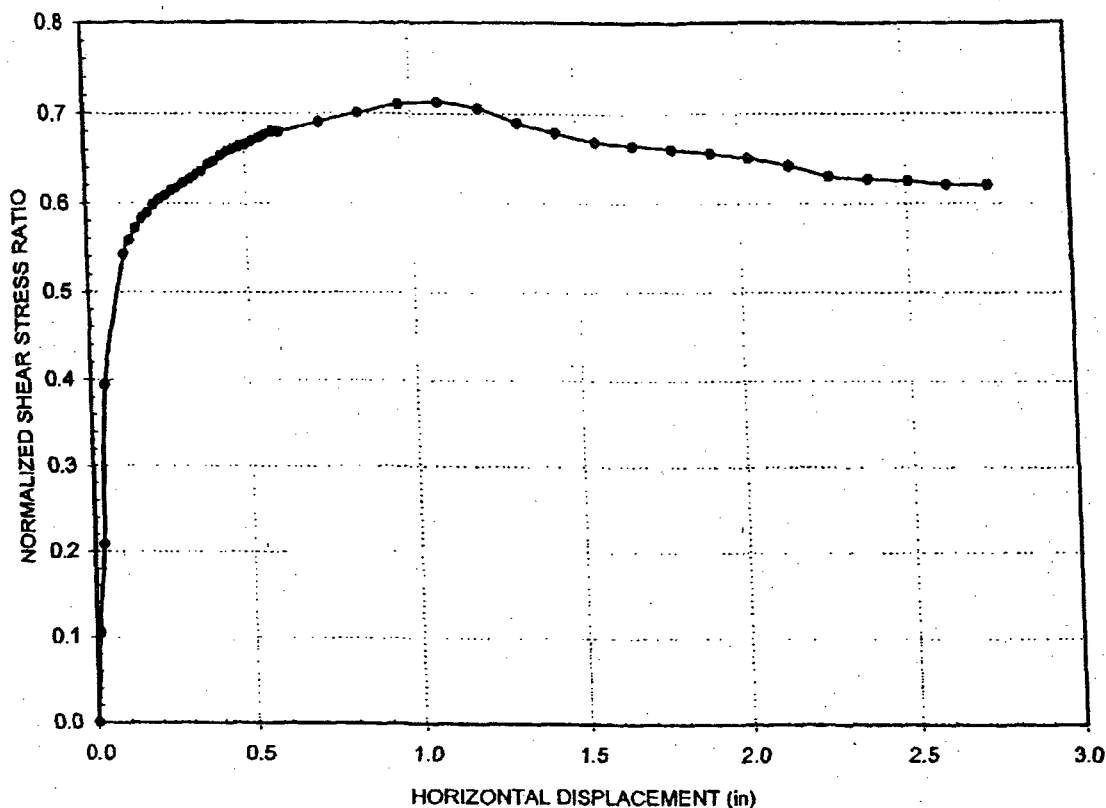


**SUMMARY OF TEST RESULTS**

SAMPLE NO.	McKINTOSH PIT
SAMPLED BY	--
SAMPLE LOCATION	--
SAMPLE DATE	--
TEST METHOD	ASTM D-698
MAXIMUM DRY DENSITY (PCF)	111.4
OPTIMUM MOISTURE CONTENT (%)	16.9
UNIFIED SOIL CLASSIFICATION	SC
SOIL DESCRIPTION: Orange clayey sand	
As-received MC = 13.8%	
-200 = 35.9%	

**STANDARD PROCTOR COMPACTION TEST ON
McKINTOSH PIT CLAYEY SAND**

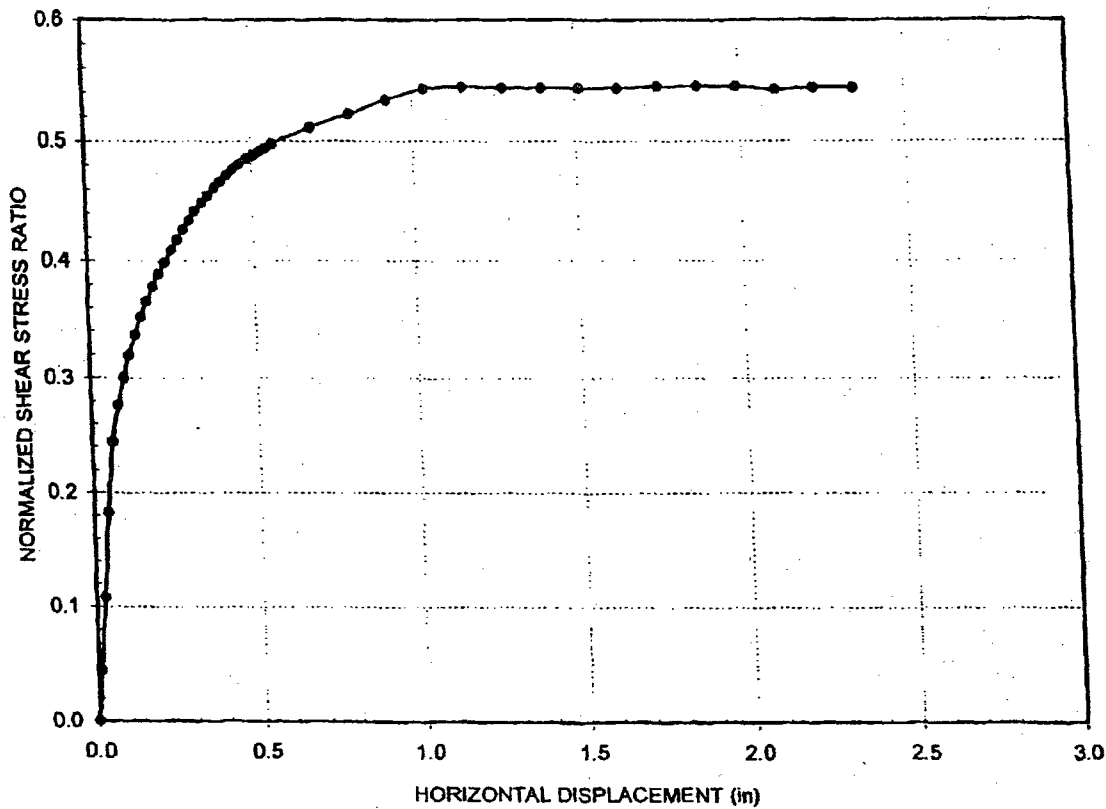
 Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants			
SOUTHEAST LANDFILL LINER INTERFACE DIRECT SHEAR TESTS			
ERC GENERAL CONTRACTING SERVICES, INC. WINTER GARDEN, FLORIDA			
DRAWN BY: SA	CHECKED BY: SA	DATE: 04-05-05	
FILE NO: 05-030	APPROVED BY: 	FIGURE: 2	



DIRECT SHEAR TEST OF TEXTURED 60-MIL HDPE GEOMEMBRANE AND MCKINTOSH PIT CLAYEY SAND INTERFACE

Normal Stress (lb/in²) 7.0
 Displacement Rate (in/min) 0.04
 Peak Friction Angle ° 35.5

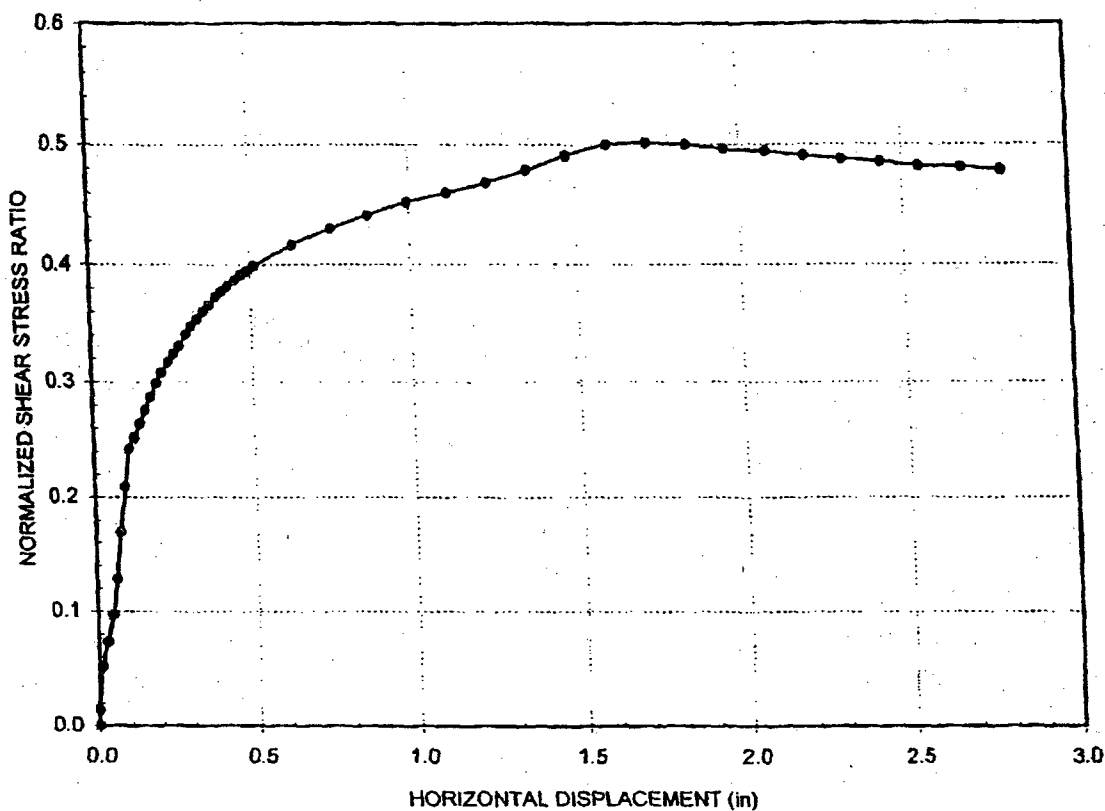
 Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants			
SOUTHEAST LANDFILL			
LINER INTERFACE DIRECT SHEAR TESTS			
ERC GENERAL CONTRACTING SERVICES, INC.			
DRAWN BY: SA	CHECKED BY: SA	DATE	04-05-05
FILE NO 05-030	APPROVED BY: 	FIGURE 3	



DIRECT SHEAR TEST OF TEXTURED 60-MIL HDPE GEOMEMBRANE AND McKINTOSH PIT CLAYEY SAND INTERFACE

Normal Stress (lb/in²) 35.0
 Displacement Rate (in/min) 0.04
 Peak Friction Angle° 28.6

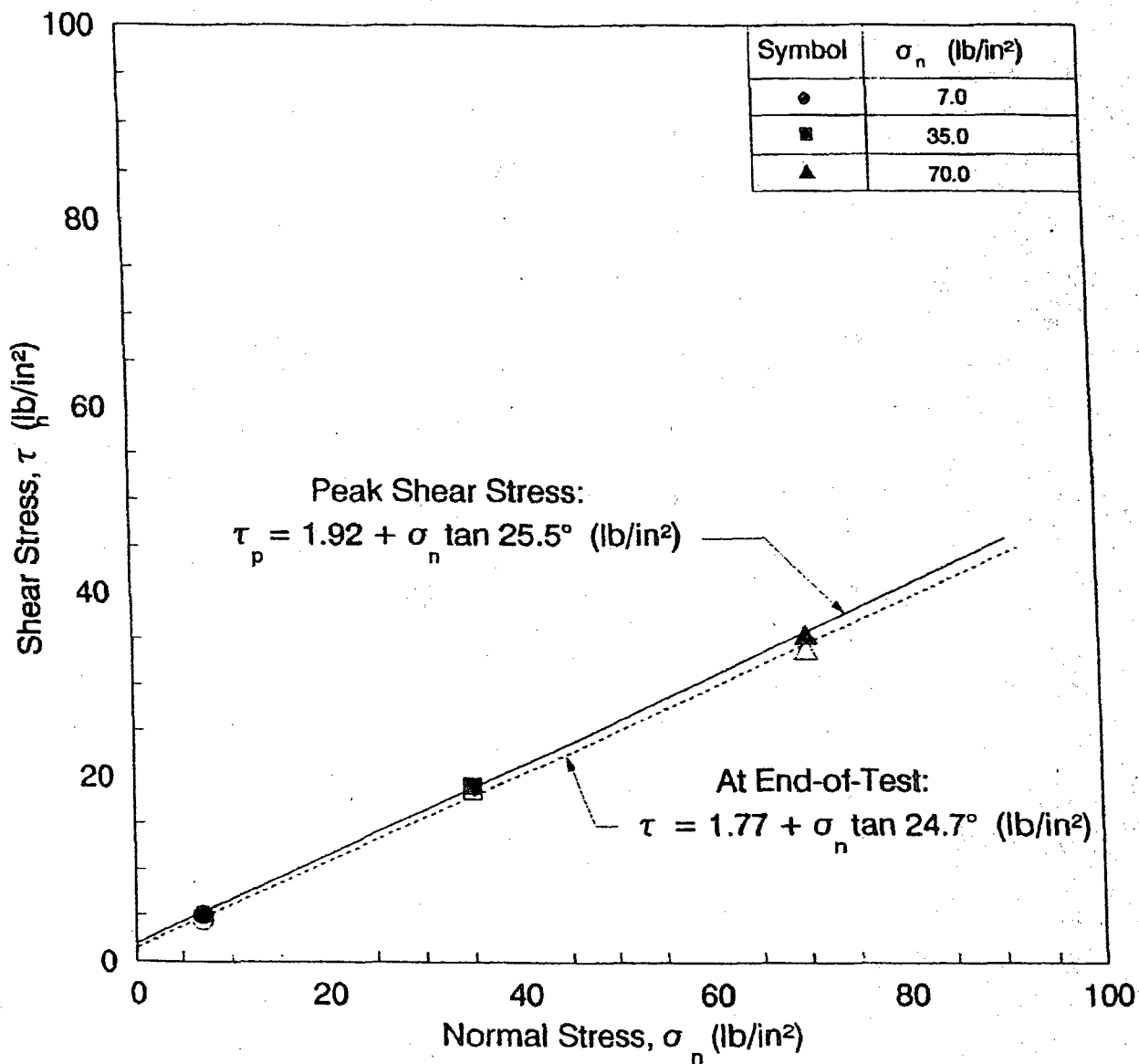
Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants			
SOUTHEAST LANDFILL LINER INTERFACE DIRECT SHEAR TESTS			
ERC GENERAL CONTRACTING SERVICES, INC.			
DRAWN BY	SA	CHECKED BY	SA
		DATE 04-05-05	
FILE NO.	APPROVED BY:		FIGURE
05-030			4



DIRECT SHEAR TEST OF TEXTURED 60-MIL HDPE GEOMEMBRANE AND McKINTOSH PIT CLAYEY SAND INTERFACE

Normal Stress (lb/in²) 70.0
 Displacement Rate (in/min) 0.04
 Peak Friction Angle ° 26.6

Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants		
SOUTHEAST LANDFILL LINER INTERFACE DIRECT SHEAR TESTS ERC GENERAL CONTRACTING SERVICES, INC.		
DRAWN BY: SA	CHECKED BY: SA	DATE: 04-05-05
FILE NO. 05-030	APPROVED BY: <i>[Signature]</i>	FIGURE 5



**MOHR-COULOMB FAILURE ENVELOPE FROM INTERFACE
DIRECT SHEAR TESTS BETWEEN TEXTURED 60-MIL HDPE
GEOMEMBRANE AND McKINTOSH PIT CLAYEY SAND**

 Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants			
SOUTHEAST LANDFILL LINER INTERFACE DIRECT SHEAR TESTS ERC GENERAL CONTRACTING SERVICES, INC. WINTER GARDEN, FLORIDA			
DRAWN BY: SA	CHECKED BY: SA	DATE: 04-05-05	
FIG. NO. 05-030	APPROVED BY: 	FIGURE: 6	

SECTION 7

INSTALLATION OF DRAINAGE SAND, PIPES, BALL PLUG VALVE

7.1 DRAINAGE SAND INSTALLATION

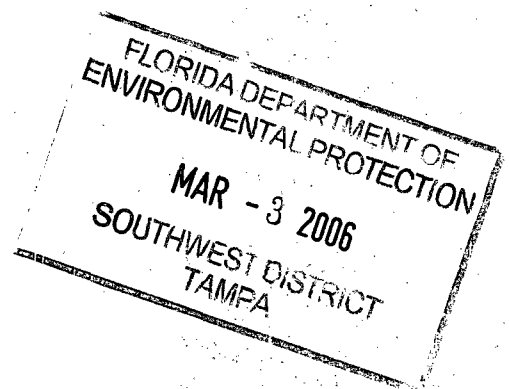
The permeability of the installed drainage sand varied from 1.4×10^{-3} to 5.8×10^{-3} centimeters per second (cm/s). The minimum permeability per specification is 1.0×10^{-3} cm/s. The permeability and sieve analyses of the drainage sand are contained in Attachment 7-1 in this section.

7.2 PIPES

Quality Control Certifications for the HDPE pipe used in the collection / detection system can be found in Attachment 7-2 in this section.

7.3 BALL PLUG VALVE

The shop drawing submittal for the ball plug valve is located in Attachment 7-3.

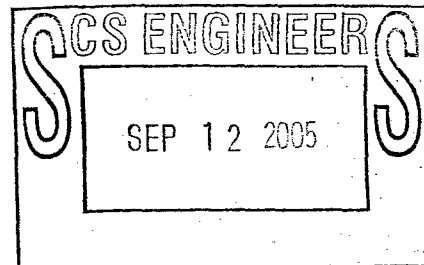


ATTACHMENT 7-1

DRAINAGE SAND

PSI

DRAINAGE SAND (CQA)



September 8, 2005

Mr. Joe O'Neill
SCS Engineers
3012 U.S. Highway 301 N., Suite 700
Tampa, Florida 33619

SUBJECT: Capacity Expansion Section 8 - Drainage Sand
Southeast County Landfill, Hillsborough County, Florida
PSI Project No. 783-50139

Dear Mr. O'Neill:

This letter forwards the results of the standard proctor (ASTM D698), falling head permeability (ASTM D2434) and the grain size analysis (ASTM D422) tests performed on the soil samples obtained for the Southeast County Landfill project in Hillsborough County, Florida and submitted to our lab. Table #1 below and the attached curves summarizes the results of the testing.

TABLE #1

Sample #	Location	Sample Description	% Fines -200	Maximum Dry Density & Optimum Moisture Content	Percent Compaction	Permeability
1	Shelly Lake Mines North Pit	Tan/Brown Sand	3.2	103.5 lbs/ft ³ @ 17% Moisture	95.0%	1.4 x 10 ⁻³ cm/sec
2	Shelly Lake Mines South Pit	Grey Sand	2.9	106.5 lbs/ft ³ @ 13% Moisture	95.0%	5.8 x 10 ⁻³ cm/sec

We understand that project specifications for filter media require a minimum permeability rate of 1x10⁻³ cm/sec. Based on the results of the permeability testing, the soil samples tested exceed this project specification.

We hope this letter provides sufficient information for the present. If you have any questions or comments, please feel free to call.

Sincerely,
PROFESSIONAL SERVICE INDUSTRIES, INC.

A handwritten signature in cursive script, appearing to read "Arthur C. Garza".

ARTHUR C. GARZA
Construction Services Manager

REPORT OF MOISTURE DENSITY RELATIONSHIP OF SOIL

TESTED FOR: JOE N'NEILL
SCS ENGINEERS
3012 U.S. HWY 301 N. SUITE 700
TAMPA, FL 33619

PROJECT: HILLSBOROUGH COUNTY SOUTHEAST
LANDFILL

DATE: September 08, 2005

OUR REPORT NO.: 783-50139-3

TEST DATA

Visual Classification TAN/BROWN SAND (STD)

Sample Source SHELLY LAKE MINES, NORTH PIT

Method of Test ASTM D698 METHOD A

Rammer: Manual

Method of Preparation: Moist

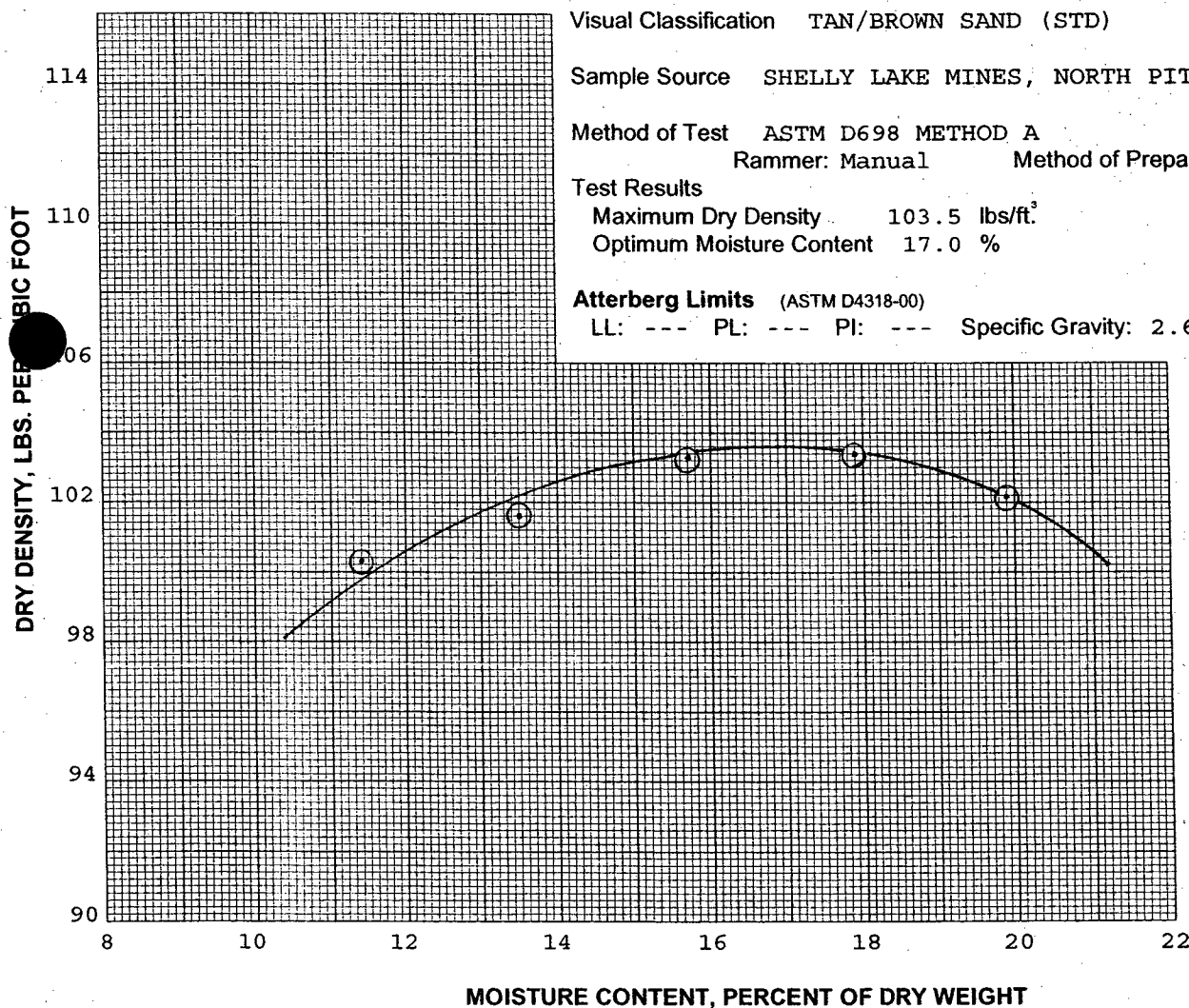
Test Results

Maximum Dry Density 103.5 lbs/ft.³

Optimum Moisture Content 17.0 %

Atterberg Limits (ASTM D4318-00)

LL: --- PL: --- PI: --- Specific Gravity: 2.60 (estimate)



Grain Size Analysis
(ASTM C136-01 and/or C117-95)
Sieve Size Percent Passing

REMARKS:

Lab Tech: DAVID HILL

Respectfully submitted,
Professional Service Industries, Inc.

Arthur C. Garza
ARTHUR C. GARZA
PROJECT MANAGER

REPORTS MAY NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT WRITTEN PERMISSION BY PROFESSIONAL SERVICE INDUSTRIES, INC.

REPORT OF MOISTURE DENSITY RELATIONSHIP OF SOIL

ESTED FOR: JOE N'NEILL
SCS ENGINEERS
3012 U.S. HWY 301 N. SUITE 700
TAMPA, FL 33619

PROJECT: HILLSBOROUGH COUNTY SOUTHEAST
LANDFILL

DATE: September 08, 2005

REVISION #2
OUR REPORT NO.: 783-50139-2

TEST DATA

Visual Classification GREY SAND (STD)

Sample Source SHELLY LAKE MINES, SOUTH PIT

Method of Test ASTM D698 METHOD A

Rammer: Manual

Method of Preparation: Moist

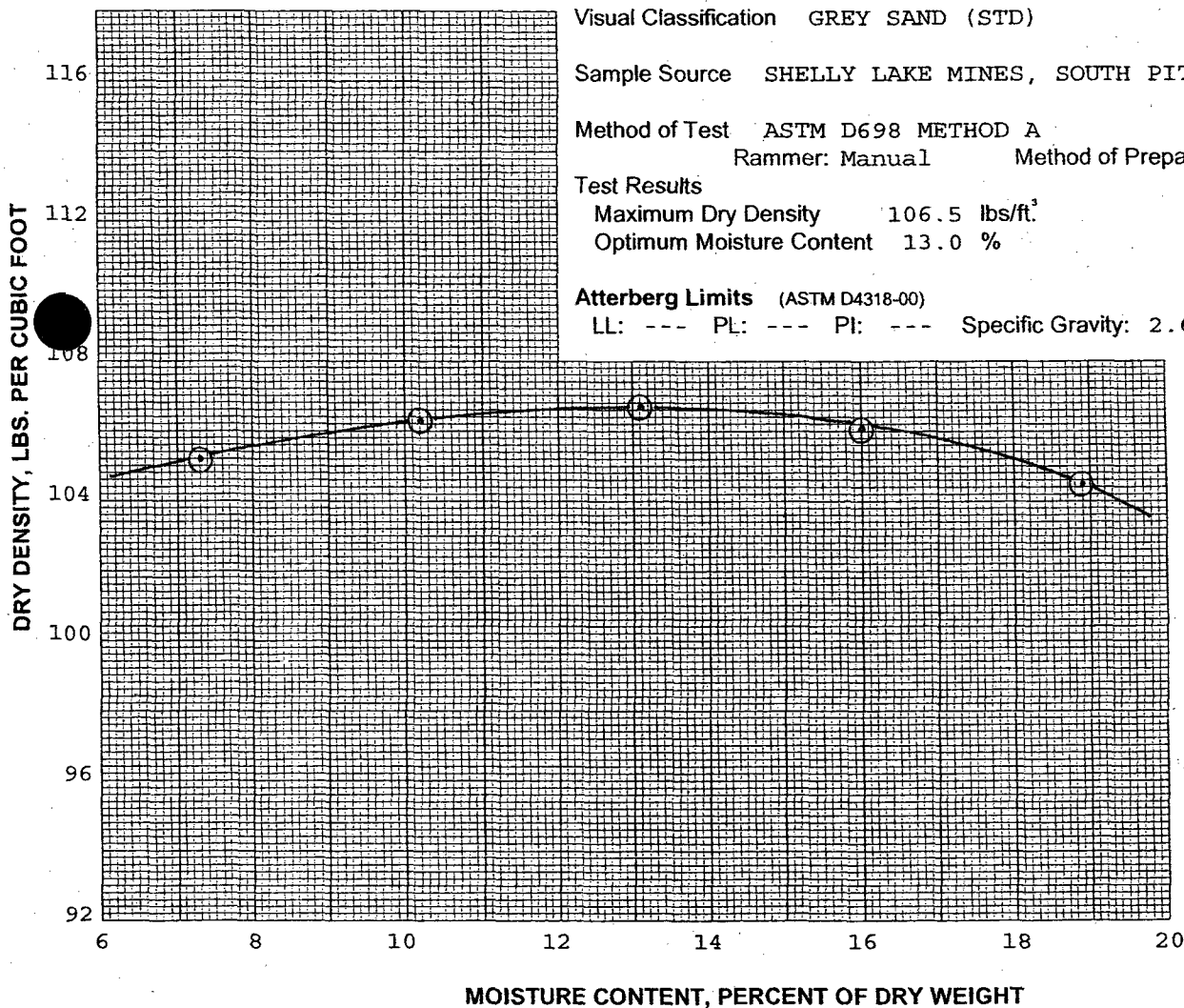
Test Results

Maximum Dry Density 106.5 lbs/ft³

Optimum Moisture Content 13.0 %

Atterberg Limits (ASTM D4318-00)

LL: --- PL: --- PI: --- Specific Gravity: 2.60 (estimate)



Grain Size Analysis
(ASTM C136-01 and/or C117-95)

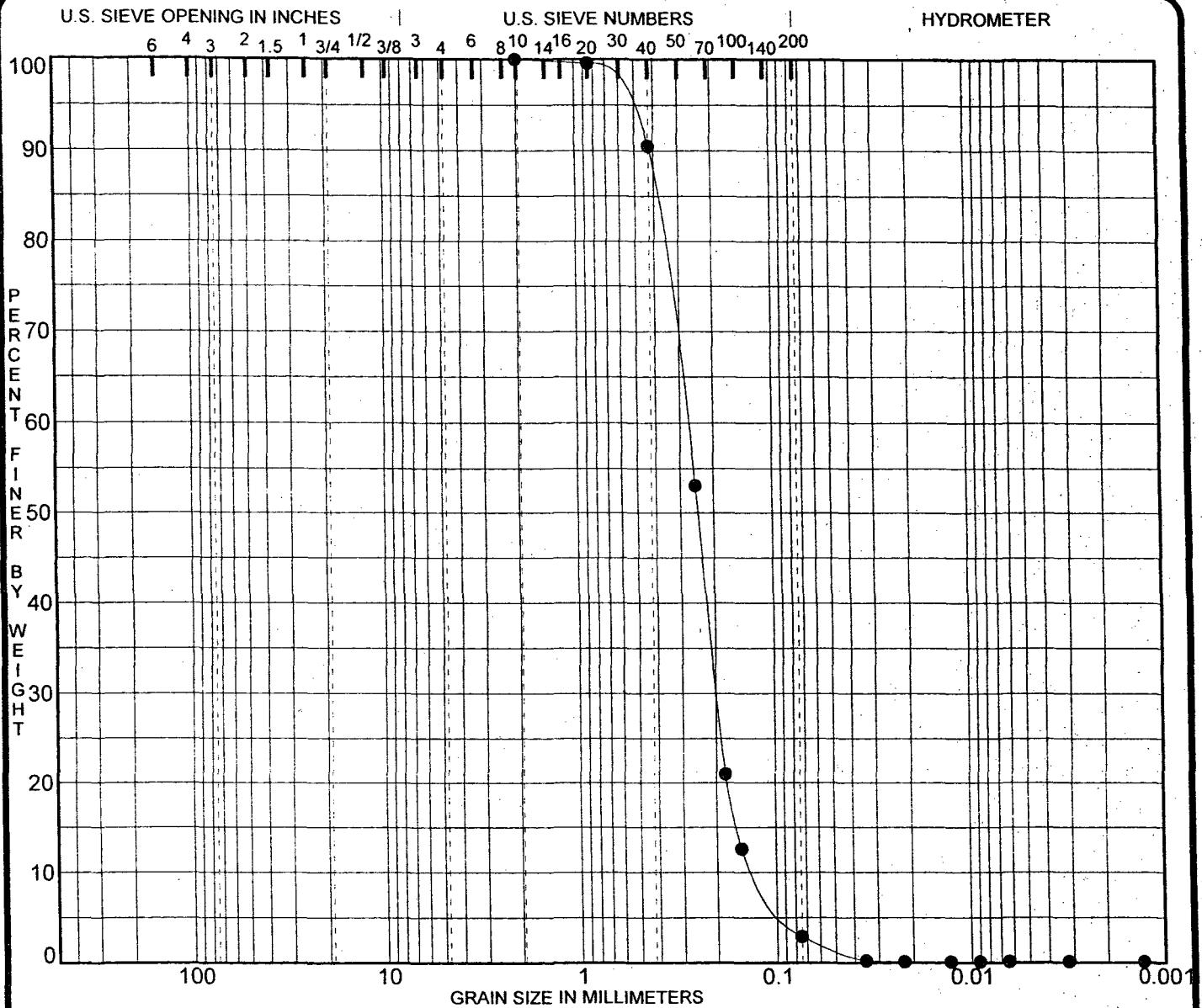
Sieve Size	Percent Passing
4.75 mm	100
75 mm	100
150 mm	100

REMARKS:

Lab Tech: DAVID HILL

Respectfully submitted,
Professional Service Industries, Inc.

Arthur C. Garza
ARTHUR C. GARZA
PROJECT MANAGER



BRUCAW

DRAINAGE SAND (CQC)



Geotechnical and
Environmental Engineering.

July 29, 2005

Mr. Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

RE: **Laboratory Testing, Report No. 4**
SOUTHEAST COUNTY LANDFILL CAPACITY EXPANSION SECTION 8
Hillsborough County, Florida
BGG Job No. G04-760

Dear Mr. Pinder:

BurcaW Geotechnical Group, Inc. (BGG) has performed the requested laboratory testing for soil samples from the referenced project. A representative of BGG sampled the material from the site on July 26, 2005. The samples are designated as Samples No. 8, and 9.

The samples were tested for Modified Proctor (ASTM D-1557), Soil Classification (D2487), and Sieve Analysis (ASTM D-422). Please refer to the attached Moisture-Density Relationship Report Nos. P8 to P9 for results. The samples were also tested for Hydraulic Conductivity (ASTM D-5084).

The results of the Hydraulic Conductivity (ASTM D-5084) testing are as follows:

Sample No.	Sample Location	Hydraulic Conductivity (cm/sec)
8	North Sand Pit	2.7×10^{-3}
9	South Sand Pit	3.9×10^{-3}

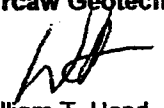
MINIMUM
 1×10^{-3} cm/s

$> 1 \times 10^{-3}$ cm/s

$> 1 \times 10^{-3}$ cm/s.

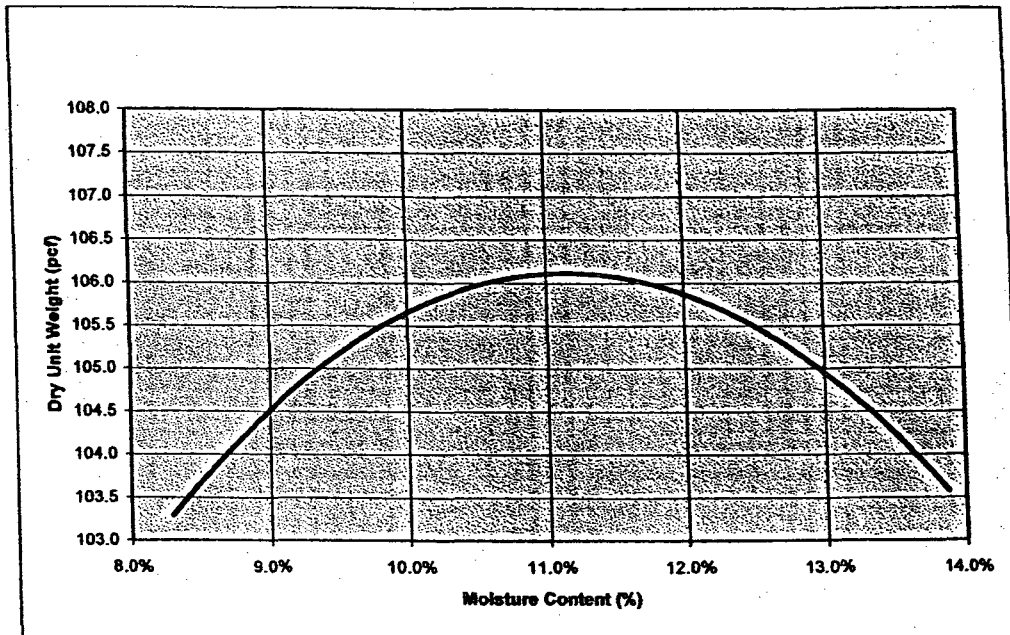
If you have any questions or if we can be of further service, please contact us at (813) 818-4606.

Sincerely,
BurcaW Geotechnical Group, Inc.


William T. Hand, P.E.
CMT Manager

Enclosures: Moisture-Density Relationship Report Nos. P8 to P9

g:\projects\2004 projects\g04-760 southeast county landfill capacity expansion sec. 8 cmts\samples 8, and 9 report 4.doc

BURCAW GEOTECHNICAL GROUP, INC.6402 W. Linebaugh Avenue, Suite A
Tampa, Florida 33625813-818-4606 / 813-891-6686
www.burcawinc.com**Tested For:** Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787**Project:** Southeast County Landfill Capacity
Expansion Section 8
Hillsborough County, Florida**Date:** 7/27/2005**Project No.** G04-760
Report No. P8**MOISTURE-DENSITY RELATIONSHIP**

Maximum Density: 106.0 PCF
Optimum Moisture: 11.0 %
Test Method: ASTM D-1557, Modified
Sampled by: JD
Sample Date: 7/25/05
% Passing No. 200 Sieve: 1%
Liquid Limit: n/a
Plasticity Index: n/a
USCS Classification:

Description: Yellowish Brown Fine Sand**Sample Location:** Sand Pit (North or South?)

Sieve No.	% Passing by Weight	Maximum per Spec.
No. 10	100	100
No. 30	96	95
No. 50	52	65
No. 70	18	20
No. 200	1	0-5

Respectfully Submitted,
Burcaw Geotechnical Group, Inc.

William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

BURCAW GEOTECHNICAL GROUP, INC.

6402 W. Linebaugh Avenue, Suite A
Tampa, Florida 33625

813-818-4606 / 813-891-6686
www.burcawinc.com

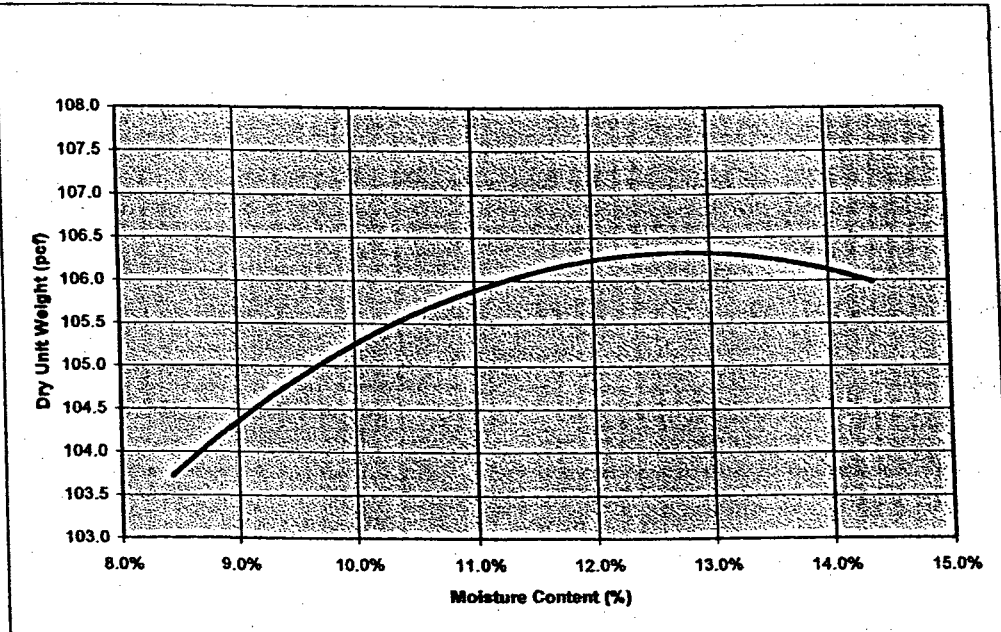
Tested For: Jerry L. Pinder
ERC General Contracting Services, Inc.
890 Carter Road, Suite 170
Winter Garden, FL 34787

Project: Southeast County Landfill Capacity
Expansion Section 8
Hillsborough County, Florida

Date: 7/27/2005

Project No. G04-760

Report No. P9

MOISTURE-DENSITY RELATIONSHIP

Maximum Density: 106.0 PCF
Optimum Moisture: 12.5 %
Test Method: ASTM D-1557, Modified
Sampled by: JD
Sample Date: 7/25/05
% Passing No. 200 Sieve: 3%
Liquid Limit: n/a
Plasticity Index: n/a
USCS Classification:

Description: Gray Fine Sand

Sample Location: Sand Pit (North or South?)

Sieve No.	% Passing by Weight	Maximum per Spec.
No. 10	100	100
No. 30	97	95
No. 50	72	65
No. 70	38	20
No. 200	3	0-5

Respectfully Submitted,
Burcaw Geotechnical Group, Inc.

William T. Hand, P.E.
CMT Manager
Florida Registration No. 56180

ATTACHMENT 7-2

CORRUGATED HIGH DENSITY POLYETHYLENE PIPE

HDPE Pipe and Fitting

Project Name: Hillsborough County Southeast Landfill
Southeast Landfill Expansion Section 8

Date: May 02, 2005

Contractor: ERC General Contractors
890 Carter Road, Suite 170
Winter Garden, Florida 34787

Supplier ISCO Industries, LLC
460 Fife Road
Mulberry, Florida 33860

TABLE OF CONTENTS

1. J-M Manufacturing HDPE Pipe Physical Properties
2. Sizes and Dimensions
3. 8" SDR 17 Perforated Pipe Detail
4. Polyethylene Pipe Joining Procedures
5. HDPE Polyethylene Fittings
 - a. 18 1/2 Degree Elbow
 - b. Molded Tee
 - c. Thr'd Cleanout Cap
 - d. 45 Deg Wye
 - e. Ecc. Reducer
 - f. 18" Access Pipe w/ Cover
 - g. Electrofusion Fitting



J-M Manufacturing Co., Inc.

9 PEACH TREE HILL ROAD, LIVINGSTON, NEW JERSEY 07039 TEL: (973) 535-1633

June 17, 2005

Ref: Hillsborough County Southeast Landfill
Cell 8 Expansion

RE: 8" SDR 17 IPS HDPE Pipe ✓

To Whom It May Concern:

J-M HDPE water pressure pipe is manufactured from PE3408 polyethylene resin, which has a cell classification of PE 345464C per ASTM D3350. The feedstock resin is a high density, high molecular weight resin which meets the criteria for a Type III, Class C, Category 5, Grade P34 pipe material. Spec 15080-201 (A)
CELL CLASS:
PE 345434C

Name of resin: HD2007H supplied by Nova Chemicals

J-M HDPE Pressure Pipe has a Plastics Pipe Institute (PPI) recommended hydrostatic basis of 1600 psi at 23°C and 800 psi at 60°C based on PPI Technical Report 3 as derived from ASTM D2837 test methodology.

J-M HDPE Pressure Pipe is manufactured in accordance with ASTM F714 and AWWA C906.

All dimensional requirements are in accordance with the ASTM 714 and above referenced standards. Any applicable standards are referenced in the print line, which is repeated every 2 feet.

JM8" IPS DR17 PC100PE3408345464 C ASTM F 714 C3 AWWA C90699 NSF - PW H 04 NOV 15 48
PAE 108

J-M Manufacturing warrants its products in material in accordance with ASTM D3350. In addition, J-M HDPE Pressure Pipe contains a minimum of 2% carbon black content for ultraviolet protection per the specifications of the above referenced standards. ✓

Best Regards,

Stan Lin
Production Engineer
Extension 2579

Submit Letter of
Equivalency for
PE 345434C vs 345464C
(Specified) (Proposed)



3435 Starwood Blvd
Huntsville, Alabama 35811
1 800 345 4726 ext 4401

August 24, 2005

Mr. Jerry Pinder
ERC General Contracting
890 Carter Road Suite 170
Winter Garden, FL 34787

REF: Changes in ASTM D 3350
Comparison of Cell Classifications

Dear Jerry:

Thank you for your call and questions about HDPE pipe. The purpose of this letter is to explain the different between a cell classification of 345434C and 345464C.

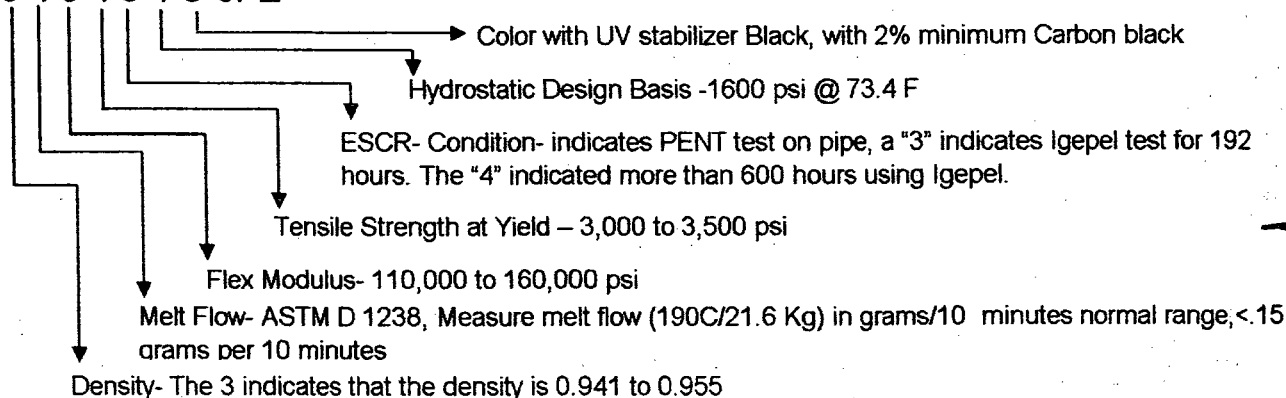
For many years, the environmental stress crack resistance of high density polyethylene was determined by using tensile bars that were "cut or scratched" and then exposed to hot detergent. The detergent used was "Igepel". A good time for a resin in the 1970's was 192 hours.

As HDPE resin manufacturers improved the properties of the HDPE resin, it was found that the samples could be "cut or scratched" and exposed to the detergent solution for 5,000 or 10,000 hours with no failures.

A new test was developed called the PENT test. Under this test procedure, the pipe or a sample with a thickness that is typical of a pipe sample is cut to set dimensions.

The illustration below provides the property for each cell in ASTM 3350:

3 4 5 4 6 4 C or E



What is the difference between a PENT test and Condition C under ASTM D 1248? Under condition "C", a tensile bar is cut to a set depth, bent and then placed in a solution of Igepal (a strong detergent, the active ingredient in Joy) which has been heated. Time to failure is measured. The Cell classification "3" indicated 192 hours. The "4" indicated more than 600 hours.

The PENT test uses a pipe like sample. The complete section of pipe or pipe like sample is first cut to simulate a scratch. This scratch runs along the centerline of the sample. The sample is then literally squeezed flat with the "cut" in the area of maximum stress. Time to failure is measured in hours. A typical value is 100 hours.

As pipe resins have been improved, there are virtually no failures under condition "C" (the "3" or "4"). A new test was needed to be sure that pipe is resistant to slow crack growth. The PENT test is a more difficult test and is meaningful since the test is run on pipe rather than a tensile bar.

We can certify to ASTM D 3350 with a cell classification of 345464 C or 345434C The C indicates that the pipe is made with 2% carbon black. Typical properties are provided in the Table below:

PROPERTY		SPECIFICATION	UNIT	NOMINAL VALUE
Material Designation		PPI / ASTM		PE3408
Cell Classification		ASTM D 3350-02		345464C
Density	(3)	ASTM D 1505	g/cm3	0.955
Melt Index	(4)	ASTM D 1238	gm/ 10 min	0.11 to 0.15
Flexural Modulus	(5)	ASTM D 790	psi	110,00 to 140,000
Tensile Strength	(4)	ASTM D 638	psi	3200 min.
Slow Crack Growth				
ESCR		ASTM D 1693	hours in 100% igeal	>5,000
PENT	(6)	ASTM F 1473	hours	>100
HDB @ 73 deg F	(4)	ASTM D 2837	psi	1600
UV Stabilizer	C	ASTM D 1603	%C	0.025

Jerry, I hope this information helps you with DuPont. If you have additional questions, please call me.

Sincerely,

Dudley Burwell

Dudley Burwell
Technical Director



50 YEARS OF PERFORMANCE UNDER PRESSURE

Part Number	Nominal Size	Size Usage Range		Maximum Allowable Back Pressure		Required Inflation Pressure	Product Weight	Deflated Length	Deflated Diameter	Inflation Valve Thread Size	Carton Quantity
		Minimum Diameter	Maximum Diameter	Air Pressure	Head Pressure						
270 008	1.25" (30mm)	.75" (19mm)	1.31" (33mm)	17 psi (1.2bar)	40 ft (12M)	45 psi (3.1bar)	4.0 oz (0.1kg)	3.75" (95mm)	.73" (18.5mm)	Molded in Valve w/ Cap	6
270 016	1.50" (40mm)	1.17" (30mm)	1.75" (44mm)	13 psi (.9bar)	30 ft (9.1M)	40 psi (2.8bar)	3.5 oz (0.1kg)	5.56" (141mm)	1.12" (33mm)	Molded in Valve w/ Cap	6
270 024	2.0" (50mm)	1.90" (48mm)	2.25" (57mm)	13 psi (.9bar)	30 ft (9.1M)	40 psi (2.8bar)	3.5 oz (0.1kg)	3.34" (85mm)	1.78" (45mm)	Molded in Valve w/ Cap	6
270 108	2.5" (65mm)	2.34" (60mm)	2.75" (70mm)	13 psi (.9bar)	30 ft (9.1M)	35 psi (2.4bar)	6.5 oz (0.20kg)	2.31" (58.5mm)	4.50" (114mm)	Molded in Valve w/ Cap	1
270 032	3.0" (75mm)	2.77" (70mm)	3.25" (83mm)	13 psi (.9bar)	30 ft (9.1M)	35 psi (2.4bar)	6.5 oz (0.20kg)	5.18" (132mm)	2.64" (67mm)	Molded in Valve w/ Cap	6
270 040	4.0" (100mm)	3.41" (87mm)	4.25" (108mm)	13 psi (.9bar)	30 ft (9.1M)	30 psi (2.1bar)	9.0 oz (0.25kg)	6.41" (163mm)	3.28" (83mm)	Molded in Valve w/ Cap	6
270 059	5.0" (125mm)	4.60" (117mm)	5.25" (133mm)	13 psi (.9bar)	30 ft (9.1M)	30 psi (2.1bar)	1.3 lbs (0.6kg)	7.88" (200mm)	4.48" (114mm)	Molded in Valve w/ Cap	1
270 067	6.0" (150mm)	5.44" (138mm)	6.25" (159mm)	13 psi (.9bar)	30 ft (9.1M)	30 psi (2.1bar)	1.9 lbs (0.85kg)	9.05" (230mm)	5.32" (135mm)	Molded in Valve w/ Cap	1
041 386	8.0" (200mm)	7.0" (178mm)	8.25" (210mm)	17 psi (1.2bar)	40 ft (12M)	25 psi (1.7bar)	3.4 lbs (1.6kg)	10.11" (257mm)	6.75" (172mm)	1/4" (Removable)	1
041 394	10.0" (250mm)	9.0" (229mm)	10.25" (260mm)	17 psi (1.2bar)	40 ft (12M)	25 psi (1.7bar)	5.6 lbs (2.5kg)	11.74" (298mm)	8.7" (221mm)	1/4" (Removable)	1
041 408	12.0" (300mm)	10.5" (267mm)	12.25" (311mm)	17 psi (1.2bar)	40 ft (12M)	25 psi (1.7bar)	10.94 lbs (5kg)	13.83" (351mm)	10.30" (262mm)	1/4" (Removable)	1

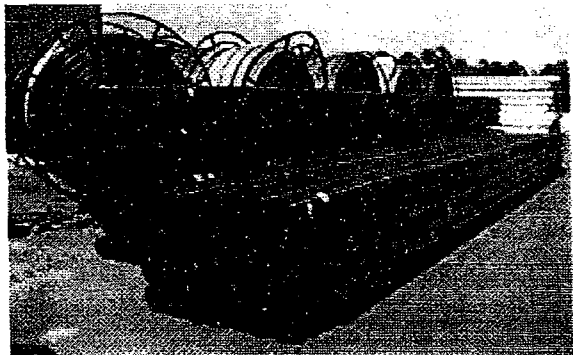
*Always block plugs when conducting air tests!

J-M MANUFACTURING

the only name you need to know in Pipe

HDPE®

Water Pressure Pipe



Scope

J-M manufactures high density polyethylene (HDPE) pressure pipe for municipal and industrial water transmission systems. Our HDPE pipes are recognized in the industry for their zero leak rate, high performance, and long life expectancy. They may be manufactured with striping to identify their application such as blue stripe for potable water, green stripe for sewer application, and purple stripe for reclaimed water.

Reduced

HDPE is lightweight, flexible, and comes in long lengths, allowing for easier and convenient installation. Because of its flexible nature, it reduces the use of fittings. HDPE also allows for non-intrusive installation by offering technology such as directional boring, pipe bursting and slip lining.

Installation

HDPE pipe provides effortless installation utilizing the newest technology available today. Our pipe can be joined by various different heat fusion methods (on installation guide) such as electrofusion, socket fusion, butt fusion, sidewall fusion, saddle fusion. Mechanical connections can also be applied to HDPE pipe. HDPE pipe can also operate in other advanced applications such as Pipeline Rehabilitation, Slip lining. (Fusion Equipments contact McElroy <http://www.McElroy.com>)

Standard

The standard laying length of HDPE pressure water pipe is 40/50 feet. Smaller size pipes 6" and under can be ordered at the continuous coil lengths by request. Longer lengths provide convenience in installation and allow for significant cost savings in labor and equipment.

Materials

J-M HDPE pipes are manufactured with premium, highly engineered PE 3408 resin that provides maximum performance benefits to service all of today's municipal and industrial water needs. They are formulated with a minimum of 2% carbon black for maximum protection against UV rays for added assurance. Our PE 3408 HDPE material conforms to ASTM D3350 with the cell classification of 345464C.

Specification call for 345434C

Type	Class*	Specification
IPS	SDR 11 / 160 PSI	ASTM D3035 or ASTM F714, AWWA
	SDR 13.5 / 125 PSI	
	SDR 17 / 100 PSI	
	SDR 21 / 80 PSI	
DIPS	SDR 11 / 160 PSI	ASTM F714, AWWA
	SDR 13.5 / 125 PSI	
	SDR 17 / 100 PSI	
	SDR 21 / 80 PSI	
IPS	SIDR 11.5 / 125 PSI	ASTM D2239
	SIDR 15 / 100 PSI	

*Other classes can be made upon request.

Applicable Specifications

J-M HDPE water pressure pipes are manufactured in accordance to AWWA C901/C906, ASTM D3035, ASTM F714, ASTM D2737, ASTM D2239, and NSF Listed.

Corrosion Resistance.

HDPE pipe has excellent corrosion resistance against electrolytic or galvanic corrosion or any known soil or water condition. Its inherent properties allows for a corrosion free service life without the need for costly lining, wrapping, coating or cathodic protection.

Quality Control

J-M takes great pride in the quality and workmanship of all of our products. J-M quality control programs encompass three critical aspects of the manufacturing process: the incoming raw material, pipe production, and the finished goods. Incoming material is visually inspected and tested to ensure the material meets all applicable requirements before its release for production. During production, the pipe will be visually examined for any cosmetic defect and pipe samples will be collected for physical verification and testing for compliance. The finished product is subjected to further visual inspection to ensure it has met all the appropriate specifications and packaging requirements. Without exception, our pipes are constantly monitored throughout the entire manufacturing process to validate that they are in accordance with all applicable specifications.



J-M MANUFACTURING

the only name you need to know in Pipe

PE 3408 J-M HDPE PRIMARY PROPERTIES

PROPERTY	UNIT	TEST PROCEDURE	TYPICAL VALUE
Material Designation	—	PPI-TR4	PE 3408
Cell Classification	—	ASTM D3350	* 345464C
Density	g/cm ³	ASTM D1505	0.955
Melt Index	g/10 minutes	ASTM D1238	<0.15
Flexural Modulus	psi	ASTM D790	110,000 to <160,000
Elastic Modulus	psi	ASTM D638	110,000
Tensile Strength	psi	ASTM D638	3,000-3,500
SCG (PENT)	Hours	ASTM F1473	>100
HDB@73.4°F (23°C)	psi	ASTM D2837	1600
HDB@140°F (60°C)	psi	ASTM D2837	800
Color, UV Stabilizer	—	—	Black with minimum 2% carbon black
Brittleness Temperature	°F (°C)	ASTM D746	<150 (<-100)
Hardness	Shore D	ASTM D2240	≥60

* Note: Gray pipe / Cell Classification 345464E

The physical (or chemical) properties of J-M products described herein represent typical average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice.

J-M MANUFACTURING
the only name you need to know in Pipe

HDPE DIPS (IRON PIPE SIZE) Pressure PIPE Dimension

Job Name: Southeast Landfill Expansion Section 8

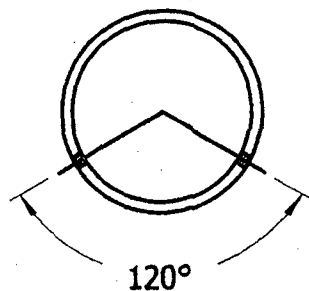
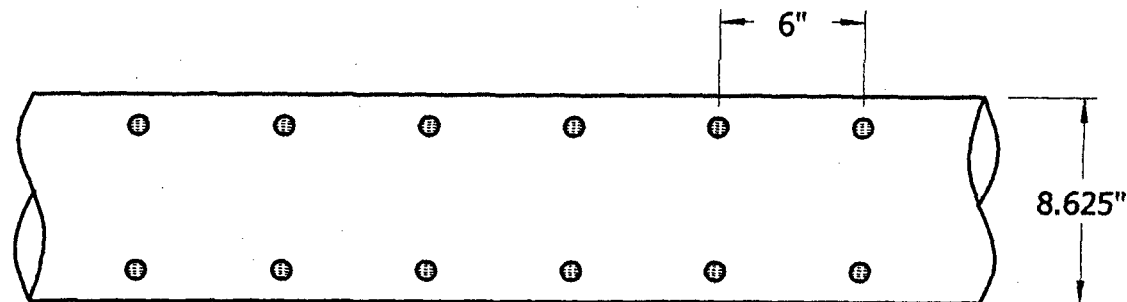
Nominal Size (in.)	DR	Weight Lb/Ft	Dimensions			PSI @ 73.4 Degrees	Color
			O.D.	Min. Wall	I.D.		
8	17	5.657	8.625	0.507	7.611	100	Black/Solid Wall
8	17	5.657	8.625	0.507	7.611	N/A	Black/Perforated

Specifications:

ASTM F714, AWWA C901, C906

NOTE: *Pressures are based on using water at 23 deg C and are determined by using standard formulas for the industry.
 *Service factors should be utilized to compensate for the effect of substances other than water, and for other temperatures.
 *The above weights are calculated per PPI TR-7 using a density .955

8" SDR 17 Perforated Pipe Detail



Conforms to drawings.

Pipe Size	8" SDR 17 IPS
Hole Dia.	1/2"
Spacing	2 rows @ 120 Degree 6" O.C.
Pattern	Non-Staggered

*PER SPEC:
- 60 degrees
apart*



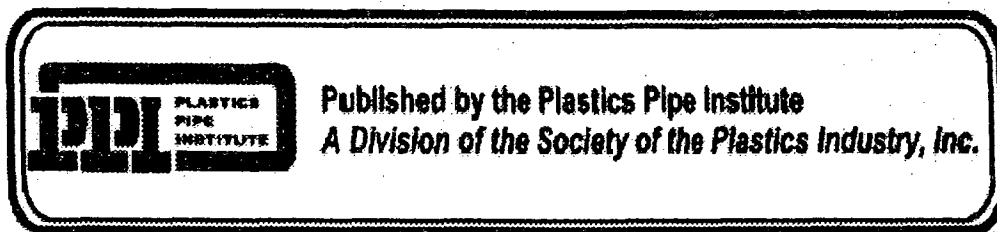
Project Name: Southeast Landfill Expansion Section 8

Comments:

DATE: May 2, 2005

SCALE: 1" = 6"

Drawn By: MWV



CHAPTER 6 POLYETHYLENE JOINING PROCEDURES

HEAT FUSION

The principle of heat fusion is to heat two surfaces to a designated temperature, then fuse them together by application of a sufficient force. This force causes the melted materials to flow and mix, thereby resulting in fusion. When fused according to the pipe and/or fitting manufacturers' procedures, the joint area becomes as strong as or stronger than the pipe itself in both tensile and pressure properties. As soon as the joint cools to near ambient temperature, it is ready for handling.

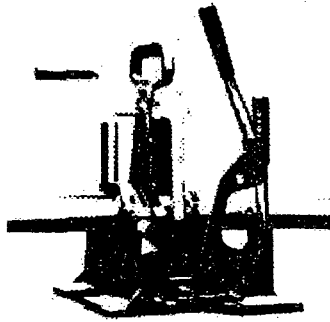


Figure 1 Standard Butt Fusion Joint

Butt Fusion

The most widely used method for joining individual lengths of large diameter polyethylene pipe is by heat fusion of the pipe butt ends as illustrated in Figure 6.1. This technique, which precludes the need for specially modified pipe ends or couplings, produces a permanent, economical and flow-efficient connection. Field-site butt fusions may be made readily by trained operators using specially developed butt fusion machines (see Figure 6.2) that secure and precisely align the pipe ends for the fusion process. The six steps involved in making a butt fusion joint are:

1. Securely fasten the components to be joined
2. Face the pipe ends
3. Align the pipe profile
4. Melt the pipe interfaces
5. Join the two profiles together
6. Hold under pressure



**Figure 2 Typical Butt Fusion machine
for Smaller Diameter Pipe**

(Butt Fusion machines are available to
fuse pipe up to 72 inches in diameter)

Secure

Each component that is to be fused must be held in position so that it will not move unless it is moved by the clamping device.

Face

The pipe ends must be faced to establish clean, parallel mating surfaces. Most, if not all, equipment manufacturers have incorporated the rotating planer block design in their facers to accomplish this goal. Facing is continued until a minimal distance exists between the fixed and movable jaws of the machine and the facer is locked firmly and squarely between the jaws. This operation provides for a perfectly square face, perpendicular to the pipe centerline on each pipe end and with no detectable gap.

Align

The pipe profiles must be rounded and aligned with each other to minimize mismatch (high-low) of the pipe walls. This can be accomplished by adjusting the clamping jaws until the outside diameters of the pipe ends match. The jaws must not be loosened or the pipe may slip during fusion. The minimal distance requirement between fixed- and moveable-jaws mentioned above allows the pipe to be rounded as close as possible to the joint area. The closer to the joint area that the pipe can be clamped, the better control the operator has in properly aligning the pipe.

Melt

Heat the ends of the pipe to the pipe manufacturer's recommended temperature, interface pressure, and time duration. By doing so, the heat will penetrate into the pipe ends and a molten "bead" of material will form at the pipe ends. Heating tools which simultaneously heat both pipe ends are used to accomplish this operation. These heating tools are normally furnished with thermometers to measure internal heater temperature so the operator can monitor the temperature before each joint is made. However, they can be used only as a general indicator because there is some heat loss from internal to external surfaces, depending on factors such as ambient temperatures and wind conditions. A pyrometer or other surface temperature measuring device should be used periodically to insure proper temperature of the heating tool. If temperature indicating crayons are used, do not use them on a surface which will come in contact with the pipe or fitting. Additionally, heating tools are usually equipped with suspension and alignment guides which center them on the pipe ends. The heater faces which come into contact with the pipe should be coated by the manufacturer to prevent molten plastic from sticking to the heater faces. Remaining molten plastic can interfere with fusion quality and must be removed according to the tool manufacturer's instructions.

Join

After the pipe ends have been heated for the proper time and to the proper temperature, the heater tool is removed and the molten pipe ends are brought together with sufficient pressure to properly mix the pipe materials and form a homogeneous joint. The pipe manufacturer's instructions may specify either interface pressure or bead size of molten material as a guide for a proper joint. There are machines available for pipe sizes from 5/8-inch through 72-inch diameters that will assist the operator to apply sufficient force to obtain the proper fusion pressure. Machines for 4-inch diameter and smaller sizes are normally lever-operated. Many of these smaller machines can be fitted with torque wrenches to obtain a theoretical value which allows the operator to consistently apply the approximate force required to properly fuse a joint. Larger machines employ hydraulics with various types of control systems such as:

1. Manual with hydraulic hand pump.
2. Semi-automatic with motorized hydraulics including pressure reducing, selector, and directional control valves.
3. Fully automatic with computer- or microprocessor-control of the heat and fusion cycles and pressures.

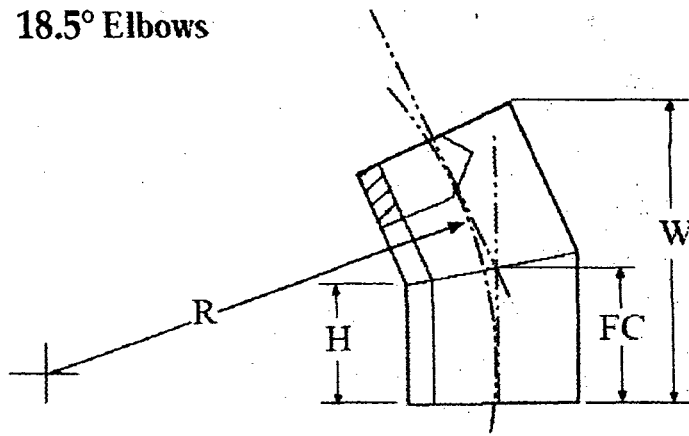
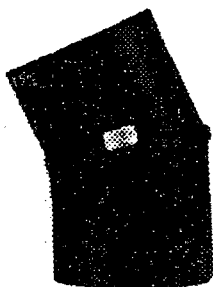
Hold

The molten joint must be held immobile under pressure until cooled adequately to develop strength. The designs of the machines vary from a lever-arm-assist to manual or automatic locking devices that assist the operator to accomplish this step. The proper cooling times for the joint are material-, pipe-diameter-, and wall-thickness dependent and are established by the pipe manufacturer. Allowing proper times under pressure for cooling prior to removal from the clamps of the machine is important in achieving joint integrity.

It should be noted that this document does not purport to address any safety problems associated with the use of these procedures. Information on safe operating procedures can be obtained from the manufacturers of the various types of joining equipment or polyethylene products.

IPS HDPE Fittings

IPS Fittings Fabricated 18.5° Elbows



IPS Fittings Fabricated 18.5° Elbows

Nominal Pipe Size (in)	DR	Pressure Rating	Part #	Dimensions				Weight	Shipping	
OD				R (in)	H (in)	FC (in)	W (in)	Lbs.	Method	
2	2.375	07	200	ISFF220207IPS	13.125	4	4.25	8.6	1	UPS
		09	160	ISFF220209IPS	"	"	"	"	1	"
		11	120	ISFF220211IPS	"	"	"	"	1	"
3	3.5	07	200	ISFF220307IPS	13.625	4	4.375	9.03	2	UPS
		09	160	ISFF220309IPS	"	"	"	"	1	"
		11	120	ISFF220311IPS	"	"	"	"	1	"
		17	75	ISFF220317IPS	"	"	"	"	1	"
4	4.5	07	200	ISFF220407IPS	14.25	5	5.5	11.34	3	UPS
		09	160	ISFF220409IPS	"	"	"	"	3	"
		11	120	ISFF220411IPS	"	"	"	"	2	"
		17	75	ISFF220417IPS	"	"	"	"	1	"
6	6.625	07	200	ISFF220607IPS	15.25	6	6.625	14.08	8	UPS
		09	160	ISFF220609IPS	"	"	"	"	7	"
		11	120	ISFF220611IPS	"	"	"	"	6	"
		17	75	ISFF220617IPS	"	"	"	"	4	"
		32.5	38	ISFF2206325IPS	"	"	"	"	2	"
8	8.625	07	200	ISFF220807IPS	16.25	6.5	7.375	15.81	15	UPS
		09	160	ISFF220809IPS	"	"	"	"	12	"
		11	120	ISFF220811IPS	"	"	"	"	10	"
		17	75	ISFF220817IPS	"	"	"	"	6	"
		32.5	38	ISFF2208325IPS	"	"	"	"	3	"
10	10.75	07	200	ISFF221007IPS	17.25	6.5	7.625	16.62	24	UPS
		09	160	ISFF221009IPS	"	"	"	"	20	"
		11	120	ISFF221011IPS	"	"	"	"	17	"
		17	75	ISFF221017IPS	"	"	"	"	11	"
		32.5	38	ISFF2210325IPS	"	"	"	"	6	"
12	12.75	07	200	ISFF221207IPS	19.5	8	9.25	20.27	42	UPS
		09	160	ISFF221209IPS	"	"	"	"	34	"
		11	120	ISFF221211IPS	"	"	"	"	28	"
		17	75	ISFF221217IPS	"	"	"	"	19	"
		32.5	38	ISFF2212325IPS	"	"	"	"	10	"
14	14	07	200	ISFF221407IPS	21	8	9.375	20.75	51	UPS
		09	160	ISFF221409IPS	"	"	"	"	41	"
		11	120	ISFF221411IPS	"	"	"	"	35	"
		17	75	ISFF221417IPS	"	"	"	"	23	"
		32.5	38	ISFF2214325IPS	"	"	"	"	12	"

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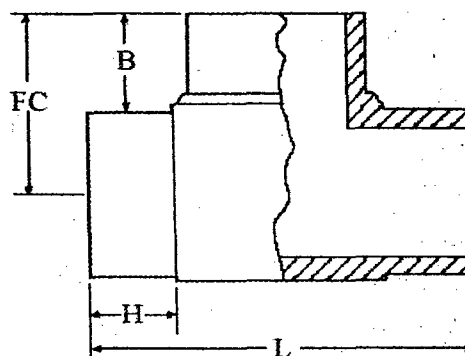
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IPS HDPE Fittings

IPS Fittings Molded Tees



IPS Fittings Molded Tees

Nominal Pipe Size(in)	DR OD(In)	DR	Pressure Rating	Part #	Dimensions				Weight Shipping	
					L (in)	H (in)	FC (in)	B (in)	Lbs.	Method
3/4	1.05	11	160	ISMFTE07511IPS	5	1.77	2.5	1.98	0.1	UPS
1	1.315	11	160	ISTETE01111IPS	5.67	1.77	2.83	2.17	0.17	UPS
1-1/4	1.66	11	160	ISMFTE012511IPS	6.61	2.01	3.31	2.48	0.3	UPS
1-1/2	1.9	11	160	ISMFTE01511IPS	7.99	2.52	4	3.05	0.47	UPS
2	2.375	09	200	ISMFTE0209IPS	8.5	2.5	4.26	3.07	1	UPS
		11	160	ISMFTE0211IPS	"	"	"	"	0.82	"
3	3.5	09	200	ISMFTE0309IPS	11.375	3	5.75	4	2.3	UPS
		11	160	ISMFTE0311IPS	"	"	"	"	2.15	"
		17	100	ISMFTE0317IPS	"	"	"	"	1.45	"
4	4.5	09	200	ISMFTE0409IPS	12.25	3	6.25	4	4	UPS
		11	160	ISMFTE0411IPS	"	"	"	"	3.8	"
		17	100	ISMFTE0417IPS	"	"	"	"	2.58	"
6	6.625	09	200	ISMFTE0609IPS	16.25	4	8.25	4.94	11	UPS
		11	160	ISMFTE0611IPS	18	4.5	9	5.69	10	"
		17	100	ISMFTE0617IPS	"	"	"	"	7	"
8	8.625	11	160	ISMFTE0811IPS	23.75	5.85	11.9	7.59	25	UPS
		17	100	ISMFTE0817IPS	"	"	"	"	17	"
10	10.75	11	160	ISMFTE1011IPS	27	6.15	13.5	8.13	43	UPS
		17	100	ISMFTE1017IPS	"	"	"	"	29	"
12	12.75	11	160	ISMFTE1211IPS	31.6	7.5	15.9	9.53	67	UPS
		17	100	ISMFTE1217IPS	"	"	"	"	46	"

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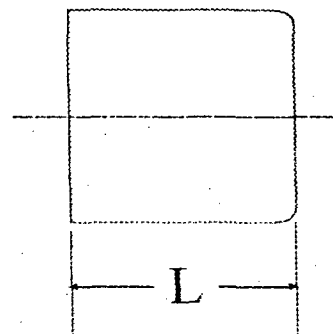
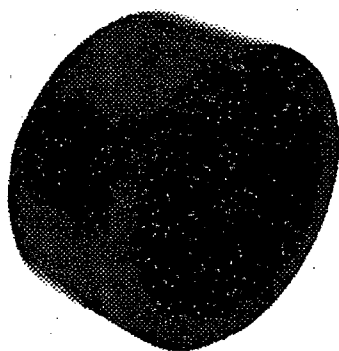
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IPS HDPE Fittings

IPS Fittings Cap



IPS Fittings Cap

Nominal Pipe Size (in)	OD (in)	DR	Pressure Rating	Part #	Dimensions L (in)	Weight Lbs	Shipping Method
3/4	1.05	11	160	ISMFCP07511IPS	2.375	0.05	UPS
1	1.315	11	160	ISMFCP01111IPS	2.375	0.1	UPS
1 1/4	1.66	11	160	ISMFCP012511IPS	2.25	0.1	UPS
1 1/2	1.9	11	160	ISMFCP01511IPS	2.83	0.25	UPS
2	2.375	09	200	ISMFCP0209IPS	3.25	0.3	UPS
		11	160	ISMFCP0211IPS	"	"	"
3	3.5	09	200	ISMFCP0309IPS	3.25	0.8	UPS
		11	160	ISMFCP0311IPS	"	"	"
4	4.5	09	200	ISMFCP0409IPS	5.5	2	UPS
		11	160	ISMFCP0411IPS	"	"	"
6	6.625	09	200	ISMFCP0609IPS	4.5	3	UPS
		11	160	ISMFCP0611IPS	"	"	"
8	8.625	11	160	ISMFCP0811IPS	4.75	4.4	UPS
10	10.75	11	160	ISMFCP1011IPS	4	13	UPS
12	12.75	11	160	ISMFCP1211IPS	4	18	UPS
14	14.00	7	267	ISFFCP1407IPS	4	21	UPS
		11	160	ISFFCP1411IPS	"	21	"
		7	267	ISFFCP1407IPS	16	53	UPS
		11	160	ISFFCP1411IPS	"	44	"
16	16.00	7	267	ISFFCP1607IPS	5	35	UPS
		11	160	ISFFCP1611IPS	4	28	"
		7	267	ISFFCP1607IPS	16	76	UPS
		11	160	ISFFCP1611IPS	"	57	"
18	18.00	7	267	ISFFCP1807IPS	5	44	UPS
		11	160	ISFFCP1811IPS	5	44	"
		7	267	ISFFCP1807IPS	16	96	UPS
		11	160	ISFFCP1811IPS	"	81	"
20	20.00	7	267	ISFFCP2007IPS	6	65	UPS
		11	160	ISFFCP2011IPS	5	55	"
		7	267	ISFFCP2007IPS	16	130	LTL
		11	160	ISFFCP2011IPS	"	100	"
22	22.00	7	267	ISFFCP2207IPS	6	79	UPS
		11	160	ISFFCP2211IPS	5	66	"
		7	267	ISFFCP2207IPS	16	157	LTL
		11	160	ISFFCP2211IPS	"	121	"
24	24.00	11	160	ISFFCP2411IPS	6	94	UPS
		11	160	ISFFCP2411IPS	16	159	LTL

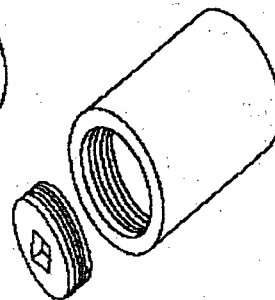
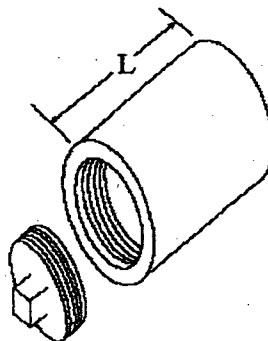
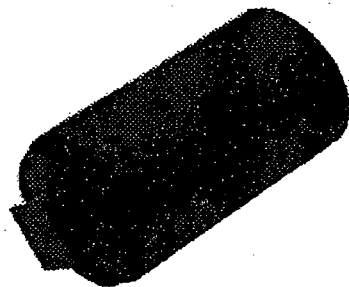
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IPS HDPE Fittings

IPS Fittings Clean Outs



IPS Fittings Clean Outs

Nominal Size (in)	Pipe OD (in)	DR	Part #	Dimensions L (in)	Weight Lbs.	Shipping Method
2	2.375	11	ISFFCO0211IPS	6	1	UPS
3	3.5	11	ISFFCO0311IPS	6	1.5	UPS
4	4.5	11	ISFFCO0411IPS	6	2	UPS
6	6.625	11	ISFFCO0611IPS	6	3	UPS
8	8.625	11	ISFFCO0811IPS	6	5	UPS
10	10.75	11	ISFFCO1011IPS	6	8	UPS
12	12.75	11	ISFFCO1211IPS	6	11	UPS

**Fittings rated for gravity service only

**Male boss standard - female boss available upon request

Project
Specs

OK

JAH

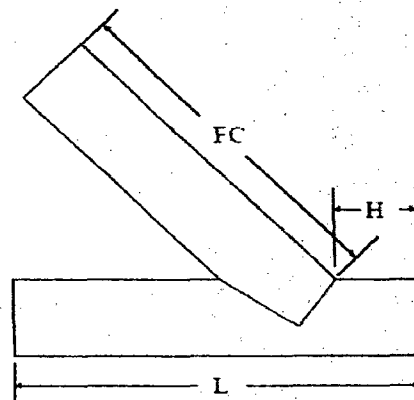
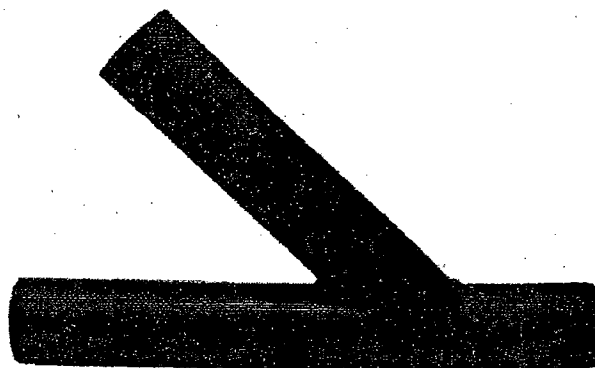
800-345-ISCO

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ISCO
INDUSTRIES

IPS HDPE Fittings

IPS Fittings Fabricated Lateral Wye - Two Segment



IPS Fittings Fabricated Lateral Wye-Two Segment									
Nominal Pipe Size (in)	DR OD (in)	DR	Pressure Rating	Part #	Dimensions			Weight Lbs.	Shipping Method
					L (in)	H (in)	FC (in)		
3	3.5	07	130	ISFFWY0307IPS2P	24	6	18	7	UPS
		11	80	ISFFWY0311IPS2P	"	"	"	5	"
4	4.5	07	130	ISFFWY0407IPS2P	24	6	18	11	UPS
		11	80	ISFFWY0411IPS2P	"	"	"	8	"
6	6.625	07	130	ISFFWY0607IPS2P	36	8	28	38	UPS
		11	80	ISFFWY0611IPS2P	"	"	"	27	"
		17	50	ISFFWY0617IPS2P	"	"	"	18	"
8	8.625	07	130	ISFFWY0807IPS2P	40	10	30	70	UPS
		11	80	ISFFWY0811IPS2P	"	"	"	49	"
		17	50	ISFFWY0817IPS2P	"	"	"	44	"
10	10.75	07	130	ISFFWY1007IPS2P	42	10	32	96	LTL
		11	80	ISFFWY1011IPS2P	"	"	"	81	"
		17	50	ISFFWY1017IPS2P	"	"	"	54	"
12	12.75	07	130	ISFFWY1207IPS2P	46	10	36	179	LTL
		11	80	ISFFWY1211IPS2P	"	"	"	126	"
		17	50	ISFFWY1217IPS2P	"	"	"	84	"
14	14	07	130	ISFFWY1407IPS2P	48	10	38	227	LTL
		11	80	ISFFWY1411IPS2P	"	"	"	159	"
		17	50	ISFFWY1417IPS2P	"	"	"	107	"
16	16	07	130	ISFFWY1607IPS2P	56	9	47	355	LTL
		11	80	ISFFWY1611IPS2P	"	"	"	249	"
		17	50	ISFFWY1617IPS2P	"	"	"	167	"
18	18	07	130	ISFFWY1807IPS2P	58	9	49	466	LTL
		11	80	ISFFWY1811IPS2P	"	"	"	327	"
		17	50	ISFFWY1817IPS2P	"	"	"	220	"

Project
Specs.

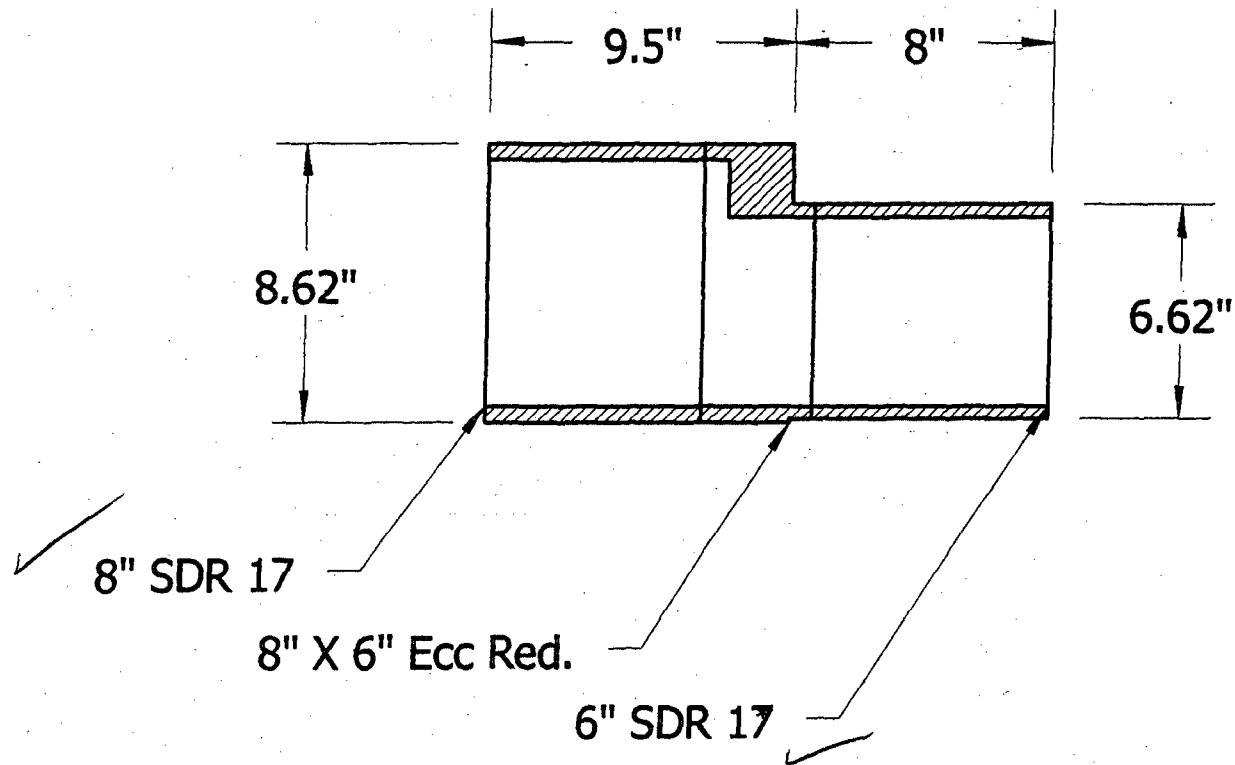
(Hc)

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ISCO

8" X 6" SDR 17 Ecc Reducer



*

OK
JH



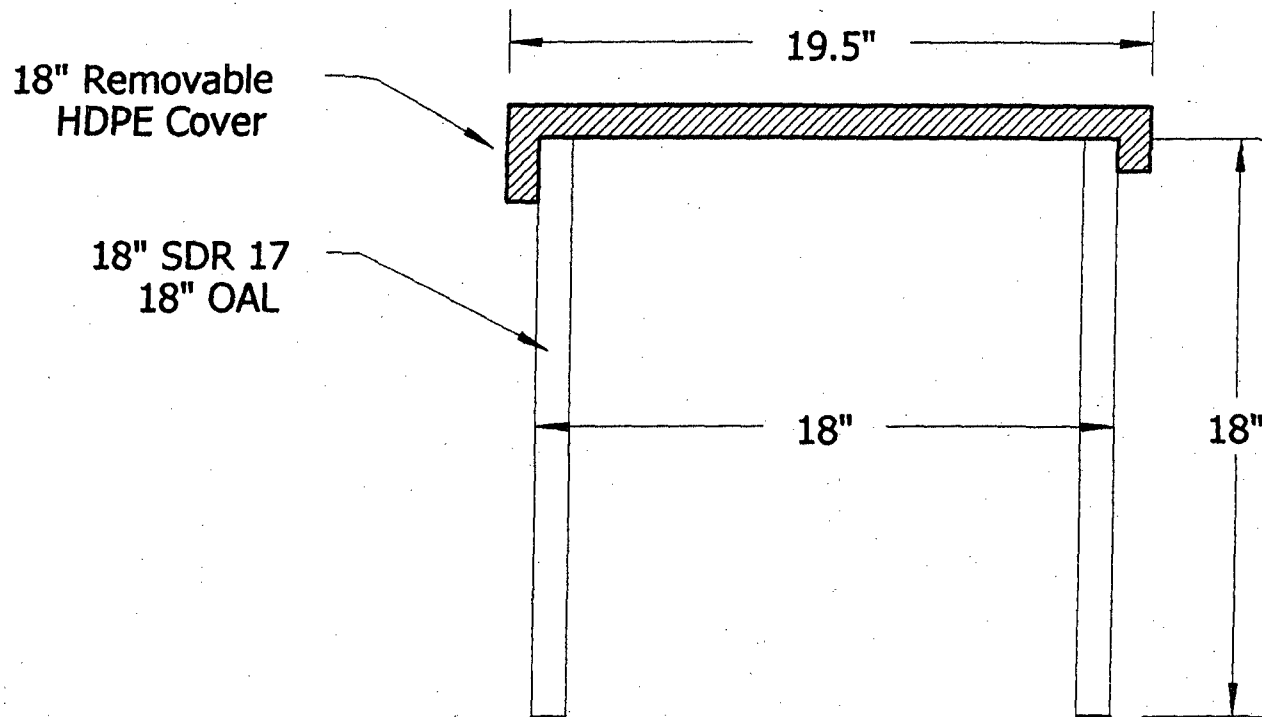
Project Name: Southeast Landfill Expansion Section 8

DATE: May 02, 2005

SCALE: 1" = 6"

Drawn By: MWV

18" X 18" SDR 17 Access Pipe w/ Cover



Handwritten signature
JAC



Project Name: Southeast Landfill Expansion Section 8

DATE: May 02, 2005

SCALE: 1" = 6"

Drawn By: MWV

ATTACHMENT 7-3

BALL PLUG VALVE



50 YEARS OF PERFORMANCE UNDER PRESSURE

Single-Size Test-Ball® Plugs

Cherne's original pipe plug has become the most popular pneumatic plug ever made. Test-Ball® plugs are made from natural rubber and will work in virtually any type of pipe, allowing greater flexibility than mechanical plugs because they will seal both round and out-of-round pipe. Cherne's trademarked rib design assures you of our quality, backed by over 50 years of experience.

PLUMBING APPLICATIONS

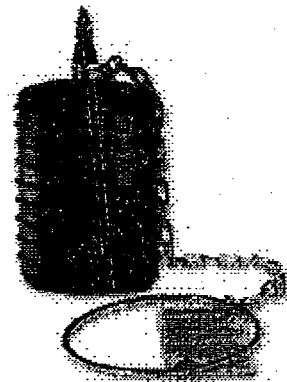
Most commonly used to test DWV systems, the Test-Ball easily fits through test tees, sanitary tees, floor drains, and in other 'tight' situations. Test-Ball plugs up to 6" have an attached zinc-plated steel chain and ring handle. The handle may be used to carry the plug or act as an anchor to prevent plug from sliding down a line.

Bulk Test-Ball plugs are available in case quantities of 24 for 1 1/4" - 1 1/2", 2", 3", and 4" sizes.

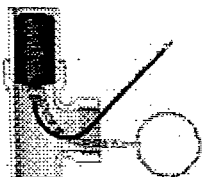
UNDERGROUND APPLICATIONS

Test-Ball® plugs are designed to block sewer flow or be used as a back plug for sewer air testing. The plugs are made of natural rubber, increasing flexibility while ensuring that they are durable and will not corrode.

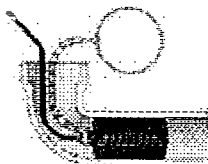
Test-Ball plugs 8" and larger are designed with a removable tire inflation valve and come equipped with an eyebolt that can be used for tethering, raising, and lowering the plug when using a poly-lift line. The inflation valve allows for simple replacement options with quick disconnect fittings, permits easy repair if damaged, and removing the valve allows the plug to collapse.



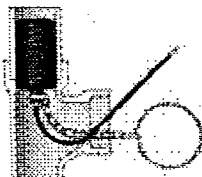
← 3"



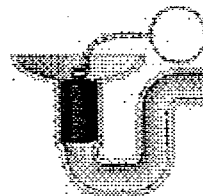
Test Tree



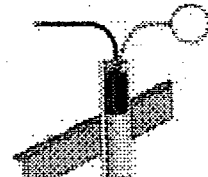
Closet Bend



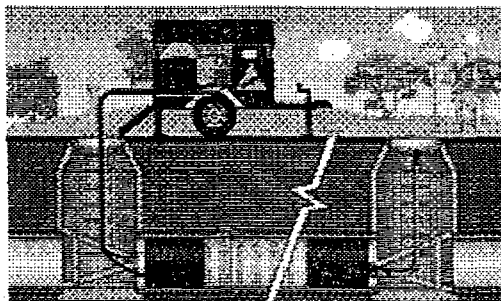
Sanitary Tree



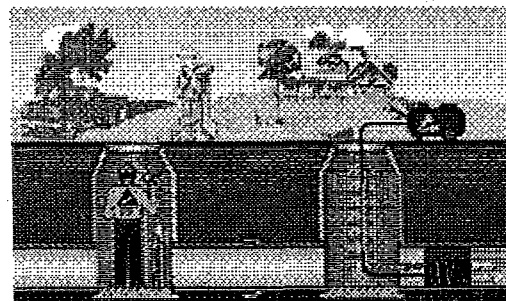
Floor Drain



Roof Vent



Sewer Air Testing Back Plug



Blocking Sewer Flow

*Always block plugs when conducting air tests!

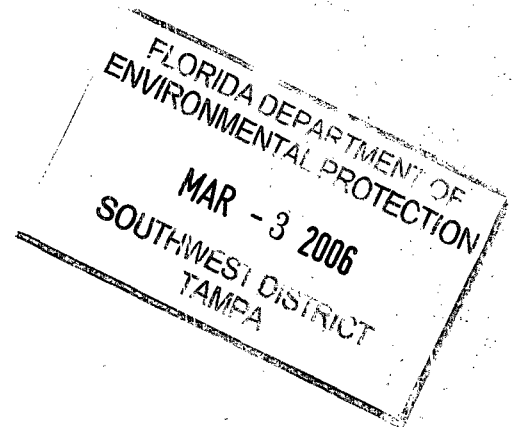
SECTION 8
DOCUMENTATION

8.1 CONSTRUCTION PHOTOGRAPHS

Attachment 8-1 in this section contains photographs which are representative of construction activities progressed during completion of the Section 8.

8.2 SCS FIELD REPORTS

Attachment 8-2 in this section contains SCS field reports.



**ATTACHMENT 8-1
CONSTRUCTION PHOTOGRAPHS**

**ATTACHMENT 8-2
SCS FIELD REPORTS**

(SEE VOLUME 2 OF 2)