Environmental Consultants
and Contractors

4041 Park Oaks Boulevard
Suite 100
Tampa, FL 33610

813 621-0080
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SCS ENGINEERS

September 24, 2013
File No. 09210021.18

Ms. Susan Pelz, P.E.
Florida Department of Environmental Protection
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

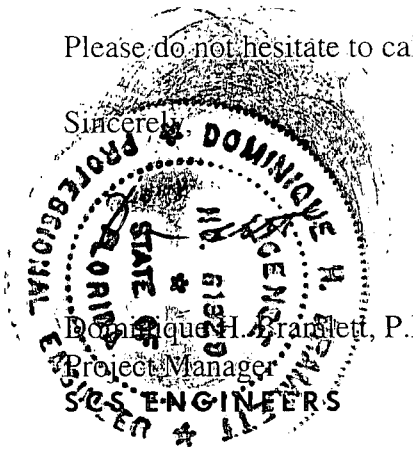
Subject: Specific Condition B.2.a – Certification of Construction Completion Report
Citrus County Central Landfill
Phase 3 Fire Damage Repair
Permit Number 21375-013-SC/01 issued November 5, 2009

Dear Susan:

In accordance with Specific Condition B.2.a of Construction Permit Number 21375-013-SC/01 issued November 5, 2009 for the Citrus County Central Landfill Phase 3 Expansion Project, and on behalf of Citrus County Board of County Commissioners, SCS Engineers (SCS) is providing the Florida Department of Environmental Protection (FDEP) two signed and sealed by a registered professional engineer of the Certification of Construction Completion Report for the above referenced project.

Please do not hesitate to call should you have any questions or require additional information.

Sincerely,



Dominique H. Frankett, P.E.
Project Manager
SCS ENGINEERS

C. Ed Hilton Jr., P.E.
Vice President
SCS ENGINEERS

DHB/CEH:dhb

Attachments

cc: Casey Stephens, Director, Citrus County

SCS ENGINEERS







Certification of Construction Completion Report
August 13, 2013 - September 9, 2013

Citrus County Class I Central Landfill
Phase 3 Fire Damage Repair
Citrus County, Florida

Prepared for:

Citrus County

230 West Gulf to Lake Highway
Lecanto, Florida 34461

Prepared by:

SCS ENGINEERS
4041 Park Oaks Blvd., Suite 100
Tampa, Florida 33610
(813) 621-0080
Fax: (813) 623-6757

Florida Board of Professional Engineers
Certification No. 00004892

September 24, 2013
File No. 09210021.18

Certification of Construction Completion Report
August 13, 2013 - September 9, 2013

Citrus County Class I Central Landfill
Phase 3 Fire Damage Repair
Citrus County, Florida

Prepared for:

Citrus County

Prepared by:

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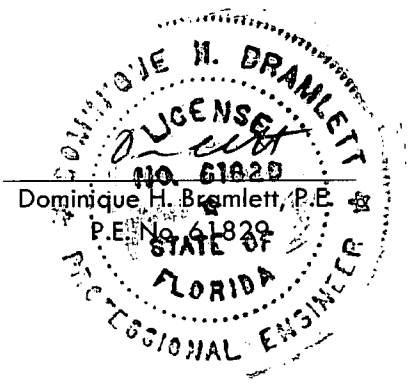

Dominique H. Bramlett, P.E.
P.E. No. 61829

September 24, 2013
File No. 09210021.18

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INTRODUCTION

On behalf of the Citrus County Solid Waste Management Division (SWMD), SCS Engineers (SCS) has prepared this Certification of Construction Completion Report for damaged liner resulting from the March 9, 2013 fire at the Phase 3 area.

A fire broke out overnight on Saturday March 9, 2013. Fire rescue was dispatched to the scene and observed the northwest end of the open cell (Phase 3) at the landfill to be engulfed in flames. This impacted an area of trash that was buried approximately one week prior and a portion of the liner, leachate pipes and electrical control boxes. The raintarp that covered that slope was also impacted.

The fire in the waste was extinguished by smothering it with soil using heavy equipment. The area was continually monitored for flare-ups and re-ignition. The portion of the fire that impacted the liners was fought by the fire department using water. The cause of the fire was most likely from spontaneous combustion.

The fire started in the waste and due to wind direction made its way up the side slope of the landfill. Approximate side-slope system damaged was a 100-foot wide by 300-foot long swath of raintarp and liner. It also damaged components of the pumping system primarily the wiring and the cover plate on the northern most riser (detection riser). The fire and the repairs will not affect the operation of the landfill. Until the repairs are completed the trash is being buried in Phase 2 of the landfill.

Citrus County immediately contacted the Florida Department of Environmental Protection (FDEP) regarding the Phase 3 fires. Citrus County installed liner cover in the damaged area to prevent erosion of the side slopes until such time as the repair can be initiated.

CONSTRUCTION PERMIT

To be in compliance with Specific Condition C.6.b. of the Citrus County Central Class I Landfill Operation Permit No. 21375-018-SO/1 SCS submitted a corrective action (CA) plan within 30 days of the incident. The CA explained the occurrence and remedial measures to be taken, and time needed for repairs.

No additional permits were needed for the repairs. All repairs were in conformance with the existing construction permits.

CONTRACT DOCUMENTS

The existing contract documents were used for the repairs and included the following:

- Construction Drawings - Central Landfill Phase 3 Expansion Project Construction Drawings, prepared by SCS dated April 2010.

- Bid Documents - Conformed Technical Specifications, Citrus County Central Landfill Phase 3 Expansion Project, prepared by SCS dated June 30, 2010.

- Construction Permit - Construction Permit Number 21375-013-SC/01, prepared by SCS dated November 5, 2009.

CONTACT LIST

Responsible parties in the project were:

Owner
Citrus County Solid Waste Management Department (County)

Engineering Consultant
SCS Engineers - Design Engineer and full-time construction quality assurance (CQA).

Contractor
Comanco Environmental Corporation - General contractor and geosynthetics installer.

Surveying
ATI - Surveying

Table 1 lists key project personnel, including those persons on site during the construction of the repairs for daily construction activities.

Table 1. Responsible People Assigned Construction of the Repairs

Name	Representing	Title
Casey Stephens	Citrus County	Solid Waste Director
C. Ed Hilton, P.E.	SCS Engineers	Project Director
Dominique H. Bramlett, P.E.	SCS Engineers	Project Manager, Engineer of Record
Keith VanGennip	SCS Engineers	Quality Assurance Observer

CONSTRUCTION OBSERVATION

SCS, as the Owner's CQA representative, verified material for compliance with the technical specifications, observed construction for compliance with the construction permit conditions, and documented the various phases of construction as necessary for final certification purposes.

SUMMARY OF CONSTRUCTION

A preconstruction meeting was held on Thursday July 25, 2013 at the Central County Landfill to review project scope and establish lines of communications.

On Tuesday August 13, 2013 Comanco began to mobilize onsite. The WORK consisted of removing the unsuitable material, preparation of subgrade for geosythetics installation, placement of protective cover, installation of rain tarp and ballast tires, and installation of HDPE pipe and pump station repairs. The construction was completed on Monday September 9, 2013.

Preconstruction Survey

A preconstruction survey of the damage was performed by ATI and is included in Attachment F.

Record Drawings

Please refer to Attachment F for the Citrus County Class I Central Landfill Phase 3 Fire Damage Repair Record Drawings.

PLANS AND DEVIATIONS

There were no deviations that were implemented during the construction of the Citrus County Class I Central Landfill Phase 3 Fire Damage Repair construction.

CONSTRUCTION OBSERVATION

Construction Quality Assurance

In accordance with the FDEP approved Construction Quality Assurance (CQA) Plan and per Specific Condition Number B.8.a.2 of FDEP Construction Permit Number 21375-013-SC/01 for the construction of the Phase 3 Expansion Project, SCS, as the Owner's CQA representative was on site full time to observe construction activities for the Phase 3 Fire Damage Repair construction.

The area that was impacted by the fire was cleaned; the damaged liner system was removed; the pumping system was rewired and replaced with new electrical conduit and junction boxes; the leachate piping, valves, meters, and relief valves were replaced; the liner components were replaced; and the slope grades were returned to the design level using clean sand fill.

During the construction quality assurance (CQA) inspection activities, SCS Engineers maintained daily field reports detailing the construction progress and various issues that were addressed throughout the project. The reports included in Attachment D were used to prepare this certification report and the Record Drawings

Photographs were taken by SCS on a regular basis in order to document each phase of the construction. The photographs included in Attachment E provide a general representation of the construction activities and methods.

Conformance testing was provided on the geosynthetics prior to delivery. The results were recorded in certificates for each roll of geosynthetics and are contained in Attachment C.

CONSTRUCTION RECORDS

The following construction documentation is provided as Attachments:

- Attachment A: Construction Permits
- Attachment B: Certification of Construction Completion FDEP Form 62-701.900(2)
- Attachment C: Conformance Testing Results
- Attachment D: Daily Field Reports by SCS Engineers
- Attachment E: Construction Photographs
- Attachment F: Certification of Acceptance Forms
- Attachment G: Record Drawings

Preconstruction Survey

A copy of the preconstruction survey for the damaged area performed by ATI is included in Attachment F.

Daily Field Reports

During the construction quality assurance (CQA) inspection activities, SCS Engineers maintained daily field reports detailing the construction progress and various issues that were addressed throughout the project. The reports included in Attachment D were used to prepare this certification report and the Record Drawings.

Conformance Testing

In accordance with FDEP Construction Permit Number 21375-013-SC/01 for the construction of the Phase 3 Expansion Project, conformance samples of the geosynthetics materials were tested and recorded. The conformance tests were conducted by TRI Environmental, Inc. on geosynthetic materials representative used in this project. The test results further verified that the geosynthetic materials met the project specifications. Please refer to Attachment C for the conformance testing results.

Construction Photographs

Photographs were taken by SCS on a regular basis in order to document each phase of the construction. The photographs included in Attachment E provide a general representation of the construction activities and methods.

Certification of Acceptance Forms

After placement of the soil subgrade area and prior to the geosynthetic installation, the CQA inspector and Contractor inspected the area and certified the area was acceptable for liner

installation. Please refer to Attachment F for the Certification of Acceptance of Soil Subgrade Form signed by the Contractor and CQA inspector.

After placement of the protective cover of the leachate collection/detection riser pipes, the CQA inspector and Contractor inspected the area and certified the area was acceptable. Please refer to Attachment F for the Certification of Acceptance of Protective Cover Form signed by the Contractor and CQA inspector.

Record Drawings

The project has been completed in general conformance with the Contract Documents. Attachment G includes a full-size signed and sealed set of Record Drawings prepared by SCS. These drawings depict the final conditions upon completion of the project.

ATTACHMENT A

Construction Permits

Florida Department of
Environmental Protection

Southwest District Office
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

CERTIFIED MAIL #7008 0150 0003 4894 2524
RETURN RECEIPT REQUESTED

November 5 2009

NOTICE OF PERMIT

Ms. Susan Metcalfe, P.G., Director
Citrus County Solid Waste Division
P.O. Box 340
Lecanto, Fl. 34460-0340

RE: Citrus County Central Class I Landfill Phase 3 Expansion
Permit No.: 21375-013-SC/01, Citrus County
WACS No.: SWD/09/39859

Dear Ms. Metcalfe:

Enclosed is permit number 21375-013-SC/01, issued pursuant to Section(s) 403.087(1), Florida Statutes.

Any party to this Order (permit) has the right to seek judicial review of the Order pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Blvd., Mail Station 35, Tallahassee, 32399-3000; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this Notice is filed with the Clerk of the Department.

Executed in Hillsborough County, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Deborah A. Getzoff
District Director
Southwest District

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this **NOTICE OF PERMIT** and all copies were mailed or transmitted electronically to the addressee and the listed persons before the close of business on November 5, 2009 to the listed persons.
Clerk Stamp

FILING AND ACKNOWLEDGMENT
FILED, on this date, pursuant to Section 120.52(10), Florida Statutes, with the designated Department, Clerk, receipt of which is hereby acknowledged.

Anna Brantley
Clerk

11/5/09
Date

DAG/sgm
Attachment
Copies furnished to:
Citrus County Elected Officials Notification
Dominique Bramlett, P.E., SCS Engineers, dbramlett@SCSEngineers.com
Patty Jefferson, Citrus County, patty.jefferson@bocc.citrus.fl.us
Fred Wick/Frank Hornbrook, FDEP, Tallahassee (e-mail)
Ronni Moore, OGC Tallahassee (e-mail)
John Morris, P.G., FDEP Tampa (e-mail)
Susan Pelz, P.E., FDEP Tampa (e-mail)

Florida Department of Environmental Protection

Southwest District
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926
Telephone: 813-632-7600

PERMITTEE
Citrus County Board of County
Commissioners
110 N. Apopka Avenue
Inverness, FL 34450

Attention:
Ms. Susan Metcalfe, P.G., Director
Citrus County Public Works,
Division of Solid Waste Mgmt.

PERMIT/CERTIFICATION

WACS ID No:	SWD/09/39859
Permit No:	**21375-013-SC/01**
Date of Issue:	**11/05/2009**
Expiration Date:	**11/05/2014**
County:	Citrus
Lat/Long:	28°51'07" 82°26'12"
Sec/Town/Rge:	1/19S/18E
Project:	Citrus County Central Class I Landfill Phase 3 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, 62-550, 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 referenced in Specific Condition #A.2., and made a part hereof and specifically described as follows:

To **construct** an expansion of a Class I landfill (approximately 6.2 acres), referred to as the **Citrus County Central Landfill, Phase 3** subject to the specific and general conditions attached, located near **S.R. 44, 3 miles east of Lecanto, Citrus County, Florida**. The specific conditions attached are for the construction of:

1. Class I Landfill and related appurtenances

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 Information:

Disposal acres	Approx. 6.2 acres (Phase 3 only) [ref. SC#A.2.a., Application form Part .3.]
Lowest Bottom elevation of Phase 3 (in primary sump)	+48.0 ft. NGVD [ref. SC#A.2.a.(4), Sheet 7 of 19]
Design top elevation at final buildout	max. +225.0 feet NGVD [ref. SC#A.2.a., Eng. Report, Sec. F. Att. F-3]
Sideslopes max.	3H:1V [ref. SC#A.2.a., Eng. Report, Sec. F. Att. F-3]
Liner system (bottom to top) [SC#A.2.a.(4), Details 2 & 3/Sheet 9 of 19]	- Prepared subbase of compacted soil [Spec. 31 20 00-Table 31 20 00-1] - biaxial reinforcing geogrid [Spec. 31 32 19-Table 31 32 19-2] - Geosynthetic clay liner (GCL) (5 x 10^{-9} cm/sec) [Spec. 02 56 15-Table 3] (cell bottom only) - 60 mil textured (both sides) HDPE geomembrane [GM] [Spec. 33 05 20-Table 33 05 20-1] - 250 mil leak detection bi-planar geocomposite [BGDN] (n/w GT/geonet/n/w GT), [Spec. 31 05 21-Table 31-05-21-1] - 60 mil textured (both sides) HDPE geomembrane [GM] [Spec. 33 05 20-Table 33 05 20-1] - 300 mil tri-planar leachate collection geocomposite [TGDN] (n/w GT/geonet/n/w GT) [Spec. 31 05 20-Table 31-05-20-1] - 2-foot protective sand layer (5.2 x 10^{-4} cm/sec) [Spec. 31 20 00-Table 31 20 00-1] (placed on cell bottom during construction & on side slopes during operation) - uniaxial reinforcing geogrid (on-side slopes only & replaced by 2 ft protective layer during operation) [Spec. 31 32 19-Table 31 32 19-1]
LCS drainage system (top to bottom)	- Drainage/protective sand ≥ 5.2 x 10^{-4} cm/sec [Spec. 31 20 00-Table 31 20 00-1] - One trench drains from east to west in center of each cell. 8-inch SDR 17 HDPE perforated LCS piping. [ref. Spec 33 51 10-2.01.B. SC#A.2.a.(4), Detail B, Sheet 9 of 19] Slope=1.0% after settlement at buildout [ref. SC#A.2.a., Eng. Report, Sec. H.3.b.3.] - LCS pipe drains to a primary leachate collection sump at the west end of Phase 3, then is pumped via two 24-inch SDR 17 HDPE side slope riser pipe to 4-inch HDPE leachate transmission line w/in-line meter to the existing 6-inch primary leachate transmission line to the existing leachate storage tank [ref. SC#A.2.a.(4), Sheets 6 and 7 of 19]
LDS drainage system	- LDS geocomposite pipe drains to a secondary leachate collection sump at west end of Phase 3, then is pumped via a 24-inch SDR 17 HDPE side slope riser pipe to 1.5-inch HDPE secondary leachate transmission line w/in-line meter to the 4-inch primary leachate transmission line to the existing 6-inch primary leachate transmission line to the existing leachate storage tank [ref. SC#A.2.a.(4), Sheets 6 and 7 of 19]
Design life	4.3 years (Phase 3) [ref. SC#A.2.a., Part F.5.c.]
Interface friction angles	GCL/Biaxial geogrid & BGDN/Uniaxial geogrid interfaces ≥ 12.0° [Spec. 02 56 15-2.02.H.; Spec. 31 32 19-2.02. F. & H.] GM/GCL, GM/TGDN, GM/BGDN, & GM/Subbase soil interfaces ≥ 20.5° [Spec. 33 05 20-3.02.G. through J.] Uniaxial geogrid/Protective soil interface ≥ 22.0° [Spec. 31 32 19-2.02.G.]

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.

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 Statues 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: PART A -Solid Waste Facility General Requirements

1. **Facility Designation.** This site shall be classified as a Class I landfill and shall be constructed, operated, closed, monitored and maintained in accordance with all applicable requirements of Chapters 62-4, 62-302, 62-330, 62-520, 62-522, 62-550, and 62-701, Florida Administrative Code (F.A.C.) and all applicable requirements of Department rules.

2. **Permit Application Documentation.** This permit is valid for **construction** of Phase 3 of the Class I landfill and related systems (including bottom liner system, leachate collection and detection systems), at the Citrus County Central Class I Landfill in accordance with Department rules and the reports, plans and other information prepared by SCS Engineers (unless otherwise specified) as follows:

a. Citrus County Class I Central Landfill Phase 3 Expansion Construction Permit Application… (collated into two 3-ring binders and plan set*) dated August 14, 2008 (received August 21, 2008), as revised, replaced or amended (replacement pages inserted into original) dated and received December 10, 2008, dated and received March 5, 2009, dated June 11, 2009 (received June 26, 2009), dated August 31, 2009 (received September 1, 2009), and dated September 9, 2009 (received September 10, 2009). This information includes, but is not limited to:

1) *Technical Specifications*, Attachment H-1, Appendix L [Specs.];
2) *CQA Plan*, Attachment H-1 [CQAP];
3) *Water Quality and Leachate Monitoring Plan*, prepared by Jones Edmunds & Associates, Inc., dated November 2008, Attachment M-1 [Water Quality Monitoring Plan]; and
4) Plan Set titled, Citrus County Solid Waste Management Division Central Landfill Phase 3 Expansion Construction Drawings… (19 Sheets) dated August 2008 (revised and received December 10, 2008), including revised Sheets 7 of 19 through 10 of 19, received June 26, 2009.

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.

b. This permit does not authorize landfill operation or closure. Construction, operation, or other activities 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, or unless otherwise approved in writing by the Department.

c. This permit authorizes the construction of the bottom liner system, including leachate collection and detection systems and other related appurtenances for the Phase 3 portion of the landfill, only.

*** see OCULUS for uncollated submittals**

SPECIFIC CONDITIONS: PART A -Solid Waste Facility General Requirements

4. **Permit Renewal. On or before April 1, 2014** the permittee shall notify the Department in writing or electronically of its intent to apply for renewal of this permit and of the anticipated date of submittal of the permit renewal application. **No later than August 1, 2014**, 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. Permits shall be renewed at least every five years as required by Rule 62-701.320(10)(b), F.A.C. In the event that the regulations governing this permitted construction are revised, the permit renewal shall include modification of those specific construction conditions which are affected by the revision of regulations to incorporate those revisions in accordance with Specific Condition A.8.

5. **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.

6. **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.

7. **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 and also including date of permit expiration and renewal deadlines. It is a violation of this permit for failure to comply with all conditions and deadlines.

8. **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.

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

a. In the event that limestone is encountered during excavation or construction activities, excavation/construction activities in the immediate area shall cease, and 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 the location, elevation, and extent of limestone noted on a plan sheet, a description of the materials encountered, and documentation of completion of specified over excavation and backfilling activities. Excavation or construction activities shall not resume in the affected area until the specified over excavation and backfilling activities have been completed.

SPECIFIC CONDITIONS: PART A -Solid Waste Facility General Requirements

(Specific Condition #A.9., cont'd)

b. In the event that surface depressions or other occurrences which may be indicative of sinkhole activity or subsurface instability, are discovered on-site, or within 500 feet of the site, the Department shall be notified in accordance with Specific Condition #C.6.b. The written notification shall include a description of the incident, the location and size of the affected area 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. Open burning of solid waste is prohibited except in accordance with Rule 62-701.300(3) and Chapter 62-256, F.A.C. All fires which require longer than one (1) hour to extinguish must be promptly reported to the Department in accordance with Specific Condition #C.6.b.

SPECIFIC CONDITIONS: PART B - Construction Requirements

1. **Construction.** All significant construction activities shall be approved by the Department prior to initiating work, unless specifically authorized otherwise.

   a. This permit authorizes the construction of the Phase 3 bottom liner system, including leachate collection and detection systems and related appurtenances.

2. **Certification of Construction Completion.** All information required by this Specific Condition shall be signed and sealed by a registered professional engineer or land surveyor as appropriate.

   a. **Within sixty (60) days** after Phase 3 construction has been completed and prior to the acceptance of waste, the following activities shall be completed and submitted by the permittee, and shall be approved by the Department:

      1) 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.

      2) The owner or operator shall submit Record Drawings/Documents showing all changes (i.e. all additions, deletions, revisions to the plans previously approved by the Department including site grades and elevations). The Record Documents shall include as-built plans details and elevations (survey) as appropriate.

      3) 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.

      4) The professional engineer of record 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.

3. **Record Drawings/Documents.**

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

      1) Location of all anchor trenches and limits of liner;

      2) Daily construction reports;

      3) 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, geomembrane booting and connection details;

      4) As-built elevations for the leachate collection pipes (including elevations in the trenches and inverts at the collection sump);

      5) All geomembrane destructive test results;

      6) A compact disc or other electronic media that includes all available photographs documenting all stages of the construction project. Each photograph shall include the camera date stamp.

SPECIFIC CONDITIONS: PART B - Construction Requirements

(Specific Condition #B.3.a., cont'd)

7) The information listed in CQAP Section 7;

8) Documentation that demonstrates that all leachate collection system piping has been video inspected and pressure cleaned. This documentation shall also detail all deficiencies discovered and corrective actions taken; and

9) Construction details for proposed monitor well MW-20 as required by Specific Condition #E.5.b., and #E.5.d., and results of initial sampling as required by Specific Condition #E.5.c.

10) Documentation of any geotechnical improvements to the subgrade during cell preparation.

4. **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). All changes shall be noted using strikethrough (~~strikethrough~~) for deletions, and shading (Shading) or underline (underline) for additions. All changes in the plans, specifications and CQA Plan shall be accompanied by a narrative indicating the change. 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 the cause of the deviation and a re-certification of the alternate design by the design engineer shall be provided. 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) The role and name of the specific company/organization for each of the parties in the Project team [CQAP Section 3.02];

b. **At least 30 days prior to initiation** of installation of the liner, the results of the interface friction testing using actual construction materials shall be submitted to the Department. The results must demonstrate that the all interfaces each exhibit a minimum safety factor of 1.5 against sliding. Placement of the geomembrane shall not proceed prior to the Engineer's receipt of the results of the interface friction testing which meet the requirements of this condition. The minimum specified interface friction angles are as specified in Specific Condition B.11.f., with no cohesion for all liner system interfaces [Spec. 02 52 15-2.02.H. & I.; Spec. 31 32 19-2.02.H.].

SPECIFIC CONDITIONS: PART B - Construction Requirements

(Specific Condition #B.4., cont'd)

c. **No later than 2 weeks** prior to construction of the following components of the project, the Department shall be notified of the initiation of construction of these components (for each phase of construction) to allow the Department to observe the construction of:

1) Seaming performed using a method other than double-fusion (wedge) or extrusion welding and;

2) Bottom liner tie-in (with Phase 2) areas;

d. **At least seven (7) days prior to** initiation of the following activities, the permittee shall submit the following information:

1) Initiation of any dewatering activity - Submit a dewatering plan for the removal and disposal of groundwater encountered and required to be removed as part of construction;

2) Initiation of placing drainage sand - Submit permeability test results for the drainage sand [Spec. 31 20 00-2.03.C.].

e. To allow for observation, at least 72 hours prior to initiation, the Department shall be notified of any spark testing.

5. **Pre-Construction Meeting Notification.** Department Solid Waste Permitting staff shall be notified **at least one (1) week prior** to all pre-construction meetings. 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. A copy of the minutes from the pre-construction conference shall be submitted to the Department within two (2) weeks of the conference.

6. **Construction Schedule and Progress Report.**

a. **No later than one (1) week 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 of 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, or may be submitted electronically. 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, piping, etc.),
2) Progress meeting minutes [CQAP, Sec. 4.2];
3) Problem or work deficiency meeting minutes [CQAP, Sec. 4.3]; and
4) Color copies of photographs which are representative of the typical construction activities for the reporting period and details of major stages of construction (e.g., biaxial reinforcing geogrid installation, leachate trench construction, Phase 2 liner tie-in, etc.). Photographs shall be date stamped.

SPECIFIC CONDITIONS: PART B - Construction Requirements

7. **Construction Tolerances.**

a. For final grading, the construction tolerances shall be ±0.20 ft. (vertical) and ±0.50 ft. (horizontal) for elevation and ±0.10% for slope to the lines and grade as shown on the construction drawings [Spec. 31 20 00-3.11].

b. As-built topographic surveys shall demonstrate that the liner and protective soil cover were constructed within the tolerance required by the Drawings and Specifications. Grid spacing shall be no greater than a 50 ft. grid [Spec. 01 51 01-3.01.I.].

c. All soil layers shall be constructed to the thicknesses listed in the Specifications and CQA Plan, which are minimum requirements.

d. Leachate collection pipe invert elevations shall be surveyed/recorded every 50 linear feet along the pipe and at each change in direction. The construction tolerance for pipe elevations shall be ±0.1 ft. for the leachate collection and detection lines.

8. **Construction Quality Assurance.**

a. CQA Plan and Observation.

1) 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#A.2.a(2)], and the conditions of this permit.

2) The professional engineer or his designee shall be on-site at all times during construction (including liner system and leachate collection/detection systems) to monitor construction activities.

3) The CQA Consultant and CQA support personnel shall evaluate contractor activities; review and evaluate submittals, and MQC and CQC results; perform and evaluate CQA tests; and notify the Engineer of defective or non-conforming work. [CQAP, Sec. 3.4]

4) The CQA Laboratories shall be independent of the Contractors, Installers, and Manufacturers. [CQAP, Secs. 3.8 & 3.9] The CQA Laboratories are responsible for conducting interface friction angle testing, internal shear testing (GCL), GCL hydraulic conductivity testing, and liner seams peel and shear testing.

b. Construction Documents. 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. Drawings which show the locations of geomembrane panel seams and repairs shall be kept on-site at all times for reference. Work shall not be concealed until required information is recorded.

SPECIFIC CONDITIONS: PART B - Construction Requirements

(Specific Condition #B.8., cont'd)

c. Spills.

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

2) The Department shall be notified in accordance with Specific Condition #C.6.b. of all fuel, oils, greases, solvents, lubricants, etc., that are spilled or leaked in areas that may discharge outside the liner system. The permittee shall ensure that all personnel working on the landfill site (including contractors and subcontractors) shall utilize all appropriate measures to prevent spills and leaks of fuel, solvents, lubricants, oils, etc.

d. Defective work. 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 on-site 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 Conditions #B.2 and #B.3. All areas not meeting the requirements of the contract specifications and CQA Plan shall be reworked by the Contractor to meet the specifications, CQA Plan and requirements of this permit.

e. Night work. Construction activities such as geomembrane seaming, QA/QC testing of the geosynthetics or soil materials, surveying, etc. shall not be carried out during non-daylight hours without prior Department approval [Spec. 33 05 20-1.04.K.]. If these activities will be conducted during nighttime hours, the Department shall be notified **at least 1 week** in advance for schedule makeup, and 1 day for weather emergencies, to allow for Department observation [see Spec. 33 05 20-3.04.J.]. This notification shall include a description of the methods to be used to provide adequate illumination to ensure that the quality of the construction is not compromised.

f. Dewatering.

1) 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. 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.

2) Required dewatering shall be conducted in accordance with the dewatering plan submitted in accordance with Specific Condition B.4.d(1).

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

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

i. All portions of the bottom liner system including leachate collection and detection system components, shall be observed and documented by the CQA Officer or CQA support personnel.

SPECIFIC CONDITIONS: PART B - Construction Requirements

(Specific Condition #B.8., cont'd)

j. CQA daily reports shall include weather conditions (e.g., precipitation, temperature).

k. Runoff from stockpiled soils shall not discharge to surface water bodies or wetlands such that Department surface water standards are violated at the point of discharge.

l. No solid waste shall be used for backfill.

m. Monitoring wells shall be protected at all times during construction. In the event that a monitoring well is damaged, the Department shall be notified in accordance with Specific Condition C.6.b.

9. **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.

10. **Soil Materials.**

a. Compaction.

1) The subbase (material under biaxial reinforcing geogrid) shall be compacted to a minimum of 95% Standard Proctor maximum dry density. [Spec. 31 20 00-Table 31 20 00-1B] The subbase material shall meet the requirements of Specification Section 31 32 19-3.03.A.

2) Compaction equipment used for proofing-rolling shall be a vibratory drum roller having a static at-drum weight of at least 10 tons capable of obtaining the densities specified [Spec. 31 20 00-3.03.C.].

b. During the preparation of the subbase, the entire site shall be inspected under the direction of a geotechnical engineer and shall be evaluated for soils that may pump, rut or settle, or that would indicate soft or loose conditions. The permittee shall notify the Department **within 24 hours of discovery** of any such conditions and shall ensure that the foundation is geotechnically improved in these areas [Spec. 31 20 00-3.03].

c. The protective cover soil shall have a minimum hydraulic conductivity of 5.2×10^{-4} cm/sec and shall be a minimum of 24-inches thick [ref. SC#A.2.a.(4), Detail 3,Sheet 9 of 19]. The frequency of permeability tests to be performed on the drainage sand material to demonstrate the required permeability shall be 1 per acre of protective cover soil [Spec. 31 20 00-Table 31 20 00-1].

d. The leachate collection trench gravel shall be well-graded gravel that meets the requirements of Specification Parts 31 20 00-2.04 & 2.05.

e. All laboratory tests required for the borrow sources for backfill, sand and gravel shall be done by an independent soils testing agency retained by the Owner.

SPECIFIC CONDITIONS: PART B - Construction Requirements

(Specific Condition #B.10., cont'd)

f. Soil CQA testing frequencies for the final subbase shall be doubled for the first five acres of liner system construction. Earthwork shall be tested by the CQAM for the tests and frequencies specified in Specification 31 20 00-Table 31 20 00-1.

g. Soil cover material shall be placed over the geocomposite such that the geocomposite is not damaged and no tensile stress is induced in the materials.

h. 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. The subbase shall be accepted by the Liner Installer and Engineer in writing before placement of the next layer.

i. During the construction of, and until the GCL is placed on the subbase, the subbase shall be inspected daily for signs of desiccation, excessive moisture, or other damage. In the event that the condition of the subbase deteriorates, corrective actions shall be implemented immediately. Washouts or erosion of the subbase shall repaired immediately. The CQAM shall observe the condition of the subbase and note areas of inadequacy, erosion or other deterioration in the Daily Reports.

j. Markers used to observe the depth of the protective soil cover shall be removed after use and shall not be abandoned in place.

11. **Geosynthetic Materials.**

a. Conformance testing.

1) The CQA Consultant or designee (independent from the Contractor) shall take conformance samples of the geosynthetics materials in accordance with the test methods and frequencies referenced in Specific Condition B.11.a(3) below. In all cases, the test results shall meet or exceed the property values in the Specifications and CQA Plan.

2) The geosynthetic materials shall not be accepted for use on the project until the results of the CQA conformance testing that indicate that the geosynthetics meet the specifications have been received.

3) The geosynthetic materials shall conform to the following:
   a) Biaxial reinforcing geogrid: Spec. 31 32 19-Table 31 32 19-2
   b) GCL: Spec. 02 56 15-Table 3
   c) Geomembrane [GM]: Spec. 33 05 20-Table 33 05 20-1
   d) Bi-planar Geocomposite [BGDN]: Spec. 31 05 21-Tables 31-05-21-1 through 31-05-21-3
   e) Tri-planar Geocomposite [TGDN]: Spec. 31 05 20- Tables 31-05-20-1 through 31-05-20-3
   f) Uniaxial reinforcing geogrid: Spec. 31 32 19-Table 31 32 19-1
   g) Non-woven geotextile: Spec. 31 05 19-2.01

4) Certificates of Compliance from the Manufacturer are acceptable in lieu of CQA testing for the following properties: resin certificates for raw materials for geosynthetics, water vapor transmission rates through geomembranes, Oxidation Induction Time (OIT), general chemical compatibility ratings.

SPECIFIC CONDITIONS: PART B - Construction Requirements

(Specific Condition #B.11., cont'd)

b. Prior to placement of the geomembrane, the GCL layer and/or biaxial geogrid layer shall be inspected and accepted by the geomembrane liner Installer and Engineer [CQAP, Sec. 6.1.3 & 6.5.8].

c. 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) Trial seam testing shall meet the requirements of Specification Section 33 05 20-3.05.A. Seaming apparatus or personnel which have failed trial welds shall not be used for seaming until passing welds are achieved.

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. No geomembrane seaming shall be performed unless the CQA manager/inspector is on-site.

4) The full-time resident CQA inspector shall observe no more than two geosynthetics seaming crews at any given time.

5) The procedure used to temporarily bond adjacent geomembrane panels together shall not damage the geomembrane. Solvent or adhesive shall not be used to bond geomembrane panels.

6) All seaming operations shall cease upon the presence of any precipitation (drizzle, sprinkle, fog, dew, etc.) [Spec. 33 05 20-3.04.I.].

7) On side slopes, seams shall be oriented parallel to the line of maximum slope, i.e., oriented along, not across the slope [Spec. 33 05 20-3.04.B.].

8) All geomembrane seams, including trial seams, shall have peel strength of 98 ppi for fusion welds and 78 ppi for extrusion welds, and must exhibit an FTB failure. Shear strength shall be 120 ppi for fusion and extrusion welds [Spec. 33 05 20- Table 33 05 20-2].

d. 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. This frequency shall not be based on an average throughout the entire facility [Spec. 33 05 20-3.05.B.1.].

2) In all cases destructive tests conducted on the geomembrane field seams shall demonstrate that the failure is outside of the seam area. Five specimens shall be tested for shear and peel. Four of the five specimens shall meet the minimum strength requirements for each test method (peel and shear) listed in Table 33 05 20-2 and all the specimens must exhibit an FTB failure [Spec. 33 05 20-3.05.B.6.]. The strength results shall not be averaged and both sides of fusion welds shall be tested.

SPECIFIC CONDITIONS: PART B - Construction Requirements

(Specific Condition #B.11.d., cont'd)

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 on-site CQA manager/inspector.

4) All areas that fail nondestructive testing shall be marked by the on-site CQA inspector.

5) All welds shall be tested in shear and peel. Geomembrane seams shall not be tested by "hand" exclusively.

e. Geocomposite Drainage Layer.

1) Transmissivity.

a) The transmissivity test results required by the Specifications shall be submitted to the Engineer for review before the proposed materials are approved for use on the project.

b) The transmissivity of tri-planar and bi-planar geocomposite shall be in accordance with the minimum transmissivities specified by and based upon the gradients and loads specified in Specification Sections 31 05 20 and 31 05 21, respectively. CQA conformance transmissivity testing shall be conducted on the actual materials that will be used in the project [ref Spec. 31 05 20- Tables 31-05-20-1 through 31-05-20-3; Spec. 31 05 21- Tables 31-05-21-1 through 31-05-21-3].

2) The geocomposite and geotextile shall be handled (stored, placed, etc.) in a manner which prevents the infiltration of dirt and protects the geocomposite and geotextile from abrasion, punctures and excessive moisture. Geocomposite or geotextile that are clogged by dirt shall be cleaned prior to placement.

f. Interface friction angles.

1) The minimum interface friction angles (peak) for the following interfaces shall be the following:

- GCL/biaxial geogrid and BGDN/uniaxial geogrid interfaces - **12.0 degrees with no cohesion.** [Spec. 02 56 15-2.02.H.; Spec. 31 32 19-2.02. F. & H.]

- GM/GCL, GM/TGDN, GM/BCDN, and GM/subbase soils interfaces - **20.5 degrees with no cohesion.** [Spec. 33 05 20-3.02.G. through J.]

- Uniaxial geogrid/protective soil layer interface - **22.0 degrees with no cohesion.** [Spec. 31 32 19-2.02.G.]

Deviation from this requirement shall require a permit modification and shall demonstrate that adequate slope stability will be achieved.

g. Wrinkles. The construction methods used shall minimize wrinkles in the geomembrane and geocomposites. Excessive wrinkles are wrinkles that fold over when stepped on or are at least 12 inches high. 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.

SPECIFIC CONDITIONS: PART B - Construction Requirements

(Specific Condition #B.11., cont'd)

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

i. The geomembrane shall always be kept dry and protected from wind damage. Sandbags or other temporary anchoring devices shall be removed prior to subsequent placement of materials over the geosynthetics. Temporary loading and/or anchoring devices (such as sand bags) shall be removed prior to placing the next layer (i.e., geocomposite or soil) over the geomembrane.

j. The CQA Officer and support personnel shall inspect the geosynthetic materials for imperfections, faulty work and suspect areas [CQAP, Sec 3.4].

k. The geomembrane shall be clean at the time when it is examined for defects, and during testing of repairs.

l. Geocomposite Clay Layer.

1) The GCL shall have a saturated hydraulic conductivity of no greater than 5×10^{-9} cm/sec [Spec. 02 56 15-Table 3].

2) The minimum internal friction angles (peak) for the GCL shall be **20.5 degrees** under fully hydrated conditions and the specified confining pressures [Spec. 02 56 15-2.02.J.]

3) GCL that has become prematurely hydrated or has become hydrated with no confining pressure shall not be used on project.

4) Prior to placement of the GCL on the bi-axial geogrid, the geogrid subgrade shall be accepted by the GCL liner Installer and Engineer [CQAP, Sec. 6.1.3].

5) The GCL shall be covered the same day as installed with the HDPE liner. Only the amount of GCL that can be anchored, inspected, repaired, and covered in the same day shall be installed each day [CQAP, Sec. 6.5.8].

m. No geomembrane shall be placed in an area that has become softened by precipitation or desiccated and cracked due to lack of moisture. No standing water or excessive moisture shall be allowed on the area to be lined before the geomembrane installation.

12. **Leachate collection and removal system.**

a. HDPE pipe or fittings shall not be dropped or crimped 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. All non-pressurized (perforated and non-perforated) HDPE piping shall be jet cleaned and video inspected prior to final acceptance [Spec. 33 51 10-3.08]. The cleaning report and videotapes shall be provided as part of the Record Documents required in Specific Condition #B.3.

d. All pressurized HDPE piping shall be pressure tested in accordance with Specification Section 33 51 10-3.06.

SPECIFIC CONDITIONS: PART C - Operation Requirements

1. **Facility Operation Requirements.**

a. The permittee shall operate this facility in accordance with Chapter 62-701, F.A.C., and Operation Permit No. 21375-008-SO/01 [Phases 1, 1A, and 2] (including modifications, if any) or its successors.

b. Leachate shall not be deposited, injected, dumped, spilled, leaked, or discharged in any manner to soils, surface water or groundwater outside the liner and leachate management systems at any time during the construction or operation of this facility.

c. **In no event** shall waste be accepted for disposal in the **Phase 3** portion of the Citrus County Central Class I Landfill or the **vertical expansion over Phase 1A and 2** 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 #B.2. and #B.3.,

2) Financial assurance requirements of Specific Condition #D.4.c.,

3) Construction of groundwater monitoring wells as required by Specific Conditions #E.5.,

4) Completion of initial sampling of new monitoring wells as required by Specific Condition #E.5.

5) Construction of the stormwater management system for Phase 3,

7) Issuance of a separate permit or modification of Operation Permit No. 21375-008-SO/01 (including modifications, if any) or its successors that authorizes operation of **Phase 3** and **vertical expansion over Phases 1A and 2**. The separate permit or modification request shall include operational procedures for protecting the liner system particularly during the placement of the first layer of waste in Phase 3.

2. **Facility Personnel.** The owner or operator shall provide adequate personnel for constructing, operating, monitoring and maintaining the facility in an orderly, safe, and sanitary manner.

3. **Control of Access.** Access to, and use of, the facility shall be controlled as required by Rule 62-701.500(5), F.A.C.

4. **Monitoring of Waste.** The permittee shall not accept hazardous waste or any hazardous substance at this site. Hazardous wastes are wastes listed in 40 CFR 261 Subpart D as hazardous or are wastes characterized in 40 CFR 261 Subpart C as hazardous. Hazardous substances are those defined in Section 403.703, Florida Statutes or in any other applicable state or federal law or administrative rule. Sludges or other wastes which may be hazardous should be disposed of in accordance with Rules 62-701.300(4) and 62-701.500(6)(b), F.A.C. In the event that hazardous wastes are discovered, the Department shall be notified in accordance with Specific Condition C.6.b. below.

SPECIFIC CONDITIONS: PART C - Operation Requirements

5. **Control of Nuisance Conditions.** The owner or operator shall control odors, vectors (mosquitoes, other insects, rodents), and fugitive particulates (dust, smoke) arising from the construction so as to protect the public health and welfare. Such control shall minimize the creation of nuisance conditions on adjoining property. Complaints confirmed by Department personnel upon site inspection, shall constitute a nuisance condition, and the permittee must take immediate corrective action to abate the nuisance.

6. **Facility Maintenance and Repair.**

a. The site shall be properly maintained including maintenance of access roads, equipment, stormwater and leachate management systems (including pumps and piping), cover systems and berms, gas venting and/or monitoring and management systems, surface water management system, and groundwater monitoring system. Erosion and ponded water within landfill footprint shall be minimized.

b. In the event of damage to any portion of the landfill site facilities, unauthorized leachate discharges, failure of any portion of the landfill systems (including damaged or dry groundwater monitoring wells), fire, explosion, the development of sinkhole(s) or other subsurface instability at the site, the permittee shall **immediately (within 24 hours)** notify the Department explaining such occurrence and remedial measures to be taken, method to prevent recurrence, and time needed for repairs. **Written, detailed notification shall be submitted to the Department within seven (7) days following the occurrence.** Routine maintenance does not require notification but shall be noted on daily reports.

c. In the event that any portion of the groundwater monitoring system is damaged or unable to be sampled, corrective actions shall be completed **within sixty (60) days** of the written notification specified in Specific Condition #C.6.b., unless otherwise approved by the Department. Corrective actions which include relocation or installation of new groundwater monitoring wells shall be in accordance with Specific Condition #E.5.a., or as otherwise approved by the Department.

d. In the event that the leachate management systems are damaged or are not operating effectively, corrective actions shall be initiated **within thirty (30) days** of the written notification specified in Specific Condition #C.6.b., unless otherwise approved by the Department.

7. **Stormwater Management.** The site shall have a surface water management system designed, constructed, operated, and maintained to prevent surface water from running on to waste filled areas, and a stormwater runoff control system designed, constructed, operated, and maintained to collect and control stormwater to meet the requirements of Chapter 62-330, F.A.C., and the requirements for management and storage of surface water in accordance with Rule 62-701.500(10), F.A.C., to meet applicable standards of Chapters 62-3, 62-302, and 62-330, F.A.C. The stormwater management system shall be inspected for damage and proper operation daily.

8. **Leachate Management.**

a. Leachate shall be managed in accordance with the requirements of Operation Permit No. 21375-008-SO/01 (Phases 1, 1A, and 2) (including modifications, if any) or its successors, Rule 62-701.500(8), F.A.C., and other applicable Department rules.

SPECIFIC CONDITIONS: PART D - Recordkeeping

1. **Report submittals.** Unless otherwise specified, all submittals, notifications, requests for permit modification, reports for compliance with this permit, etc. shall be sent to: Solid Waste Section, Department of Environmental Protection, Southwest District Office, 13051 North Telecom Parkway, Temple Terrace, Fl. 33637-0926.

2. **Operation Plan and Operating Record.** Each landfill owner or operator shall have an operational (long-term care, monitoring and maintenance) plan. A copy of the Department approved permit, plan, construction reports and record drawings, and supporting information shall be kept at the facility at all times for reference and inspections. Operating records as required by Rule 62-701.500(3), F.A.C., shall be maintained at the site.

3. **Waste Records.** The permittee shall maintain all records required by the construction specifications, CQA Plan and this permit on-site during construction, and shall provide copies to the Department upon request, unless specified otherwise.

4. **Financial Assurance.** The permittee shall provide adequate financial assurance for this facility and related appurtenances in accordance with Rule 62-701.630, F.A.C.

   a. All costs for closure shall be adjusted and submitted **annually, by September 1st each year** to: Solid Waste Manager, Solid Waste Section, Department of Environmental Protection, 13051 North Telecom Parkway, Temple Terrace, Fl. 33637-0926.

   b. Proof that the financial mechanism has been adequately funded shall be submitted **annually** to: Financial Coordinator, Solid Waste Section, Department of Environmental Protection, 2600 Blair Stone Road, MS#4565, Tallahassee, Florida 32399-2400.

   c. Proof of the initial funding of the financial assurance mechanism shall be submitted **no later than 60 days prior to** receipt of waste in the Phase 3 portion of the landfill.

SPECIFIC CONDITIONS: PART E - Water Quality Monitoring Requirements

1. **Water Quality Monitoring Quality Assurance.**
   a. All field work done in connection with the facility's Water Quality Monitoring Plan regarding the collection of ground water, surface water and leachate (influent, treated effluent, and treatment plant sludge) samples shall be conducted in accordance with the Standard Operating Procedures (SOPs) described in DEP-SOP-001/01 (March 31, 2008) [or as replaced by successor SOPs], as referenced in Rule 62-160.210(1), F.A.C. All laboratory analyses done in connection with the facility's Water Quality Monitoring Plan shall be conducted by firms that hold certification from the Department of Health, Environmental Laboratory Certification Program under Chapter 64E-1, F.A.C., as referenced in Rule 62-160.300(1), F.A.C. The SOPs utilized and the laboratory's list of certified test methods and analytes must specifically address the types of sampling and analytical work that are required by the permit and shall be implemented by all persons performing sample collection or analysis related to this permit. Alternate field procedures and laboratory methods may be used if approved according to the requirements of Rules 62-160.220 and 62-160.330, F.A.C., respectively.

   b. The field testing, sample collection and preservation, and laboratory testing, including the collection of quality control samples, shall be in accordance with methods approved by the Department in accordance with Rule 62-4.246 and Chapter 62-160, F.A.C. Approved methods published by the Department or as published in Standard Methods, A.S.T.M., or EPA methods shall be used.

2. **Zone of Discharge.**
   a. The zone of discharge shall extend horizontally 100 feet from the limits of the landfill disposal areas or to the property boundary, whichever is less, and shall extend vertically to the first semi-confining unit within the upper Floridan aquifer.

   b. The permittee shall ensure that the water quality standards for Class G-II ground water will not be exceeded at the boundary of the zone of discharge according to Rule 62-520.420(1), F.A.C., and that the ground water minimum criteria listed in Rule 62-520.400(1), F.A.C., will not be exceeded outside the footprint of the landfill disposal areas.

SPECIFIC CONDITIONS: PART E - Water Quality Monitoring Requirements

3. **Ground Water Monitor Well Locations.** The ground water monitoring network is designed and constructed in accordance with the document entitled "Water Quality and Leachate Monitoring Plan," prepared by Jones Edmunds & Associates, Inc., dated November 2008 [ref. SC#A.2.a.(3)]. The ground water monitor wells are located on the figure entitled "Attachment 1, Site Plan," prepared by Jones Edmunds & Associates, Inc., received June 26, 2009 **(attached)**, as follow:

Well No.	WACS Testsite ID Number	Aquifer	Designation	Location
MW-1R *	165	Floridan	Background	See figure
MW-2	149	Floridan	Background	See figure
MW-3	150	Floridan	Background	See figure
MW-7	179	Floridan	Background	See figure
MW-10	22010	Floridan	Compliance	See figure
MW-11	22011	Floridan	Compliance	See figure
MW-12	22012	Floridan	Compliance	See figure
MW-13	22013	Floridan	Compliance	See figure
MW-14	22014	Floridan	Compliance	See figure
MW-15	22015	Floridan	Compliance	See figure
MW-17	22017	Floridan	Compliance	See figure
MW-20 **	23691	Floridan	Compliance	See figure
MW-18	22709	Floridan	Assessment	See figure
MW-19	22710	Floridan	Assessment	See figure
MW-6	168	Floridan	Intermediate	See figure
MW-4R	166	Floridan	Piezometer	See figure
MW-5	167	Floridan	Piezometer	See figure
MW-8R	180	Floridan	Piezometer	See figure
MW-9	181	Floridan	Piezometer	See figure
MW-16	22016	Floridan	Piezometer	See figure
MW-AA	169	Floridan	Piezometer	See figure
MW-B	65	Floridan	Piezometer	See figure
MW-E	171	Floridan	Piezometer	See figure
PZ-1	22711	Floridan	Piezometer	See figure
PZ-2	22712	Floridan	Piezometer	See figure

* = the designation of existing well MW-1R will change from "background well" to "piezometer" upon initiation of waste disposal in the Phase 3 expansion area.

** = proposed compliance well MW-20 shall be installed **prior to the initiation of waste disposal in the Phase 3 expansion area** in accordance with the construction details provided in Attachment 2 of the document entitled "Water Quality and Leachate Monitoring Plan," prepared by Jones Edmunds & Associates, Inc., dated November 2008 [ref. SC#A.2.a.(3)]; documentation of well construction shall be prepared in accordance with Specific Condition #E.5.b., and #E.5.d.; an initial sampling event shall be conducted **within 7 days of well installation and development** for the parameters referenced in Specific Condition #E.5.c.; documentation of well construction details and the results of the initial sampling event shall be **submitted as part of the certification of the Phase 3 construction completion** [see SC#B.3.a.(9)].

All wells are to be clearly labeled and easily visible at all times. The permittee should keep all wells locked to minimize unauthorized access.

SPECIFIC CONDITIONS: PART E - Water Quality Monitoring Requirements

4. **Ground Water Sampling**. The locations, parameters, and frequencies specified herein represent the minimum requirements for ground water monitoring. Additional samples, wells, and parameters may be required based upon subsequent analysis. Method Detection Limits must be less than or equal to the Maximum Contaminant Levels established for the individual parameters to demonstrate compliance with Class G-II ground water standards referenced in Chapter 62-520, F.A.C. Ground water samples for analysis of metals may be field-filtered if the criteria listed in the Department's 1994 technical document entitled *Determining Representative Ground Water Samples, Filtered or Unfiltered* are met, and shall be limited to the monitor wells that are screened in unconsolidated sandy sediments. Otherwise, compliance with ground water standards shall be based on the analysis of unfiltered samples.

a. Ground water levels shall be measured at all active wells and piezometers listed in Specific Condition No. E.3., during all sampling events described in Specific Condition Nos. E.4.b., E.4.c., and E.4.d., to a precision of 0.01 foot. The ground water surface contour maps prepared for each sampling event shall include ground water elevations (using a consistent, nationally recognized datum) calculated for each well and piezometer.

b. Prior to the initiation of waste disposal in Phase 3, routine ground water sampling shall be conducted at a **semi-annual frequency** at background wells MW-1R, MW-2, MW-3, and MW-7, and at compliance wells MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, and MW-17. Following the initiation of waste disposal in Phase 3, routine ground water sampling shall be conducted at a **semi-annual frequency** at background wells MW-2, MW-3, and MW-7, and at compliance wells MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, MW-17, and MW-20. These semi-annual sampling events shall be conducted for analysis of the following parameters:

Field Parameters	Laboratory Parameters
Static water levels before purging	Total ammonia - N
Specific conductivity	Chlorides
pH	Iron
Dissolved oxygen	Mercury
Temperature	Nitrate
Turbidity	Sodium
Colors & sheens (by observation)	Total dissolved solids(TDS)
	Those parameters listed in 40 CFR Part 258, Appendix I

c. Intermediate well MW-6 shall be sampled **semi-annually** for analysis of the following parameters:

Field Parameters	Laboratory Parameters
Static water levels before purging	Total ammonia - N
Specific conductivity	Chlorides
pH	Iron
Dissolved oxygen	Mercury
Temperature	Nitrate
Turbidity	Sodium
Colors & sheens (by observation)	Total dissolved solids(TDS)
	Those parameters listed in 40 CFR Part 258, Appendix I
	Fecal Coliform
	Total Trihalomethanes

SPECIFIC CONDITIONS: PART E - Water Quality Monitoring Requirements

(Specific Condition #E.4., continued)

d. Assessment wells MW-18 and MW-19 shall be sampled **semi-annually** for analysis of the following parameters:

Field Parameters	Laboratory Parameters
Static water levels before purging	Benzene
Specific conductivity	Methylene chloride
pH	Vinyl chloride
Dissolved oxygen	
Temperature	
Turbidity	
Colors & sheens (by observation)	

5. **Ground Water Monitor Well Construction.** The following information shall be submitted within 90 days of installation of all new or replacement wells and piezometers, or as stated below:

a. Prior to construction of all new or replacement wells and piezometers (excluding proposed well MW-20) the permittee shall request and receive Department approval of a minor permit modification in accordance with Specific Condition No. A.3.a.

b. Construction details (record drawings) for all new or replacement wells and piezometers shall be provided to the Department's Southwest District Office on Department Form No. 62-522.900(3), Monitor Well Completion Form **(attached)** [or as replaced by Department Form No. 62-701.900(30].

c. **Within one week of well completion and development,** each new or replacement well shall be sampled for the parameters listed in Rules 62-701.510(8)(a) and (8)(d), F.A.C.

d. A surveyed drawing shall be submitted in accordance with Rule 62-701.510(3)(d)(1), F.A.C., showing the location of all monitor wells and piezometers (active and abandoned) horizontally located in degrees, minutes and seconds of latitude and longitude, and the elevation of the top of the well casing and ground surface by the well casing to the nearest 0.01 foot, using a consistent, nationally recognized datum. The surveyed drawing shall include the monitor well identification numbers, locations and elevations of all permanent benchmarks and/or corner monument markers at the site. The survey shall be conducted by a Florida Licensed Professional Surveyor and Mapper.

6. **Well Abandonment.** All wells and piezometers not listed in Specific Condition No. E.3., and not a part of the approved Water Quality Monitoring Plan are to be plugged and abandoned in accordance with Rule 62-532.440, F.A.C., and the rules of the Southwest Florida Water Management District (SWFWMD). Documentation of abandonment shall include a map showing well/piezometer locations and SWFWMD abandonment records. The permittee shall submit a written report to the Department providing verification of the well/piezometer abandonment **within 30 days of abandonment.** A written request for exemption to the abandonment of a well must be submitted to the Department's Solid Waste Section for approval.

SPECIFIC CONDITIONS: PART E - Water Quality Monitoring Requirements

7. **Verification/Evaluation Monitoring.** If at any time monitoring parameters are detected at concentrations significantly above background water quality, or exceed the Department's water quality standards or minimum criteria in any detection well, the permittee has 30 days from receipt of the sampling results to resample the monitor well(s) to verify the original analysis. Should the permittee choose not to resample, the Department will consider the water quality analysis as representative of current ground water conditions at the facility. If the data is confirmed, or if the permittee chooses not to resample, the permittee shall notify the Department in writing within 14 days of this finding. Upon notification by the Department, the permittee shall initiate evaluation monitoring as described in Rule 62-701.510(7)(a), F.A.C. If monitoring parameters are detected at concentrations significantly above background water quality, or exceed the Department's water quality standards or minimum criteria in any compliance well, the permittee shall submit a preventive measures plan and initiate corrective action as described in Rule 62-701.510(7)(b), F.A.C.

8. **Surface Water Sampling.** All surface water bodies that may be affected by a contaminant release at the facility shall be monitored, except bodies of water contained completely within the property boundaries of the site which do not discharge from the site to surface waters (Rule 62-701.510(4), F.A.C.). It is not anticipated that the existing stormwater management system will discharge from the property. However, in the event that surface water discharge occurs from the stormwater management system, representative samples of each discharge event shall be collected for analysis of the parameters listed in Specific Condition No. E.8.b. In the event that any modifications to the stormwater management system associated with future uses of the landfill result in periodic surface water discharges from the property, the Department may require the implementation of routine surface water monitoring.

a. The locations, parameters, and frequencies specified herein represent the minimum requirements for surface water monitoring. Additional sampling locations and parameters may be required based upon subsequent analysis. Method Detection Limits must be less than or equal to the surface water criteria established for the individual parameters to demonstrate compliance with Class III surface water (predominantly freshwater) referenced in Chapter 62-302, F.A.C. Compliance with surface water criteria will be based on analysis of unfiltered samples.

b. Surface water sampling shall be conducted **per discharge event** in accordance with the Department's SOPs to comply with the requirements of Rules 62-701.510(4) and 62-701.510(6)(e), F.A.C. The Solid Waste Section of the Department shall be notified of the occurrence of each discharge event **within 24 hours of discovery**. Surface water samples shall be analyzed for the following parameters:

Field parameters	**Laboratory parameters**	
Specific conductivity	Unionized ammonia	Total organic carbon (TOC)
pH	Total hardness	Total nitrogen
Dissolved oxygen	Total phosphates	Chemical oxygen demand (COD)
Turbidity	Chlorophyll A	Fecal coliform
Temperature	Copper	Biochemical oxygen demand (BOD5)
Colors and sheens (by observation)	Iron	Total dissolved solids (TDS)
	Mercury	Total suspended solids (TSS)
	Nitrate	Zinc
	Parameters listed in 40 CFR Part 258, Appendix I	

SPECIFIC CONDITIONS: PART E - Water Quality Monitoring Requirements

9. **Leachate Sampling.**

a. Leachate Influent Sampling. Grab samples of leachate influent (unfiltered) shall be collected from the master lift station for Phases 1/1A (WACS testsite ID No. 172), from the Phase 2 primary pump sampling port (WACS testsite ID No. 21790), and from the sampling port at the top of the side slope riser pipes for Phase 3 (WACS testsite No. 23692) to comply with the requirements of Rules 62-701.510(5) and 62-701.510(6)(c), F.A.C. The leachate influent sampling points are located on the figure entitled "Attachment 1, Site Plan," prepared by Jones Edmunds & Associates, Inc., received June 26, 2009 **(attached).** The leachate influent samples collected from the master lift station for Phases 1/1A, the primary pump sampling port for Phase 2, and the sampling port for Phase 3 may be composited except that individual samples shall be collected from each location for analysis of volatile organic compounds.

1) **Annual** leachate influent sampling shall be conducted for analysis of the following parameters:

Field Parameters	Laboratory Parameters
Specific conductivity	Total ammonia - N
pH	Bicarbonate
Dissolved oxygen	Chlorides
Colors & sheens (by observation)	Iron
	Mercury
	Nitrate
	Sodium
	Total dissolved solids (TDS)
	Those parameters listed in 40 CFR Part 258, Appendix II

2) If the annual leachate influent analysis indicates that a contaminant listed in 40 CFR Part 261.24 exceeds the regulatory level listed therein, the permittee shall initiate **monthly** sampling and analysis of the parameters listed in Specific Condition No. E.9.a.(1), and shall notify the Department in writing in accordance with Specific Condition No. C.6.b. If in any three consecutive months no listed contaminant is found to exceed the regulatory level, the permittee may discontinue the monthly sampling and analysis and return to a routine sampling schedule.

b. Leachate Treatment Plant Effluent Sampling. Grab samples of treated leachate effluent (unfiltered) shall be collected at the discharge from the chlorine contact tank (WACS Testsite ID No. 175) as shown on the figure entitled "Attachment 1, Site Plan," prepared by Jones Edmunds & Associates, Inc., received June 26, 2009 **(attached)**, to comply with the ground water standards and minimum criteria referenced in Rules 62-520.420(1) and 62-520.400(1), F.A.C., respectively, with the exception of sodium, chloride and total dissolved solids (TDS). These three parameters shall meet the standards referenced in Rule 62-520.420(1), F.A.C., at the edge of the zone of discharge along the western property boundary (as described in SC#E.2.a.).

1) Leachate effluent shall be sampled at the frequency listed in Specific Condition No. E.9.b.(2), and the analytical results shall be submitted **quarterly**, as follows: Quarter 1 results shall be submitted by **April 15th**; Quarter 2 by **July 15th**; Quarter 3 by **October 15th**; and, Quarter 4 by **January 15th**.

SPECIFIC CONDITIONS: PART E - Water Quality Monitoring Requirements

(Specific Condition #E.9.b., continued)

2) Leachate effluent samples shall be collected for analysis of the following parameters [ref. SC#A.2.a.(2)]:

Parameter	Unit	Minimum	Maximum	Frequency
Flow	gpd	N/A	30,000	Daily
pH	STD UNITS	6.00	8.50	Daily
$CBOD_5$	mg/l	N/A	20	Monthly
TSS	mg/l	N/A	20	Monthly
Nitrate - N	mg/l	N/A	10	Monthly
Chloride	mg/l	N/A	N/A	Quarterly
Sodium	mg/l	N/A	N/A	Quarterly
TDS	mg/l	N/A	N/A	Quarterly
Total ammonia - N	mg/L	N/A	2.8	Quarterly
Benzene	µg/l	N/A	1	Quarterly
Toluene	µg/l	N/A	40	Quarterly
Ethylbenzene	µg/l	N/A	30	Quarterly
Total Xylenes	µg/l	N/A	20	Quarterly
Vinyl Chloride	µg/L	N/A	1	Quarterly
Ethylene dibromide (EDB)	µg/l	N/A	0.02	Quarterly
Total Trihalomethanes	µg/l	N/A	100	Semi-annually*
Arsenic	mg/l	N/A	0.01	Annually
Barium	mg/l	N/A	2	Annually
Cadmium	mg/l	N/A	0.005	Annually
Chromium	mg/l	N/A	0.1	Annually
Iron	mg/l	N/A	0.3	Annually
Mercury	mg/l	N/A	0.002	Annually
Lead	mg/l	N/A	0.015	Annually
Selenium	mg/l	N/A	0.05	Annually
Silver	mg/l	N/A	0.1	Annually

* = to be conducted concurrently with the semi-annual ground water sampling events described in Specific Condition Nos. E.4.b., and E.4.c.

If in any two consecutive months of leachate effluent sampling, the same listed parameter exceeds the regulatory level, the permittee shall immediately cease discharge into the percolation ponds and provide off-site disposal for its leachate and/or effluent, until acceptable leachate treatment is again demonstrated and until on-site discharge into the percolation ponds is again approved by the Department.

3) **Annually**, the leachate effluent shall be analyzed for the parameters listed in 40 CFR Part 258, Appendix I, however the effluent shall be analyzed for the parameters listed in 40 CFR Part 258, Appendix II during the annual sampling event conducted prior to permit renewal.

c. Leachate Treatment Plant Sludge Sampling. Waste sludge from the leachate treatment plant shall be sampled and analyzed **annually** using Department SOPs for the following parameters:

- Toxicity Characteristic Leaching Potential Test (TCLP) for the organics, metals and pesticides listed in 40 CFR Part 261.24, Table 1
- pH (standard units)
- Solids (percent)

Waste sludge that is not classified as hazardous waste (Rule 62-730.030, F.A.C.) may be disposed in the Class I landfill. Based upon the results of the analyses, the Department may require further testing and alternative disposal to assure compliance with all Department rules and regulations. The Department shall be notified within thirty (30) days of alternative sludge disposal activities.

SPECIFIC CONDITIONS: PART E - Water Quality Monitoring Requirements

10. Water Quality and Leachate Reporting Requirements. The results of each water quality sampling event conducted at the facility to comply with the Specific Conditions of this permit shall be included in Electronic Data Deliverable (EDD) reports that include:

a. Required water quality monitoring reports and all analytical results shall be submitted electronically. Water quality monitoring reports shall be submitted in Adobe pdf file format. The water quality EDD shall be provided to the Department in an electronic format consistent with requirements for importing the data into the Department's databases as summarized on the Department's web site at: ftp://ftp.dep.state.fl.us/pub/WACS-ADaPT. Water quality monitoring reports shall be signed and sealed by a Florida registered professional geologist or professional engineer with experience in hydrogeological investigations and shall provide the information required by Rules 62-701.510(9)(a)1 through 62-701.510(9)(a)10, F.A.C., including:

1. Cover letter;
2. Summary of exceedances and recommendations;
3. Ground water contour maps;
4. Chain of custody forms;
5. Water levels, water elevation table;
6. Ground Water Monitoring Report Certification, using the appropriate Department form;
7. Appropriate sampling information on Form FD 9000-24 (DEP-SOP-001/01); and,
8. Laboratory and Field data and error logs, as applicable. [In addition to the Adobe pdf file format, this data and associated error logs shall be submitted in an ADaPT-compatible, comma separated text file format.]

The report of results shall be submitted to:

- Department of Environmental Protection, Southwest District Office, Solid Waste Section, 13051 North Telecom Parkway, Temple Terrace, FL 33637-0926; and,
- Department of Environmental Protection, Solid Waste Section 2600 Blair Stone Road, MS 4565, Tallahassee, FL 32399-2400.

b. The permittee shall submit to the Department the results of analyses reported for each sampling event conducted at the facility by the following due dates:

1. Specific Conditions #E.4.b., #E.4.c., #E.4.d. - results of ground water routine semi-annual sampling events shall be submitted **within 60 days from completion of laboratory analyses and no later than January 15th and July 15th of each year** for the periods July 1-Dec. 31, and Jan. 1-June 30, respectively;
2. Specific Condition #E.5.c. - results of ground water "initial sampling events" shall be submitted **within 60 days from completion of laboratory analyses;**
3. Specific Condition #E.7. - results of ground water verification events shall be submitted **within 60 days from completion of laboratory analyses;**
4. Specific Condition #E.8.b. - results of surface water "discharge sampling events" shall be submitted **within 60 days from completion of laboratory analyses;**

SPECIFIC CONDITIONS: PART E - Water Quality Monitoring Requirements

(Specific Condition #E.10.b., continued)

5. Specific Condition #E.9.a.(1) - results of leachate influent routine annual sampling events shall be submitted **within 60 days from completion of laboratory analyses and no later than January 15th of each year** for the periods Jan. 1-Dec. 31;

6. Specific Condition #E.9.a.(2) - results of leachate influent monthly sampling events shall be submitted **within 60 days from completion of laboratory analyses;**

7. Specific Condition #E.9.b.(1) - results of leachate effluent periodic sampling events [see SC #E.9.b.(2)] shall be submitted **within 60 days from completion of laboratory analyses and no later than January 15th, April 15th, July 15th and October 15th of each year** for the periods Oct. 1-Dec. 31, Jan. 1-Mar. 31, Apr. 1-June 30, and July 1-Sep. 30, respectively;

8. Specific Condition #E.9.b.(3) - results of leachate effluent routine annual sampling events shall be submitted **within 60 days from completion of laboratory analyses and no later than January 15th of each year** for the periods Jan. 1-Dec. 31; and,

9. Specific Condition #E.9.c. - results of leachate treatment plant sludge sampling events shall be submitted **within 60 days from completion of laboratory analyses and no later than January 15th of each year** for the periods Jan. 1-Dec. 31.

11. Monitoring Plan Evaluation. The permittee shall submit evaluations of the water quality and leachate monitoring data in accordance with the requirements of permit No. 21375-008-SO/01 (including modifications) or successor operating permit.

SPECIFIC CONDITIONS: PART F - Landfill Gas Management

[Landfill gas requirements are provided in Operation Permit No. 21375-008-SO/01, (including modifications, if any) or its successors.]

SPECIFIC CONDITIONS: PART G - Closure and Long-Term Care Requirements

1. **Closure Requirements.**
   a. Long-Term Care Requirements.
      1) The owner or operator shall perform long-term care for the site in accordance with Rule 62-701.620, F.A.C., and the conditions of Operation Permit No. 21375-008-SO/01 (Cells 1, 1A, and 2) (including modifications, if any) or its successors.

      2) Long-term care includes, but is not limited to, water quality, leachate and gas monitoring, maintenance of the final cover system, maintenance of the leachate collection and removal system, erosion control, and the prevention of ponding within disposal areas.

   b. Closing Requirements.
      1) **No later than ninety (90) days** prior to the date when wastes will no longer be accepted for portions of the landfill which have reached closure design dimensions, the landfill owner or operator shall submit a closure permit application to the Department, in order to assure conformance with all applicable Department rules. A closure permit is required prior to implementing closure related activities.

2. **Use of Closed Landfill Areas.**

   a. Current approved uses of closed portions of the Citrus County Central Landfill are provided in Operation Permit No. 21375-008-SO/01, (including modifications, if any) or its successors.

   b. Proposed uses of closed landfill areas shall be authorized in accordance with Specific Condition #G.2.b. of Operation Permit No. 21375-008-SO/01, (including modifications, if any) or its successors.

3. **Final Cover.** Portions of the landfill which have been filled with waste to the extent of designed dimensions shall be closed (shall receive final cover) within 180 days after reaching design dimensions, in accordance with Rule 62-701.500(7)(g), F.A.C. and all applicable requirements of Department rules.

Executed in Hillsborough County, Florida.

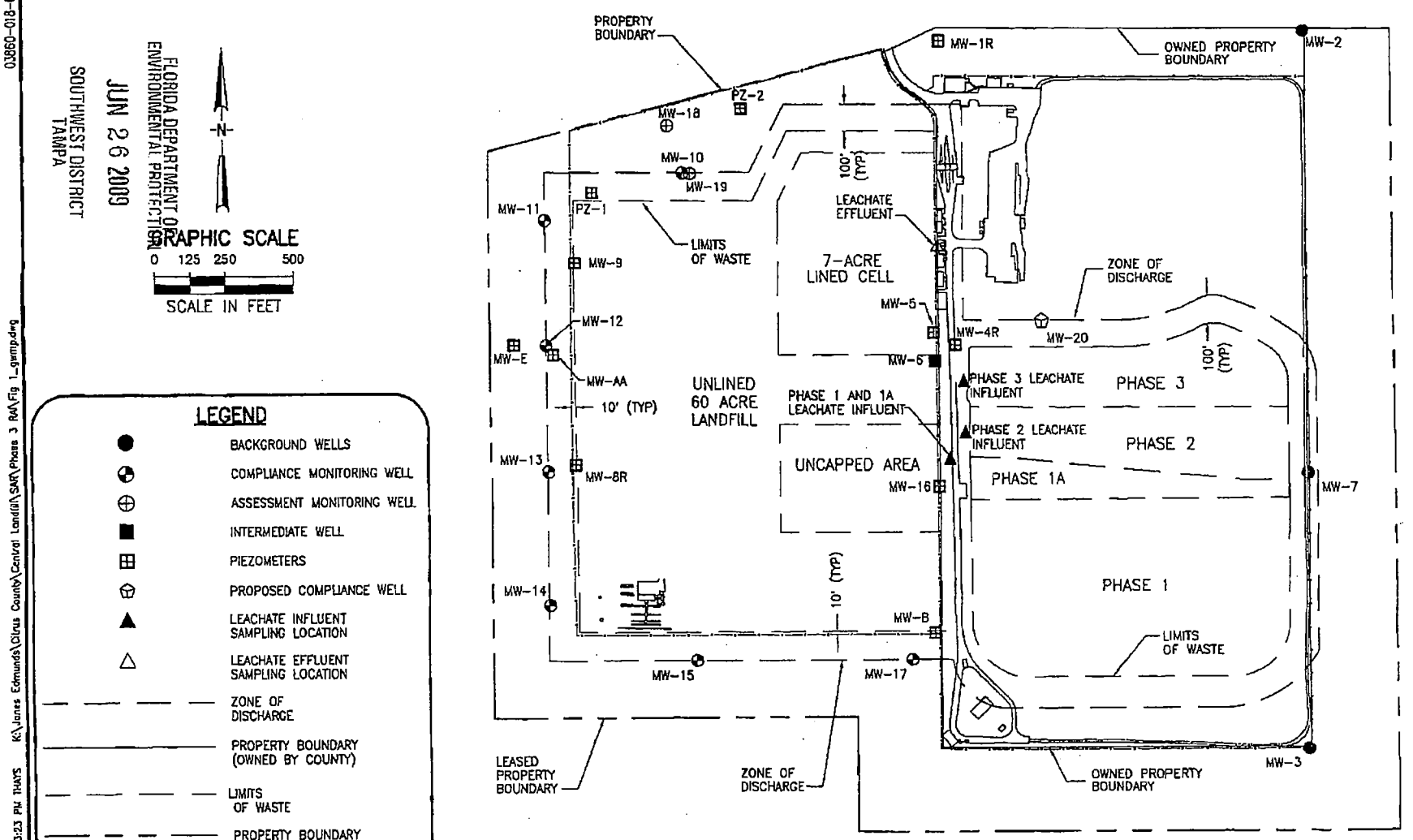
STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Deborah A. Getzoff
District Director
Southwest District

ATTACHMENT 1		
Specific Condition	**Submittal Due Date**	**Required Item**
A.4.	On or before April 1, 2014 No later than August 1, 2014	Notification of date of permit renewal application submittal Submit application for permit renewal
A.9.a.	Within 24 hours of discovery Within 7 days of verbal notification	Notification of sinkholes or subsurface instability Written notification & corrective action plan
B.2.a.	Within 60 days of completion	Submit certification of construction completion, record drawings, etc.
B.4.a.	At least 30 days prior to construction	Submit complete plans, specification, CQA plan, or statement that no changes have occurred, org. chart with parties/roles, etc.
B.4.b.	At least 30 days prior to installation of the liner	Submit interface friction testing results
B.4.c.	No later than 2 weeks prior to construction	Notify of tie-in construction, non-standard seaming methods, construction of bottom liner tie-ins with Phase 2.
B.4.e.	At least 7 days prior	Submit dewatering plan, drainage sand permeability tests
B.4.f.	At least 72 hours prior	Notify of spark testing
B.5.	At least 1 week prior	Notify of preconstruction meeting
B.6.a.	No later than 1 week after pre-construction meeting	Submit meeting minutes
B.6.b.	Monthly, by the 15th each month	Submit monthly progress report & schedule
B.8.e.	At least 1 week prior for schedule makeup and 1 day prior for weather emergencies	Notify of night work
B.10.c.	Within 24 hours of discovery	Notify of discovery of soils requiring geotechnical improvement
C.6.b.	Within 24 hours of discovery Within 7 days of verbal notification	Notification of: sinkholes, failure of landfill systems or equipment, etc. Written notification & corrective action plan
C.6.c.	Within 60 days of notification	Corrective actions completed for dry or damaged wells
C.6.d.	Within 30 days of notification	Corrective actions completed for leachate management system

ATTACHMENT 1

Specific Condition	Submittal Due Date	Required Item
D.4.a.	Annually, by September 1st each year	Submit revised cost estimates
D.4.b.	Annually	Submit proof of funding
D.4.c.	No later than 60 days prior to receipt of waste	Submit proof of initial funding for Phase 3
E.4.b.	Semi-annually	Sample background and compliance wells
E.4.c.	Semi-annually	Sample well MW-6
E.4.d.	Semi-annually	Sample assessment wells
E.5.a., E.5.b., E.5.d.	Within 90 days of installation of new wells	Request permit modification, provide construction details for wells, submit survey
E.5.c.	Within 1 week of well completion and development	Conduct initial sampling
E.6.	Within 30 days of abandonment	Submit documentation of abandonment
E.8.b.	Each discharge event	Conduct surface water sampling
E.9.b(1)	Quarterly, by Jan. 15th, April 15th, July 15th, and Oct. 15th each year	Submit results of routine leachate effluent sampling events
E.10.b.	Within 60 days from completion of laboratory analyses	Submit results of: - Ground water initial sampling - Ground water verification sampling - Surface water discharge sampling - Leachate influent monthly sampling
E.10.b.	Semi-annually, by Jan. 15th and July 15th each year	Submit results of ground water routing sampling (SC#E.4.b., #E.4.c., #E.4.d.)
	Annually, by Jan. 15th each year	Submit results of leachate influent, effluent and sludge analyses (SC#E.9.a(1), #E.9.b(3), #E.9.c.)



ATTACHMENT 1 SITE PLAN
CITRUS COUNTY CENTRAL LANDFILL

JONES EDMUNDS

DEP Form # 62-520.900(3)
Form Title MONITORING WELL COMPLETION REPORT
Effective Date July 12, 2009
DEP Application No. _____
(Filled in by DEP)

Florida Department of Environmental Protection

Bob Martinez Center, 2600 Blair Stone Road Tallahassee, Florida 32399-2400

MONITORING WELL COMPLETION REPORT

PART I: GENERAL INFORMATION

Well ID:	Site Name:		Well Install Date
Facility ID	Alternate ID	FLUWID #	WMD Permit #
Well Purpose ☐ Background ☐ Intermediate ☐ Compliance ☐ Other (explain)			
Latitude (to nearest 0.1 seconds)		Longitude (to nearest 0.1 seconds)	
Latitude and Longitude collection method: ☐ DGPS ☐ AGPS ☐ MAP ☐ ZIPCODE ☐ DPHO ☐ UNKNOWN ☐ OTHER			

PART II: WELL CONSTRUCTION DETAILS

Contractor Name				Contractor License #
Company Name				
Construction Method: ☐ Hollow Stem Auger ☐ Solid Stem Auger ☐ Water/Mud Rotary ☐ Air Rotary ☐ Cable Tool ☐ Direct Push ☐ Sonic ☐ Other (describe)				Aquifer Monitored
Top of Casing Elevation (NVGD or NAVD)			Ground Surface Elevation (NVGD or NAVD)	

Material	Inside Diameter	Outside Diameter	Depth (ft.) From	Depth (ft.) To

Material	Inside Diameter	Outside Diameter	Depth (ft.) From	Depth (ft.) To	Slot Size

Material including additives for sealant	Size of Material	Amount (# of bags)	Depth (ft.) From	Depth (ft.) To	Installation Method

PART III: WELL DEVELOPMENT DETAILS

Well Development Date	Well Development Method: ☐ Surge/Pump ☐ Pump ☐ Compressed Air ☐ Other (explain)		
Development Duration			
Pumping Rate	Maximum Drawdown	Well Purged Dry ☐ yes ☐ no	Pumping Condition ☐ continuous ☐ intermittent
Turbidity (if Measured): Start:	End:		Stabilized Water Level (BLS)
Water appearance (color and odor) at start of development:			
Water appearance (color and odor) at end of development:			

Report Prepared By:	Date
Title/Company	License #

PLEASE ATTACH BORING LOG

Remarks

ATTACHMENT B

Certification Of Construction Completion
FDEP Form 62-701.900(2)

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 19, 1994

DEP Application No. _____
(Filled by DEP)

Certification of Construction Completion of a Solid Waste Management Facility

DEP Construction Permit No: **21375-013-SC/01** County: **Citrus**

Name of Project: **Phase 3 Fire Damage Repair**

Name of Owner: **Citrus County Solid Waste Management Department**

Name of Engineer: **SCS Engineers**

Type of Project: **Fire Damage Repair in the Phase 3 area**

Cost: Estimate $ **190,073** Actual $ **192,515**

Site Design: Quantity: **350** ton/day Site Acreage: **80** Acres

Deviations from Plans and Application Approved by DEP: **The project was constructed in general conformance with the permitted plans and specifications.**

Address and Telephone No. of Site: **230 West Gulf Lake Highway, Lecanto, FL 34461**

Name(s) of Site Supervisor: **Mr Casey Stephens**

Date Site inspection is requested: **As soon as possible**

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. **21375-013-SC/01** Dated: **November 5, 2009**

Date: **September 24, 2013**

Signature of Professional Engineer

DOMINIC M. DAMIANI LICENSE No. 61329 STATE OF FLORIDA PROFESSIONAL ENGINEER

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

ATTACHMENT C

Conformance Testing Results

TRI/Environmental, Inc.
A Texas Research International Company

Date: 2013-08-29

Mail To:
Dominique Bramlett
SCS Eng.

, ,

Bill To:

SCS Eng.

e-mail:
dbramlett@scsengineers.com kvangennip@scsengineers.com

Dear Ms. Bramlett,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**Citrus County Landfill Phase 3 Fire Repair**
TRI Job Reference Number:	**11616**
Material(s) Tested:	(1) Heat Fusion Weld Seam(s) (1) Single Extrusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

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,

Jennifer T. Tenney

Jennifer Tenney
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

http://www.geosyntheticstesting.com
9063 Bee Caves Road / Austin, Tx. 78733 / 512.263.2101 / fax: 512.263.2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Eng.

Project: Citrus County Landfill Phase 3 Fire Repair

Material: 60 mil. HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

TRI Log#: 11616

	TEST REPLICATE NUMBER						
PARAMETER	1	2	3	4	5	MEAN	Proj.Spec.
Sample ID: DS-1 | Weld: Heat Fusion							
Side: A						**Peel A**	
Peel Strength (ppi)	129	120	120	117	118	**121**	98 min.
Peel Incursion (%)	<5	<5	<5	<5	<5		
Peel Locus Of Failure Code	SE	SE	SE	SE	SE		
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
Side: B						**Peel B**	
Peel Strength (ppi)	119	118	115	117	115	**117**	98 min.
Peel Incursion (%)	<5	<5	<5	<5	<5		
Peel Locus Of Failure Code	SE	SE	SE	SE	SE		
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
Shear						**Shear**	
Shear Strength (ppi)	175	173	167	167	166	**170**	120 min.
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

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9063 Bee Caves Road / Austin, Tx. 78733 / 512.263.2101 / fax: 512.263.2558

TRI/Environmental, Inc.
A Texas Research International Company

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS - SINGLE TRACK

TRI Client: SCS Eng.

Project: Citrus County Landfill Phase 3 Fire Repair

Material: 60 mil. HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

TRI Log#: 11616

	TEST REPLICATE NUMBER						
PARAMETER	1	2	3	4	5	MEAN	Proj.Spec.
Sample ID: DS-2 | Weld: Single Extrusion							
Side: Peel						**Peel**	
Peel Strength (ppi)	121	125	136	126	132	**128**	78 min.
Peel Incursion (%)	<5%	<5%	<5%	<5%	<5%		
Peel Locus Of Failure Code	SE	SE	SE	SE	SE		
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
Shear						**Shear**	
Shear Strength (ppi)	162	162	155	157	154	**158**	120 min.
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

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TRI/Environmental, Inc.
A Texas Research International Company

Date: 2013-08-24

Mail To:
Dominique Bramlett
SCS Eng.

, ,

Bill To:

SCS Eng.

e-mail:
dbramlett@scsengineers.com kvangennip@scsengineers.com

Dear Ms. Bramlett,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**Citrus County Landfill Phase 3 Fire Repair**
TRI Job Reference Number:	**11556**
Material(s) Tested:	(3) Heat Fusion Weld Seam(s) (1) Single Extrusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

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,

MPatel

Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

http://www.geosyntheticstesting.com
9063 Bee Caves Road / Austin, Tx. 78733 / 512.263.2101 / fax: 512.263.2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: SCS Eng.

Project: Citrus County Landfill Phase 3 Fire Repair

Material: 60 mil. HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

TRI Log#: 11556

	TEST REPLICATE NUMBER						
PARAMETER	1	2	3	4	5	MEAN	Proj.Spec.
Sample ID: DT-1 | Weld: Heat Fusion							
Side: A						**Peel A**	
Peel Strength (ppi)	101	97	98	97	97	**98**	98 min.
Peel Incursion (%)	<5	<5	<5	<5	<5		
Peel Locus Of Failure Code	SE	SE	SE	SE	SE		
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
Side: B						**Peel B**	
Peel Strength (ppi)	126	124	114	114	129	**121**	98 min.
Peel Incursion (%)	<5	<5	<5	<5	<5		
Peel Locus Of Failure Code	SE	SE	SE	SE	SE		
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
Shear						**Shear**	
Shear Strength (ppi)	166	171	171	175	166	**170**	120 min.
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID: DT-1A | Weld: Heat Fusion							
Side: A						**Peel A**	
Peel Strength (ppi)	122	116	118	115	123	**119**	98 min.
Peel Incursion (%)	<5	<5	<5	<5	<5		
Peel Locus Of Failure Code	SE	SE	SE	SE	SE		
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
Side: B						**Peel B**	
Peel Strength (ppi)	124	109	115	135	113	**119**	98 min.
Peel Incursion (%)	<5	<5	<5	<5	<5		
Peel Locus Of Failure Code	SE	SE	SE	SE	SE		
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
Shear						**Shear**	
Shear Strength (ppi)	167	166	171	164	166	**167**	120 min.
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: SCS Eng.
Project: Citrus County Landfill Phase 3 Fire Repair

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 11556

	TEST REPLICATE NUMBER						
PARAMETER	1	2	3	4	5	MEAN	Proj.Spec.
Sample ID: DT-1B | Weld: Heat Fusion							
Side: A						**Peel A**	
Peel Strength (ppi)	102	102	118	102	101	**105**	98 min.
Peel Incursion (%)	<5	<5	<5	<5	<5		
Peel Locus Of Failure Code	SE	SE	SE	SE	SE		
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
Side: B						**Peel B**	
Peel Strength (ppi)	118	115	116	116	113	**116**	98 min.
Peel Incursion (%)	<5	<5	<5	<5	<5		
Peel Locus Of Failure Code	SE	SE	SE	SE	SE		
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
Shear						**Shear**	
Shear Strength (ppi)	164	173	165	167	173	**168**	120 min.
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS - SINGLE TRACK

TRI Client: SCS Eng.

Project: Citrus County Landfill Phase 3 Fire Repair

Material: 60 mil. HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

TRI Log#: 11556

	TEST REPLICATE NUMBER						
PARAMETER	1	2	3	4	5	MEAN	Proj.Spec.
Sample ID: DT-2 | Weld: Single Extrusion							
Side: Peel						**Peel**	
Peel Strength (ppi)	141	154	129	115	130	**134**	78 min.
Peel Incursion (%)	<5%	<5%	<5%	<5%	<5%		
Peel Locus Of Failure Code	SE	SE	SE	SE	SE		
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
Shear						**Shear**	
Shear Strength (ppi)	168	158	160	164	160	**162**	120 min.
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

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TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

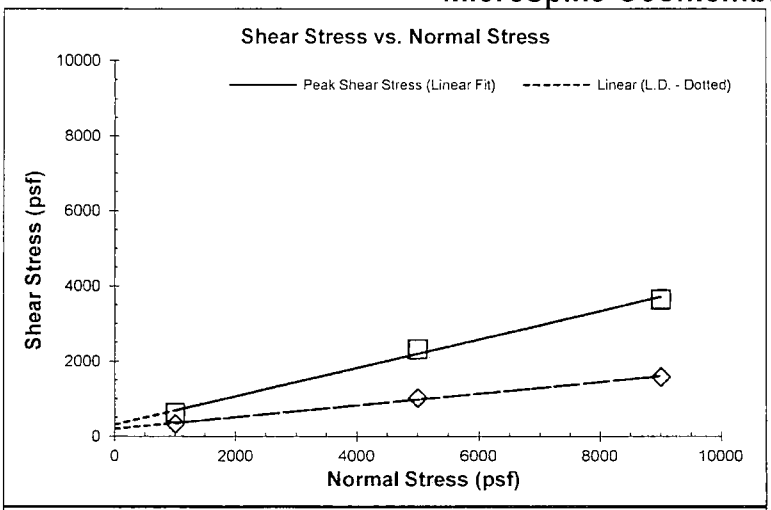
Interface Friction Test Report

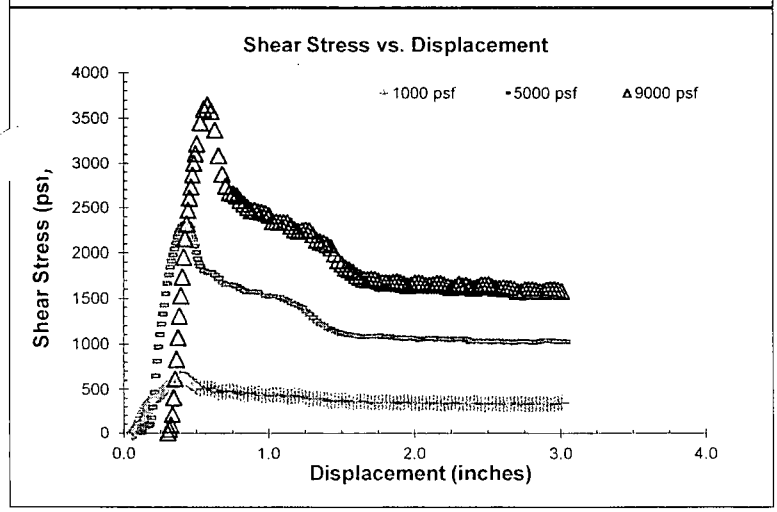
.ent: **SCS Engineers**
Project: **Citrus County Central Landfill Phase 3 Reline**
Test Date: 09/05/13-09/05/13

TRI Log#: E2373-74-08
Test Method: ASTM D5321

John M. Allen, P.E., 09/05/2013
Quality Review/Date

Tested Interface: GSE Double-sided Geocomposite (131430869) vs. Agru 60 mil HDPE Microspike Geomembrane (444324.13)





Test Results		
	Peak	**Large Displacement (@ 3.0 in.)**
Friction Angle (degrees):	**20.7**	**8.9**
Y-intercept or Adhesion (psf):	**309**	**198**

Shearing occurred at the interface.

Test Conditions

Upper Box & — GSE double-sided geocomposite

Lower Box — Agru 60 mil HDPE Microspike geomembrane (dull side)

Box Dimensions: 12"x12"x4"

Interface Conditioning: — Interface soaked and loading applied for a minimum of 1 hour prior to shear.

Test Condition: Wet

Shearing Rate: 0.04 inches/minute

Test Data

Specimen No.	1	2	3
Bearing Slide Resistance (lbs)	18	56	94
Normal Stress (psf)	1000	5000	9000
Corrected Peak Shear Stress (psf)	623	2327	3648
Corrected Large Displacement Shear Stress (psf)	332	1027	1585
Peak Secant Angle (degrees)	31.9	25.0	22.1
Large Displacement Secant Angle (degrees)	18.4	11.6	10.0
Asperity (mils)	22.0	23.6	23.4

9063 Bee Caves Road □ Austin, TX 78733-6201 □ (512) 263-2101 □ (512) 263-2558 □ 1-800-880-TEST

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

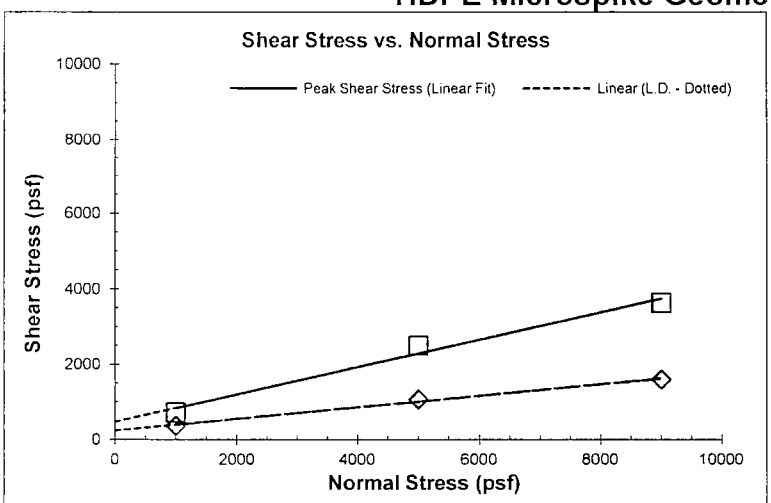
Interface Friction Test Report

,ent: **SCS Engineers**
Project: **Citrus County Central Landfill Phase 3**
Test Date: 09/05/13-09/05/13

TRI Log#: E2373-74-08
Test Method: ASTM D5321

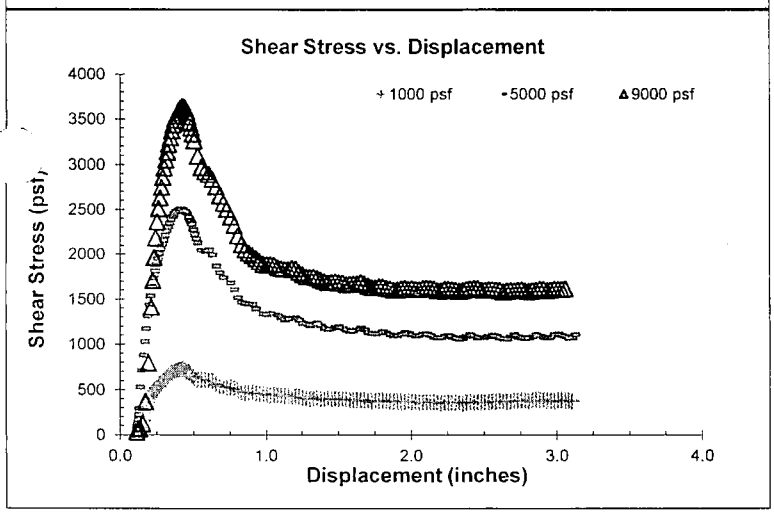
John M. Allen, P.E., 09/05/2013
Quality Review/Date

Tested Interface: Syntec TenDrain 770-2 Double-sided Geocomposite (1000051) vs. Agru 60 mil HDPE Microspike Geomembrane (338579.10)



Test Results		
	Peak	Large Displacement (@ 3.0 in.)
Friction Angle (degrees):	20.0	8.7
Y-intercept or Adhesion (psf):	467	243

Shearing occurred at the interface.



Test Conditions

Upper Box &	Syntec TenDrain 770-2 double-sided geocomposite (rib side)
Lower Box	Agru 60 mil HDPE Microspike geomembrane (dull side)

Box Dimensions: 12"x12"x4"

Interface Conditioning:	Interface soaked and loading applied for a minimum of 1 hour prior to shear.

Test Condition: Wet

Shearing Rate: 0.04 inches/minute

Test Data

Specimen No.	1	2	3
Bearing Slide Resistance (lbs)	18	56	94
Normal Stress (psf)	1000	5000	9000
Corrected Peak Shear Stress (psf)	722	2508	3639
Corrected Large Displacement Shear Stress (psf)	368	1068	1595
Peak Secant Angle (degrees)	35.8	26.6	22.0
Large Displacement Secant Angle (degrees)	20.2	12.1	10.0
Asperity (mils)	21.6	22.4	19.8

9063 Bee Caves Road □ Austin, TX 78733-6201 □ (512) 263-2101 □ (512) 263-2558 □ 1-800-880-TEST

August 20, 2013

Mail To:

Dominique Bramlett
SCS Engineers
4041 Park Oaks Blvd., Suite 100
Tampa, Florida 33610-9501

email: dbramlett@scsengineers.com

Bill To:

< == Same

Dear Ms. Bramlett:

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:	**Citrus County Phase 3 Reline**
TRI Job Reference Number:	E2382-44-08
Material(s) Tested:	One GSE FS2-275E-06-06-E-00 Double Sided Geocomposite(s)
Test(s) Requested:	Transmissivity (ASTM D 4716) - GC Peel Strength (GRI GC7) - GC Thickness (ASTM D 5199) - GC, GN Density (ASTM D 1505) - GN Carbon Content (ASTM D 4218) - GN Wide Width Tensile (ASTM D 4595) - GN Mass/Unit Area (ASTM D 5261) - GT Grab Tensile (ASTM D 4632) - GT Puncture Strength (ASTM D 4833) - GT Trapezoidal Tear (ASTM D 4533) - 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,

MPatel

Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

cc: Sam R. Allen, Vice President and Division Manager

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax 512 263 2558

GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers
Project: Citrus County Central Landfill Phase 3 Expansion

Material: GSE FS2-275E-06-06-E-00 Double Sided Geocomposite
Sample Identification: 131430869
TRI Log #: E2382-44-08

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf):	10,000											
Hydraulic Gradient:	0.1											
Test Length (in)	12											
Test Width (in)	12											

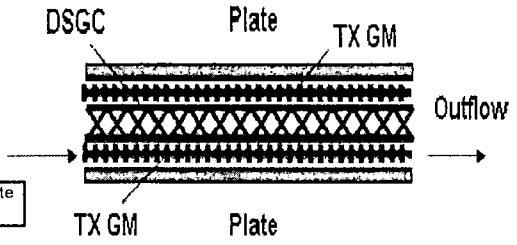


Plate / Agru-60 mil. TXHDGM / GC Sample / Agru-60 mil. TXHDGM / Plate

Seat Time (hours) — Specimen 1

	Pre-Test Thickness GN (in)			0.298								
	Post-Test Thickness GN (in)			0.293								
	Volume (cc)		576	566	548							
	Time (s)		5.72	5.58	5.41							
	Flow Rate (GPM/ft width)		1.60	1.61	1.61						1.60	0.01
100	Transmissivity (m^2/s)		3.39E-03	3.41E-03	3.41E-03						3.40E-03	1.31E-05
	Permeability (cm/s)		44.4	44.7	44.7						44.6	0.2
	Test Temp (C)			19.0								
	Temp. Corr. Factor			1.025								

Peel Strength (GRI GC7)												
A - MD Average Peel Strength (ppi)	7.8	4.1	3.9	6.0	4.6						5.3	1.6
A - MD Average Peel Strength (g/in)	3541	1861	1771	2724	2088						2397	740
B - MD Average Peel Strength (ppi)	7.4	4.8	4.5	6.1	3.1						5.2	1.6
B - MD Average Peel Strength (g/in)	3360	2179	2043	2769	1407						2352	743

Note: A and B represent a randomly assigned top and bottom of the sample

Thickness (ASTM D 5199)				GEONET COMPONENT								
Thickness (mils)	281	281	282	281	274	280	279	279	281	277	280	2
											274	<< min

Density (ASTM D 1505)				GEONET COMPONENT								
Density (g/cm3)	0.956	0.956	0.956								0.956	0.000

Carbon Black Content (ASTM D 4218)				GEONET COMPONENT								
% Carbon Black	2.85	2.88									2.87	0.02

MD Machine Direction

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax 512 263 2558

GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers
Project: Citrus County Central Landfill Phase 3 Expansion

Material: GSE FS2-275E-06-06-E-00 Double Sided Geocomposite
Sample Identification: 131430869 GEONET COMPONENT
TRI Log #: E2382-44-08

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Wide Width Tensile Properties (ASTM D 4595)												
MD Specimen Width (inches)	8											
MD Specimen Width (mm)	203											
MD Ultimate Strength (lbs)	850	841	791	769	761	833					**807**	39
MD Ultimate Strength (ppi)	106	105	98.8	96.1	95.1	104					**101**	5
MD Ultimate Strength (kN/m)	18.6	18.4	17.3	16.8	16.7	18.2					**17.7**	0.8
MD Break Elongation (%)	26.4	22.3	25.7	21.5	26.1	25.3					**24.6**	2.1

MD Machine Direction

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers
Project: Citrus County Central Landfill Phase 3 Expansion

Material: GSE FS2-275E-06-06-E-00 Double Sided Geocomposite GEOTEXTILE COMPONENT - TOP
Sample Identification: 131430869
TRI Log #: E2382-44-08

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter circle (grams)	3.53	4.07	3.47	3.21	3.17	4.31	4.95	3.37	2.64	2.63	3.54	0.73
Mass/Unit Area (oz/sq.yd)	8.21	9.47	8.07	7.47	7.37	10.0	11.5	7.84	6.14	6.12	8.22	1.70
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	183	249	171	201	176	198	207	186	226	240	204	27
TD - Tensile Strength (lbs)	265	336	273	201	191	329	358	215	263	240	267	58
MD - Elong. @ Max. Load (%)	98	98	101	101	91	103	112	109	114	105	103	7
TD - Elong. @ Max. Load (%)	118	113	105	120	114	120	116	118	117	117	116	5
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	134	162	118	74	107	157	154	109	128	116	131	25
	138	126	133	170	144							
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	87	104	91	103	104	118	101	76	84	74	94	14
TD - Tear Strength (lbs)	162	172	135	117	114	177	213	158	153	111	151	33
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.156	0.148	0.149	0.147	0.147						0.150	0.004
Sieve No.	80	100	100	100	100						100	

Falling Head Permittivity (ASTM D 4491, 9-in Upper Standpipe; 2 in opening)

Water Temp. (C):	20.5
Correction Factor:	0.99

Test Specimn No. >:	1					2				
Thickness (mils)	114	114	114	114	114	126	126	126	126	126
Time (s)	17.5	17.9	17.4	17.6	18.0	13.8	14.1	13.9	14.0	14.2
Specimen Permittivity (s-1)	1.62	1.59	1.63	1.61	1.58	2.06	2.01	2.04	2.03	2.00
Specimen Permittivity @20°C (sec-1)	1.61	1.57	1.62	1.60	1.56	2.04	2.00	2.03	2.01	1.98
Specimen Flow rate (GPM/ft2)	120	118	121	120	117	153	149	152	150	148
Specimen Permeability (cm/s)	0.47	0.46	0.47	0.46	0.45	0.65	0.64	0.65	0.64	0.63

Test Specimn No. >:	3					4				
Thickness (mils)	156	156	156	156	156	145	145	145	145	145
Time (s)	20.9	21.2	21.1	20.8	21.0	16.4	16.7	16.6	16.9	16.6
Permittivity (s-1)	1.36	1.34	1.34	1.36	1.35	1.73	1.70	1.71	1.68	1.71
Specimen Permittivity @20°C (sec-1)	1.35	1.33	1.33	1.35	1.34	1.72	1.69	1.70	1.67	1.70
Specimen Flow rate (GPM/ft2)	101	99.3	99.8	101	100	128	126	127	125	127
Specimen Permeability (cm/s)	0.53	0.53	0.53	0.54	0.53	0.63	0.62	0.62	0.61	0.62

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	1.66
	Flow rate (GPM/ft2)	124
	Permeability (cm/s)	0.57

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers
Project: Citrus County Central Landfill Phase 3 Expansion

Material: GSE FS2-275E-06-06-E-00 Double Sided Geocomposite
Sample Identification: 131430869 — **GEOTEXTILE COMPONENT - BOTTOM**
TRI Log #: E2382-44-08

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter circle (grams)	3.91	3.31	3.04	3.17	2.59	3.62	3.43	2.77	3.13	2.38	**3.14**	0.47
Mass/Unit Area (oz/sq.yd)	9.09	7.70	7.07	7.37	6.02	8.42	7.98	6.44	7.28	5.54	**7.29**	1.09
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	242	216	183	223	209	119	148	162	203	232	**194**	40
TD - Tensile Strength (lbs)	250	238	267	247	203	124	259	238	254	261	**234**	43
MD - Elong. @ Max. Load (%)	109	107	115	91	115	99	101	94	113	86	**103**	10
TD - Elong. @ Max. Load (%)	120	116	115	115	105	107	110	109	125	129	**115**	8
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	139	123	80	128	82	116	143	119	130	140	**120**	23
	131	78	144	116	136							
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	114	91	119	109	79	109	110	52	107	80	**97**	21
TD - Tear Strength (lbs)	123	142	108	113	130	143	137	109	144	112	**126**	15
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.148	0.148	0.148	0.147	0.147						**0.148**	0.000
Sieve No.	100	100	100	100	100						**100**	

Falling Head Permittivity (ASTM D 4491, 9-in Upper Standpipe; 2 in opening)

Water Temp. (C):	20.5
Correction Factor:	0.988

Test Specimn No. >:	1					2				
Thickness (mils)	121	121	121	121	121	127	127	127	127	127
Time (s)	14.6	14.8	14.5	14.8	14.6	12.9	13.3	13.0	13.2	13.3
Specimen Permittivity (s-1)	1.94	1.92	1.96	1.92	1.94	2.20	2.13	2.18	2.15	2.13
Specimen Permittivity @20°C (sec-1)	1.92	1.89	1.93	1.89	1.92	2.17	2.11	2.16	2.12	2.11
Specimen Flow rate (GPM/ft2)	144	142	145	142	144	163	158	161	159	158
Specimen Permeability (cm/s)	0.59	0.58	0.59	0.58	0.59	0.70	0.68	0.70	0.68	0.68

Test Specimn No. >:	3					4				
Thickness (mils)	138	138	138	138	138	139	139	139	139	139
Time (s)	16.3	16.4	16.7	16.5	16.7	15.4	15.8	16.2	15.9	16.1
Permittivity (s-1)	1.74	1.73	1.70	1.72	1.70	1.84	1.80	1.75	1.78	1.76
Specimen Permittivity @20°C (sec-1)	1.72	1.71	1.68	1.70	1.68	1.82	1.77	1.73	1.76	1.74
Specimen Flow rate (GPM/ft2)	129	128	126	127	126	136	133	129	132	130
Specimen Permeability (cm/s)	0.60	0.60	0.59	0.60	0.59	0.64	0.63	0.61	0.62	0.61

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	**1.88**
	Flow rate (GPM/ft2)	**140**
	Permeability (cm/s)	**0.62**

MD Machine Direction TD Transverse Direction

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August 20, 2013

Mail To:

Dominique Bramlett
SCS Engineers
4041 Park Oaks Blvd., Suite 100
Tampa, Florida 33610-9501

email: dbramlett@scsengineers.com

Bill To:

< == Same

Dear Ms. Bramlett:

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:	**Citrus County Phase 3 Reline**
TRI Job Reference Number:	E2382-42-06
Material(s) Tested:	1 Syntec TenDrain 770-2 Double Sided Geocomposite(s)
Test(s) Requested:	Transmissivity (ASTM D 4716) - GC Peel Strength (GRI GC7) - GC Thickness (ASTM D 5199) - GC, GN Density (ASTM D 1505) - GN Carbon Content (ASTM D 4218) - GN Wide Width Tensile (ASTM D 4595) - GN Mass/Unit Area (ASTM D 5261) - GT Grab Tensile (ASTM D 4632) - GT Puncture Strength (ASTM D 4833) - GT Trapezoidal Tear (ASTM D 4533) - 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,

MPatel

Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

cc: Sam R. Allen, Vice President and Division Manager

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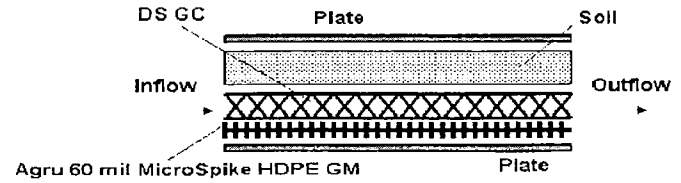
GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers
Project: Citrus County Central Landfill Phase 3 Expansion

Material: Syntec TenDrain 770-2 Double Sided Geocomposite
Sample Identification: 1300008
TRI Log #: E2382-42-06

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf):	15,000											
Hydraulic Gradient:	0.1											
Test Length (in)	12											
Test Width (in)	12											
Plate / Site Soil / GC Sample / Agru-60 mil. HDPE MSGM / Plate												
Seat Time (hours)	Specimen		1									
Pre-Test Thickness GN (in)			0.340									
Post-Test Thickness GN (in)			0.322									
Volume (cc)		864	861	859								
Time (s)		10.36	10.41	10.40								
Flow Rate (GPM/ft width)		1.32	1.31	1.31							1.31	0.01
100 Transmissivity (m^2/s)		2.80E-03	2.78E-03	2.78E-03							2.79E-03	1.46E-05
Permeability (cm/s)		33.5	33.2	33.2							33.3	0.2
Test Temp (C)			19.0									
Temp. Corr. Factor			1.025									
Peel Strength (GRI GC7)												
A - MD Average Peel Strength (ppi)	4.0	1.2	4.3	1.4	1.6						2.5	1.5
A - MD Average Peel Strength (g/in)	1816	545	1952	636	726						1135	689
B - MD Average Peel Strength (ppi)	2.5	1.4	2.8	4.2	0.8						2.3	1.3
B - MD Average Peel Strength (g/in)	1135	636	1271	1907	363						1062	599
Note: A and B represent a randomly assigned top and bottom of the sample												
Thickness (ASTM D 5199)				GEONET COMPONENT								
Thickness (mils)	314	309	320	330	304	306	327	326	320	311	317	9
											304	<< min
Density (ASTM D 1505)				GEONET COMPONENT								
Density (g/cm3)	0.952	0.952	0.952								0.952	0.000
Carbon Black Content (ASTM D 4218)				GEONET COMPONENT								
% Carbon Black	2.05	2.12									2.09	0.05



MD Machine Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers
Project: Citrus County Central Landfill Phase 3 Expansion

Material: Syntec TenDrain 770-2 Double Sided Geocomposite
Sample Identification: 1300008 GEONET COMPONENT
TRI Log #: E2382-42-06

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Wide Width Tensile Properties (ASTM D 4595)												
MD Specimen Width (inches)	8											
MD Specimen Width (mm)	203											
MD Ultimate Strength (lbs)	1056	1146	811	792	1231	1110					1024	182
MD Ultimate Strength (ppi)	132	143	101	99.0	154	139					128	23
MD Ultimate Strength (kN/m)	23.1	25.1	17.8	17.4	27.0	24.3					22.4	4.0
MD Break Elongation (%)	28.3	21.5	32.3	29.0	25.0	26.6					27.1	3.7

MD Machine Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers
Project: Citrus County Central Landfill Phase 3 Expansion

Material: Syntec TenDrain 770-2 Double Sided Geocomposite GEOTEXTILE COMPONENT - TOP
Sample Identification: 1300008
TRI Log #: E2382-42-06

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter circle (grams)	3.57	3.60	4.59	3.70	3.58	3.22	3.54	4.17	4.02	3.33	3.73	0.41
Mass/Unit Area (oz/sq.yd)	8.30	8.37	10.68	8.61	8.33	7.49	8.23	9.70	9.35	7.75	8.68	0.96
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	246	271	259	275	274	247	230	354	294	212	266	39
TD - Tensile Strength (lbs)	401	378	362	400	404	361	445	392	427	379	395	27
MD - Elong. @ Max. Load (%)	84	87	79	85	91	91	73	79	99	81	85	7
TD - Elong. @ Max. Load (%)	96	96	101	113	95	97	106	109	113	102	103	7
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	136	126	159	124	117	147	157	140	143	135	137	17
	166	134	103	124	150							
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	102	94	146	84	89	94	120	114	101	105	105	18
TD - Tear Strength (lbs)	159	142	181	137	149	126	149	132	179	151	151	18
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.105	0.105	0.103	0.102	0.104						0.104	0.001
Sieve No.	140	140	140	140	140						140	

Falling Head Permittivity (ASTM D 4491, 9-in Upper Standpipe; 2 in opening)

Water Temp. (C):	20.3
Correction Factor:	1.00

Test Specimn No. >:	1					2				
Thickness (mils)	69.2	69.2	69.2	69.2	69.2	65.2	65.2	65.2	65.2	65.2
Time (s)	22.5	22.7	22.6	23.0	23.3	26.8	26.9	27.3	26.8	26.7
Specimen Permittivity (s-1)	1.26	1.25	1.26	1.23	1.22	1.06	1.05	1.04	1.06	1.06
Specimen Permittivity @20°C (sec-1)	1.26	1.25	1.25	1.23	1.21	1.06	1.05	1.04	1.06	1.06
Specimen Flow rate (GPM/ft2)	94.0	93.2	93.6	92.0	90.8	78.9	78.7	77.5	78.9	79.2
Specimen Permeability (cm/s)	0.22	0.22	0.22	0.22	0.21	0.17	0.17	0.17	0.17	0.18
Test Specimn No. >:	3					4				
Thickness (mils)	72.4	72.4	72.4	72.4	72.4	75.2	75.2	75.2	75.2	75.2
Time (s)	23.3	23.8	24.0	23.6	24.1	30.2	30.5	29.9	30.4	30.7
Permittivity (s-1)	1.22	1.19	1.18	1.20	1.18	0.94	0.93	0.95	0.93	0.92
Specimen Permittivity @20°C (sec-1)	1.21	1.19	1.18	1.20	1.17	0.94	0.93	0.95	0.93	0.92
Specimen Flow rate (GPM/ft2)	90.8	88.9	88.2	89.6	87.8	70.1	69.4	70.8	69.6	68.9
Specimen Permeability (cm/s)	0.22	0.22	0.22	0.22	0.22	0.18	0.18	0.18	0.18	0.18

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	1.10
	Flow rate (GPM/ft2)	82.5
	Permeability (cm/s)	0.20

MD Machine Direction TD Transverse Direction

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.

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GEOCOMPOSITE TEST RESULTS

TRI Client: SCS Engineers
Project: Citrus County Central Landfill Phase 3 Expansion

Material: Syntec TenDrain 770-2 Double Sided Geocomposite
Sample Identification: 1300008 GEOTEXTILE COMPONENT - BOTTOM
TRI Log #: E2382-42-06

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Mass/Unit Area (ASTM D 5261)												
5" diameter circle (grams)	3.63	3.74	3.96	3.83	3.53	3.52	3.88	3.61	3.69	3.77	3.72	0.15
Mass/Unit Area (oz/sq.yd)	8.44	8.70	9.21	8.91	8.21	8.19	9.02	8.40	8.58	8.77	8.64	0.34
Grab Tensile Properties (ASTM D 4632)												
MD - Tensile Strength (lbs)	246	268	272	282	280	208	272	344	276	238	269	35
TD - Tensile Strength (lbs)	362	341	376	403	431	419	371	385	361	374	382	28
MD - Elong. @ Max. Load (%)	91	89	79	89	95	79	83	80	92	89	86	6
TD - Elong. @ Max. Load (%)	107	93	95	117	105	101	103	99	113	94	103	8
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	124	132	125	147	141	125	111	120	140	123	132	11
	135	145	145	144	127							
Trapezoidal Tear (ASTM D 4533)												
MD - Tear Strength (lbs)	92	83	131	86	103	123	92	111	101	97	102	16
TD - Tear Strength (lbs)	141	161	129	149	143	132	152	167	140	129	144	13
Apparent Opening Size (ASTM D 4751)												
Opening Size Diameter (mm)	0.105	0.104	0.105	0.103	0.101						0.104	0.002
Sieve No.	140	140	140	140	140						140	

Falling Head Permittivity (ASTM D 4491, 9-in Upper Standpipe; 2 in opening)

Water Temp. (C):	20
Correction Factor:	1.000

Test Specimn No. >:	1					2				
Thickness (mils)	71.2	71.2	71.2	71.2	71.2	68.9	68.9	68.9	68.9	68.9
Time (s)	26.4	26.7	27.0	26.2	26.6	28.9	29.3	29.6	29.1	29.7
Specimen Permittivity (s-1)	1.07	1.06	1.05	1.08	1.07	0.98	0.97	0.96	0.98	0.96
Specimen Permittivity @20°C (sec-1)	1.07	1.06	1.05	1.08	1.07	0.98	0.97	0.96	0.98	0.96
Specimen Flow rate (GPM/ft2)	80.4	79.5	78.6	81.0	79.8	73.4	72.4	71.7	72.9	71.5
Specimen Permeability (cm/s)	0.19	0.19	0.19	0.20	0.19	0.17	0.17	0.17	0.17	0.17

Test Specimn No. >:	3					4				
Thickness (mils)	65.5	65.5	65.5	65.5	65.5	69.5	69.5	69.5	69.5	69.5
Time (s)	21.5	21.6	22.2	21.9	21.6	23.5	23.6	23.8	23.6	24.0
Permittivity (s-1)	1.32	1.31	1.28	1.30	1.31	1.21	1.20	1.19	1.20	1.18
Specimen Permittivity @20°C (sec-1)	1.32	1.31	1.28	1.30	1.31	1.21	1.20	1.19	1.20	1.18
Specimen Flow rate (GPM/ft2)	98.7	98.3	95.6	96.9	98.3	90.3	89.9	89.2	89.9	88.4
Specimen Permeability (cm/s)	0.22	0.22	0.21	0.22	0.22	0.21	0.21	0.21	0.21	0.21

TEMPERATURE CORRECTED VALUES		
	Permittivity (s-1)	1.13
	Flow rate (GPM/ft2)	84.8
	Permeability (cm/s)	0.20

MD Machine Direction TD Transverse Direction

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax 512 263 2558

August 14, 2013

Mail To:

Dominique H. Bramlett, P.E.
SCS Engineers
4041 Park Oaks Blvd., Suite 100
Tampa, Florida 33610

email: dbramlett@scsengineers.com

Bill To:

<= Same

Dear Dominique:

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:	**Citrus County Phase 3 Reline**
TRI Job Reference Number:	E2382-32-05
Material(s) Tested:	Two, TenCate Mirafi Geogrid(s)
Test(s) Requested:	Mass/Unit Area (ASTM D 5261) Density/Specific Gravity (ASTM D 792, Method A) Wide Width Tensile Properties (ASTM D 6637, Method B) Single Rib Tensile (GRI GG1-87)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOGRID TEST RESULTS

TRI Client: SCS Engineers
Project: Citrus County Phase 3 Reline

Material: TenCate Mirafi Geogrid
Sample Identification: 5XT-BD, Roll # 032234415
TRI Log #: E2382-32-05

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Density/Specific Gravity (ASTM D 792, Method A)												
Density (g/cm3)	1.25	1.26	1.25								1.25	0.01
Wide Width Tensile Properties (ASTM D 6637, Method B)												
MD Number of Ribs per Specimen:	7											
MD Number of Ribs per foot:	10.7											
MD Ultimate Strength (lbs)	3223	3252	3254	3196	3221						3229	24
MD Ultimate Strength (lbs/ft)	4941	4985	4988	4899	4937						4950	37
MD Ultimate Strength (kN/m)	72.1	72.8	72.8	71.5	72.1						72.3	0.5
MD Strength @ 2% Strain (lbs)	757	735	675	755	740						732	33
MD Strength @ 2% Strain (lbs/ft)	1160	1127	1035	1157	1134						1123	51
MD Strength @ 2% Strain (kN/m)	16.9	16.5	15.1	16.9	16.6						16.4	0.7
MD Strength @ 5% Strain (lbs)	1381	1335	1335	1360	1311						1344	27
MD Strength @ 5% Strain (lbs/ft)	2117	2047	2046	2085	2010						2061	41
MD Strength @ 5% Strain (kN/m)	30.9	29.9	29.9	30.4	29.3						30.1	0.6
MD Strength @ 10% Strain (lbs)	3220	3151	3173	3113	3116						3155	44
MD Strength @ 10% Strain (lbs/ft)	4936	4830	4864	4772	4776						4836	68
MD Strength @ 10% Strain (kN/m)	72.1	70.5	71.0	69.7	69.7						70.6	1.0
MD Break Elongation (%)	10.1	10.9	10.7	10.7	10.7						10.6	0.3
TD Number of Ribs per Specimen:	7											
TD Number of Ribs per foot:	10.8											
TD Ultimate Strength (lbs)	3735	3749	3816	3712	3816						3766	48
TD Ultimate Strength (lbs/ft)	5763	5784	5888	5727	5888						5810	74
TD Ultimate Strength (kN/m)	84.1	84.5	86.0	83.6	86.0						84.8	1.1
TD Strength @ 2% Strain (lbs)	682	660	672	679	695						678	13
TD Strength @ 2% Strain (lbs/ft)	1052	1018	1037	1048	1072						1045	20
TD Strength @ 2% Strain (kN/m)	15.4	14.9	15.1	15.3	15.7						15.3	0.3
TD Strength @ 5% Strain (lbs)	1174	1141	1195	1179	1171						1172	20
TD Strength @ 5% Strain (lbs/ft)	1811	1760	1844	1819	1807						1808	31
TD Strength @ 5% Strain (kN/m)	26.4	25.7	26.9	26.6	26.4						26.4	0.4
TD Strength @ 10% Strain (lbs)	3096	2971	3303	3216	3169						3151	125
TD Strength @ 10% Strain (lbs/ft)	4777	4585	5096	4962	4889						4862	193
TD Strength @ 10% Strain (kN/m)	69.7	66.9	74.4	72.4	71.4						71.0	2.8
TD Break Elongation (%)	11.7	12.3	11.5	11.3	11.9						11.7	0.4
Mass/Unit Area (ASTM D 5261)												
Mass/unit area (oz/sq.yd)	15.0	14.7	15.0	14.7	14.7	14.8	15.0	14.6	14.9	14.6	14.8	0.2

MD - Machine Direction TD - Transverse/Cross Machine Direction

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GEOGRID TEST RESULTS

TRI Client: SCS Engineers
Project: Citrus County Phase 3 Reline

Material: TenCate Mirafi Geogrid
Sample Identification: 22XT, Roll # 000299284
TRI Log #: E2382-32-05

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Density/Specific Gravity (ASTM D 792, Method A)												
Density (g/cm3)	1.22	1.21	1.21								1.21	0.01
Single Rib Tensile (GRI GG1-87)												
MD Number of Ribs per Specimen:	1											
MD Number of Ribs per foot:	12.2											
MD Ultimate Strength (lbs)	1925	1801	1941	1791	1896	1855	1826	1884	1859	1904	1868	51
MD Ultimate Strength (lbs/ft)	23480	21967	23675	21845	23126	22626	22272	22980	22675	23224	22787	621
MD Ultimate Strength (kN/m)	343	321	346	319	338	330	325	336	331	339	333	9
MD Strength @ 2% Strain (lbs)	359	358	363	352	363	351	343	360	354	344	355	7
MD Strength @ 2% Strain (lbs/ft)	4379	4367	4428	4293	4428	4281	4184	4391	4318	4196	4326	88
MD Strength @ 2% Strain (kN/m)	63.9	63.8	64.6	62.7	64.6	62.5	61.1	64.1	63.0	61.3	63.2	1.3
Secant Modulus @ 2% Strain (lbs/ft)	218942	218332	221381	214673	221381	214063	209184	219552	215892	209794	216319	4398
MD Strength @ 5% Strain (lbs)	564	559	559	547	561	547	532	556	552	535	551	11
MD Strength @ 5% Strain (lbs/ft)	6879	6818	6818	6672	6843	6672	6489	6782	6733	6526	6723	133
MD Strength @ 5% Strain (kN/m)	100.4	99.5	99.5	97.4	99.9	97.4	94.7	99.0	98.3	95.3	98.2	1.9
MD Strength @ 10% Strain (lbs)	1230	1240	1235	1220	1254	1176	1163	1192	1230	1155	1210	35
MD Strength @ 10% Strain (lbs/ft)	15003	15125	15064	14881	15295	14344	14185	14539	15003	14088	14753	428
MD Strength @ 10% Strain (kN/m)	219	221	220	217	223	209	207	212	219	206	215	6
MD Break Elongation (%)	15.4	13.6	16.0	13.9	14.2	14.7	15.4	14.9	14.6	16.2	14.9	0.9
Mass/Unit Area (ASTM D 5261)												
Mass/unit area (oz/sq.yd)	26.1	26.0	25.7	25.6	25.2	24.9	24.8	24.8	24.8	24.7	25.3	0.5

MD - Machine Direction TD - Transverse/Cross Machine Direction

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August 8, 2013

Mail To:

Dominique Bramlett, P.E.
SCS Engineers
4041 Park Oaks Blvd., Suite 100
Tampa, Florida 33610-9501

email: dbramlett@scsengineers.com

Bill To:

<= Same

Dear Ms. Bramlett:

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:	**Citrus County Phase 3 Reline**
TRI Job Reference Number:	E2382-32-09
Material(s) Tested:	1, Agru 60 mil Microspike HDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Asperity Height (GRI GM 12) Density (ASTM D 1505) Carbon Content (ASTM D 1603, mod.) Carbon Dispersion (ASTM D 5596) Tensile (ASTM D 6693/GRI GM13)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

MPatel

Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

cc: Sam R. Allen, Vice President and Division Manager

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9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOMEMBRANE TEST RESULTS

TRI Client: SCS Engineers
Project: Citrus County Phase 3 Reline

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 444324.12
TRI Log #: E2382-32-09

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Thickness (ASTM D 5994)												
Thickness (mils)	67	66	64	64	65	66	63	67	62	65	**65**	2
											62	<< min
Asperity Height (GRI GM 12)												
Asperity Height (mils) - Side A	33	32	33	29	38	43	32	37	36	26	**34**	5
Asperity Height (mils) - Side B	23	24	30	22	29	20	24	29	26	27	**25**	3
Density (ASTM D 1505)												
Density (g/cm3)	0.945	0.945	0.945								**0.945**	0.000
Carbon Black Content (ASTM D 1603, mod.)												
% Carbon Black	2.31	2.35									**2.33**	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 6693, 2 ipm strain rate)												
MD Yield Strength (ppi)	182	173	173	170	170						**174**	5
TD Yield Strength (ppi)	199	180	179	180	172						**182**	10
MD Break Strength (ppi)	267	230	209	188	181						**215**	35
TD Break Strength (ppi)	233	202	193	212	187						**205**	18
MD Yield Elongation (%)	23	23	23	23	23						**23**	0
TD Yield Elongation (%)	23	20	20	22	23						**22**	2
MD Break Elongation (%)	545	510	438	495	434						**484**	48
TD Break Elongation (%)	609	564	511	586	496						**553**	48

MD Machine Direction TD Transverse Direction

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TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

Rigid Wall Constant Head Permeability

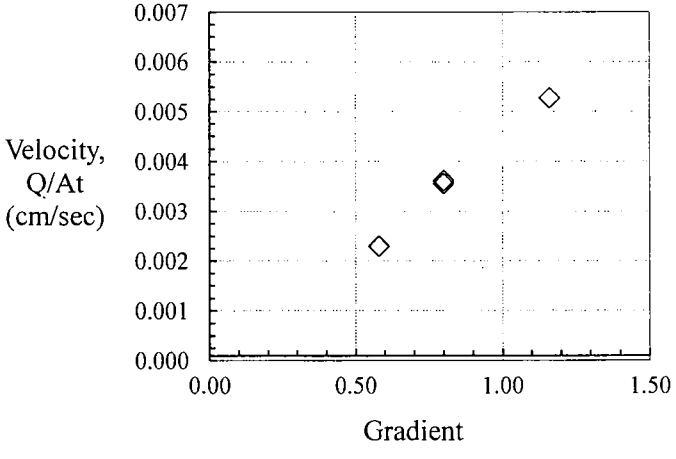
Client: SCS Engineers
Project: Citrus County Landfill Phase 3
Sample: Protective/Drainage Cover Soil

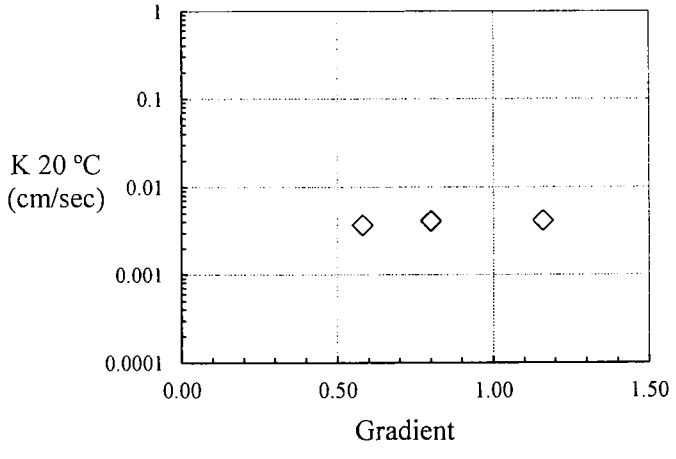
TRI Log#: E2377-35-01
Test Method: ASTM D 2434
Test Date: 08/15/13

Manometer Reading (cm)		Gradient	Flow Volume, Q (ml)	Flow Time, t (s)	Temperature (°C)	Flow Rate (cm^3/s)	Velocity, Q/At (cm/s)	System Permeability (cm/s)	System Permeability @ 20 °C, $K_{20°C}$ (cm/s)	Average System Permeability @ 20 °C (cm/s)
1	2									
Gradient No. 1										
4.3	0.6	0.58	4	60	23.1	0.073	2.3E-03	4.0E-03	3.7E-03	**3.7E-03**
4.3	0.6	0.58	4	60	23.1	0.073	2.3E-03	4.0E-03	3.7E-03	
Gradient No. 2										
6.6	1.5	0.80	7	60	23.6	0.113	3.6E-03	4.4E-03	4.1E-03	**4.1E-03**
6.6	1.5	0.80	7	60	23.6	0.115	3.6E-03	4.5E-03	4.1E-03	
Gradient No. 3										
9.9	2.5	1.16	10	60	23.8	0.167	5.3E-03	4.5E-03	4.1E-03	**4.1E-03**
9.9	2.5	1.16	10	60	23.8	0.167	5.3E-03	4.5E-03	4.1E-03	

Specimen Cross-sectional Area, A (cm^2): 31.7

Final Avg. k at 20 deg C (cm/sec) : **4.0E-03**





Note: Soil specimen was tamped in place per test request.

Jeffrey A. Kuhn, E.I.T., Ph.D., 8/15/13
Quality Review/Date
Tested by: Larry Miller

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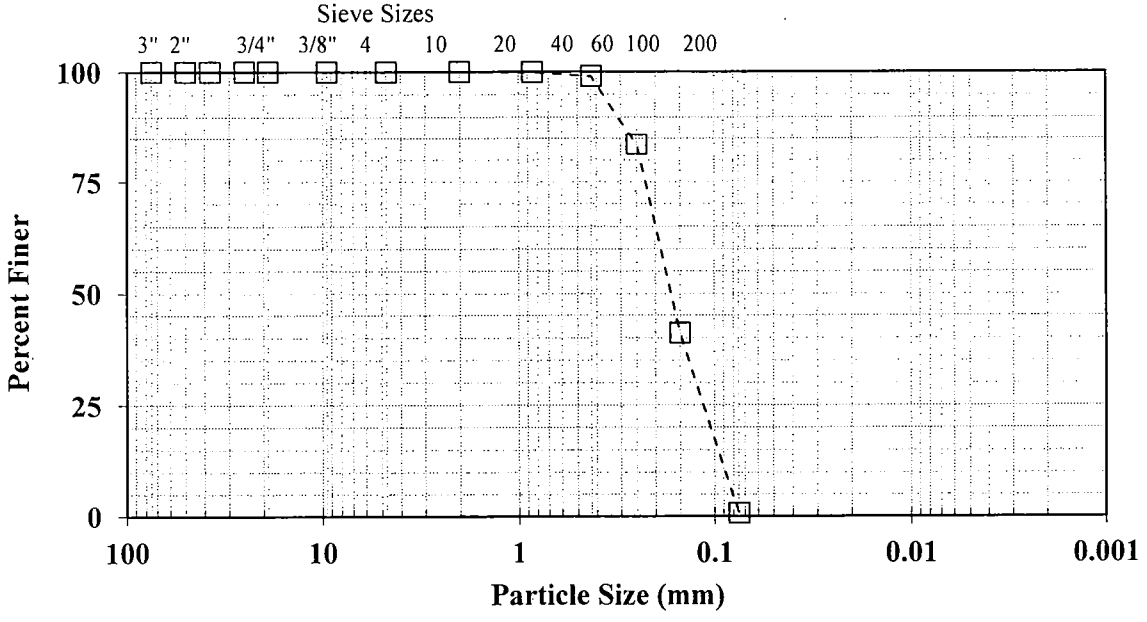
TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

Particle Size Analysis for Soils

Client: SCS Engineers
Project: Citrus County Landfill
Sample: Protective/Drainage Cover Soil

TRI Log#: E2377-35-01
Test Method: D422
Test Date: 08/14/13



Sieve Analysis	
Sieve Size	Percent Passing
3 in.	100.0
2 in.	100.0
1.5 in.	100.0
1 in.	100.0
3/4 in.	100.0
3/8 in.	100.0
No. 4 (4.75 mm)	100.0
No. 10 (2.00 mm)	100.0
No. 20 (850 µm)	100.0
No. 40 (425 µm)	99.0
No. 60 (250 µm)	83.6
No. 100 (150 µm)	41.1
No. 200 (75 µm)	0.7
Hydrometer Analysis	
Particle Size	Percent Passing
0.074 mm	- -
0.005 mm	- -
0.001 mm	- -

USCS Classification (ASTM D2487)	Poorly Graded Sand (SP)	
As-Received Moisture Content (%)	(ASTM D2216)	- -
Atterberg Limits (ASTM D 4318, Method A : Multipoint)	Liquid Limit	- -
	Plastic Limit	- -
	Plastic Index	- -
Notes: Specimen was air dried, 3 point Liquid Limit procedure was used. (NL = No Liquid Limit, NP = No Plastic Limit)		
Specific Gravity	(ASTM D854)	- -
Organic Content (%)	(ASTM D2974)	- -
Carbonate Content (%)	(ASTM 4373)	- -

Jeffrey A. Kuhn, Ph.D., P.E., 8/15/2013
Quality Review/Date
Tested by: Kahlil Hart

ATTACHMENT D

Daily Field Reports By SCS Engineers

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-13-13 Tuesday	Daily Report Log

CQA PERSONNEL: Keith VanGennip **Page 1 of 1**

Comanco Environmental Corporation (CEC) completed the following tasks:

Superintendent Gary Mitchell and six man crew were onsite today starting at 8:00

CEC Project Manager Matt Remmett was onsite this morning conducting the safety meeting and review the scope of work with the crew.

A dozer (JD 450) pushed soil at toe of slope to fill in hole holding rainwater to provide access to slope.

CEC removed the rain tarp and pushed burnt liner to toe of slope for removal.

CEC's storage container and JD 544 loader was delivered today.

Fuel truck and dozer was delivered yesterday.

Dominique Bramlett (SCS Project Manager) was onsite this morning discussing scope of work with myself and Casey Stephens (Citrus County Solid Waste Director).

Citrus County staff constructed a berm in the bottom of the cell to divert runoff away from work area.

CEC's Surveyor ATI was onsite today surveying existing conditions.

CEC stopped work at 3:30 pm, tomorrow start time at 7:00 am

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-14-13 Wednesday	Daily Report Log

CQA PERSONNEL: Keith VanGennip **Page 1 of 1**

Comanco Environmental Corporation (CEC) completed the following tasks:

Superintendent Gary Mitchell and seven man crew were onsite today starting at 7:00

CEC conducted Safety Meeting.

Rained 10:30 to 11:00

Shoveled secondary tie-in.

Lunch break 12:-12:30

Casey Stephens (Citrus County Solid Waste Director) visited the work area to see progress.

CEC trimmed tie-in and removed burnt geosythetics. Citrus County staff loaded and hauled away geosythetics.

CEC exposed anchor trench.

Mini excavator arrived this morning.

CEC stopped work at 3:30 pm

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-15-13 Thursday	Daily Report Log

CQA PERSONNEL: Keith VanGennip **Page 1 of 1**

Comanco Environmental Corporation (CEC) completed the following tasks:

Superintendent Gary Mitchell and seven man crew were onsite today starting at 7:00

CEC conducted Safety Meeting.

Continued exposing anchor trenches.

Shoveled primary tie-in.

Lunch break 12:-12:30

Casey Stephens (Citrus County Solid Waste Director) visited the work area to see progress.

JD 450 Dozer graded the temporary stormwater berm in bottom of cell to divert runoff.

CEC PM Matt Remmert was onsite this afternoon.

Coordinated with Dominique Bramlett (SCS PM) on soils and geosynthetics conformance test.

CEC stopped work at 3:30 pm

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-16-13 Friday	Daily Report Log

CQA PERSONNEL: Keith VanGennip **Page 1 of 1**

Comanco Environmental Corporation (CEC) completed the following tasks:

Project Manager Matt Remmert and seven man crew were onsite today starting at 7:00

CEC conducted Safety Meeting.

Rain over night and early morning before 7:00. A little erosion at toe of slope.

CEC reinstalled old raintarp and placed tires.

Citrus County Staff dewater standing water at toe of slope

Casey Stephens (Citrus County Solid Waste Director) visited the work area to see progress.

A larger mini excavator was delivered.

CEC equipment on site: 1-JD 450 Dozer, 1-JD 544 Loader, Fuel Truck, 2-pickups, 2-mini excavators, Storage Container.

CEC stopped work at 10:00 am, no work this weekend.

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-17-13 Saturday	Daily Report Log

CQA PERSONNEL: Keith VanGennip Page 1 of 1

No work today, Saturday

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-18-13 Sunday	Daily Report Log

CQA PERSONNEL: Keith VanGennip

No work today, Sunday

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-19-13 Monday	Daily Report Log

CQA PERSONNEL: Keith VanGennip **Page 1 of 1**

Comanco Environmental Corporation (CEC) completed the following tasks:

Project Manager Matt Remmert and seven Charlie Ingles Superintenden with six man crew were started work at 7:00 am.

CEC conducted Safety Meeting.

Two rolls of 60 mil HDPE liner was delivered today.

Uniaxial and Biaxial Geogrids were delivered on Friday.

The crew shoveled around detection riser.

Excavated Uniaxial geogrid and rain tarp anchor trench to remove old materials.

Removed geosynthetics out of anchor trench.

Casey Stephens (Citrus County Solid Waste Director) visited the work area to see progress.

Old raintarp was left in-place today.

CEC stopped work at 3:30.

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-20-13 Tuesday	Daily Report Log

CQA PERSONNEL: Keith VanGennip **Page 1 of 1**

Comanco Environmental Corporation (CEC) completed the following tasks:

Project Manager Matt Remmert was onsite this morning to review progress with Gary Mitchell. Seven man crew onsite today started work at 7:00 am.

CEC conducted daily Safety Meeting.

HDPE pipe was delivered today.

CEC hauled four loads from borrow pit for base layer. County staff stockpiled material in pit.

The crew removed old rain tarp and loaded, hauled and placed material for the base layer.

CEC's surveyor ATI was on site to stakeout grades on the slope.

The crew exposed tie-in at toe of slope.

Casey Stephens (Citrus County Solid Waste Director) visited the work area to see progress with four visitors from FDEP.

CEC stopped work at 3:30.

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-21-13 Wednesday	Daily Report Log

CQA PERSONNEL: Keith VanGennip **Page 1 of 1**

Comanco Environmental Corporation (CEC) completed the following tasks:

CEC had a seven man crew on site today starting work at 7:00 am.

CEC conducted daily Safety Meeting.

Rain overnight caused very little erosion. The crew raked the subbase and continued exposing tie-in at toe of slope and trimmed geosynthetics.

The crew removed rain tarp and replaced at end of the day.

CEC cut and removed damaged detection riser. Installed new riser electro fusing the new section. The crew removed pumped and replaced after riser was repaired.

Completed two density test on subbase and passed the density requirements of the specifications.

Thurnderstorm at 3:15 pm.

CEC stopped work at 3:30.

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-22-13 Thursday	Daily Report Log

CQA PERSONNEL: Keith VanGennip **Page 1 of 1**

Comanco Environmental Corporation (CEC) completed the following tasks:

CEC had a seven man crew on site today starting work at 7:00 am.

CEC conducted daily Safety Meeting.

CEC's Liner Crew arrived at 8:00 am with 9 men including superintendent Gene Sowers.

Matt Remmert and Nick Bridges of CEC were on site this morning for progress meeting.

Casey Stephens stopped by the work area to review the progress.

Dominique Bramlett was on site this morning to review progress and attend meeting.

CEC installed 4 rolls of biaxial geogrid over subbase.

CEC installed three panel of secondary 60 mil liner.

The surveyor (ATI) as-builted the subbase before geosynthetics were installed.

CEC re-excavated the anchor trench.

Marked two destructive tests. CEC tested DT-1 (fusion smooth to smooth) and found the peel did not meet the specifications. CEC will trace the failure tomorrow.

Marked seven repairs, not all were welded. Tie-in at toe of slope and repairs not vacuum tested yet.

Rain at 3:30pm.

CEC stopped work at 3:30.

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-23-13 Friday	Daily Report Log

CQA PERSONNEL: Keith VanGennip **Page 1 of 1**

Comanco Environmental Corporation (CEC) completed the following tasks:

CEC had a seven man crew earthwork crew and the liner crew had eight men today starting at 7:00 am.

CEC conducted daily Safety Meeting.

Traced DT-1 failure on secondary, marked and cut DT-1A and DT-1B, tested okay.

Completed secondary liner repairs and tie-in at toe.

At CEC's responsibility the crew installed the Bi-Planner Geocomposite.

Installed 3 full width panels of geocomposite and partial width panel.

At the tie-in the existing and new composite the geotextile was pulled off the net and sewn.

Cable ties were spaced less than the specifications minimum.

A long stick excavator and gravel box was delivered today for Protective Cover installation over Detection and Collection riser pipes.

The liner crew is scheduled for return to finish primary mid part of next week.

The secondary liner system is completed, Biaxial Geogrid, 60 Mil HDPE, and Bi-Planner Composite.

Rained started at 2:15 pm.

CEC stopped work at 2:30.

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-24-13 Saturday	Daily Report Log

CQA PERSONNEL: Keith VanGennip Page 1 of 1

No work today, Saturday

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-25-13 Sunday	Daily Report Log

CQA PERSONNEL: Keith VanGennip

No work today, Sunday

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-26-13 Monday	Daily Report Log

CQA PERSONNEL: Keith VanGennip **Page 1 of 1**

Comanco Environmental Corporation (CEC) completed the following tasks:

CEC had a seven man crew earthwork crew starting at 7:00 am.

CEC conducted daily Safety Meeting.

The protective cover sand was imported offsite and dumped in the floor of the cell and at top of slope.

The crew used a loader and longsitck excavator to place soil over the LCS and LDS riser pipes.

Casey Stephens - Citrus County Solid Waste Director visited the job site to review the progress.

CEC stopped work at 3:30.

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-27-13 Tuesday	Daily Report Log

CQA PERSONNEL: Keith VanGennip **Page 1 of 1**

Comanco Environmental Corporation (CEC) completed the following tasks:

CEC had a seven man earthwork crew starting at 7:00 am.

CEC conducted daily Safety Meeting.

The crew continued placing protective cover soil over the LDS riser, LCS riser is completed.

After primary tie-in is completed the CEC will finish placing sand in between LDS and LCS risers.

Three men cleaned the primary liner tie-in at the toe of slope.

Two men prewelded 2" pipe for LDS riser.

Casey Stephens - Citrus County Solid Waste Director visited the job site to review the progress.

CEC stopped work at 2:00.

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-28-13 Wednesday	Daily Report Log

CQA PERSONNEL: Keith VanGennip **Page 1 of 1**

Comanco Environmental Corporation (CEC) completed the following tasks:

CEC had a seven man earthwork crew and a seven man liner crew starting at 7:00 am.

CEC conducted daily Safety Meeting.

The surveyor as-built the protective cover sand over the LCS riser pipes.

The liner crew deployed 3 panels of 60 mil HDPE liner.

Marked two DT's on primary liner and CEC cut and tested the DT's with passing results.

All repairs were finished with the exception of the LDS pipe boot.

The liner crew install 3 panels of tri-planner geocomposite.

CEC stopped work at 3:30.

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-29-13 Thursday	Daily Report Log

CQA PERSONNEL: Keith VanGennip **Page 1 of 1**

Comanco Environmental Corporation (CEC) completed the following tasks:

CEC had a seven man earthwork crew and a seven man liner crew starting at 7:00 am.

CEC conducted daily Safety Meeting.

The liner crew deployed, tied and sewed the tri-planner geocomposite.

Finished welding LDS riser pipe boot. Heat sealed geotextile around LDS riser to geocomposite.

Installed 1.5 panels of uniaxial geogrid on the slope.

Backfilled anchor trench in one foot lifts using a mini excavator and hand tamping.

Weekly progress meeting 2 today at 10:00. Attendees: Casey Stephens-Citrus County Solid Waste, Dominique Bramlett and Keith VanGennip-SCS Engineers, and Matt Remmert-Comanco.

Meeting Topics:
- Electrical Permit approved. The electrician to start Friday.
- Off Labor Day
- Pump Startup schedule for Monday 9-9-13 and project walk thru.
- Next Thursday start demobbing equipment.
- Matt to email to Dominique, Safety Meetings, Safety Plan and Tensiometer Certificate

60 mil Liner and Tri-Planner Geocomposite finished today.

Received DT's results from TRI with passing results.

CEC stopped work at 3:30.

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-30-13 Friday	Daily Report Log

CQA PERSONNEL: Keith VanGennip **Page 1 of 1**

Comanco Environmental Corporation (CEC) completed the following tasks:

CEC had a seven man earthwork crew and crew starting at 7:00 am.

CEC conducted daily Safety Meeting.

Backfilled anchor trench in one foot lifts using a mini excavator and hand tamping.

The electricians from Gaudette Electric started demo of damaged panels and conduit.

CEC using a long stick excavator (DX 225 Doosan), a gravel box, JD 544 loader placed protective cover between the LDS and LCS riser pipes.

The crew temporary placed the old rain tarp and tires over the riser pipes to protect against erosion

CEC will return on Tuesday 9/3/13.

CEC stopped work at 12:00.

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 8-31-13 Saturday	Daily Report Log

CQA PERSONNEL: Keith VanGennip Page 1 of 1

No work today, Saturday

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 9-1-13 Sunday	Daily Report Log

CQA PERSONNEL: Keith VanGennip Page 1 of 1

No work today, Sunday

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 9-2-13 Monday	Daily Report Log

CQA PERSONNEL: Keith VanGennip Page 1 of 1

No work today, Labor Day Holiday

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 9-3-13 Tuesday	Daily Report Log

CQA PERSONNEL: Keith VanGennip **Page 1 of 1**

Comanco Environmental Corporation (CEC) completed the following tasks:

CEC had a six man earthwork crew and crew starting at 7:00 am.

CEC conducted daily Safety Meeting.

Finished backfilling anchor trench in one foot lifts using a mini excavator and hand tamping.

The electricians from Gaudette Electric on-site installing new panels, conduit and pulled wire.

Excavated geogrid anchor trench, 5 foot deep and 10 to 11 feet wide.

Installed three panels of Uniaxial Geogrid on the slope. Cable ties spaced at 3' apart down slope and 1 to 1.5' on butt seams. Installation completed.

Demobed long stick excavator.

Installed LDS tranducer in 2" SCH 40 PVC pipe.

CEC stopped work at 3:05.

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 9-4-13 Wednesday	Daily Report Log

CQA PERSONNEL: Keith VanGennip **Page 1 of 1**

Comanco Environmental Corporation (CEC) completed the following tasks:

CEC had a six man earthwork crew and crew starting at 7:00 am.

CEC conducted daily Safety Meeting.

The crew removed the old rain tarp and rolled it for future use.

Installed new raintarp over slope, sewed to existing raintarp and heat sealed to LCS and LDS riser pipes.

Backfilled raintarp anchor trench in one foot lifts.

The crew picked up demo debris and trash in the project area.

The electricians from Gaudette Electric on-site installing new panels, conduit and pulled wire.

CEC stopped work at 3:10.

SCS GLOBEX ENGINEERING

Site: Citrus County Project: Phase 3 Fire Repair Date: 9-5-13 Thursday	Daily Report Log

CQA PERSONNEL: Keith VanGennip **Page 1 of 1**

Comanco Environmental Corporation (CEC) completed the following tasks:

CEC had a six man earthwork crew and crew starting at 7:00 am.

CEC conducted daily Safety Meeting.

One operator with a mini excavator regraded stormwater ditch by anchor trench.

Completed installation of LDS forcemain, check valve and air release valve.

The crew started placing tires on rain tarp.

The liner equipment trailer was demobilized this morning.

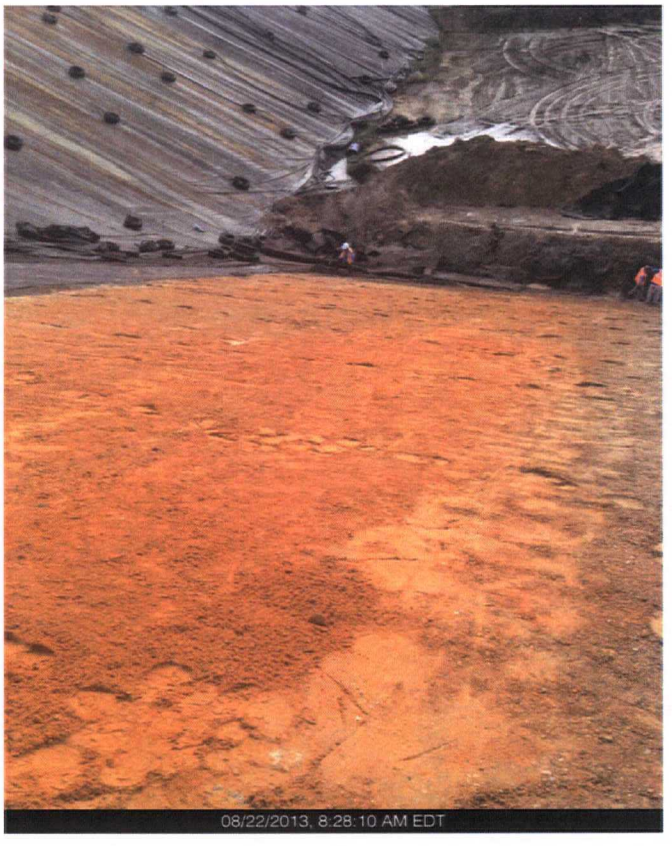
SCS left site at 12:00

ATTACHMENT E

Construction Photographs

Citrus County LF Fire Remediation

COMANCO Environmental Corp. - 9-12-13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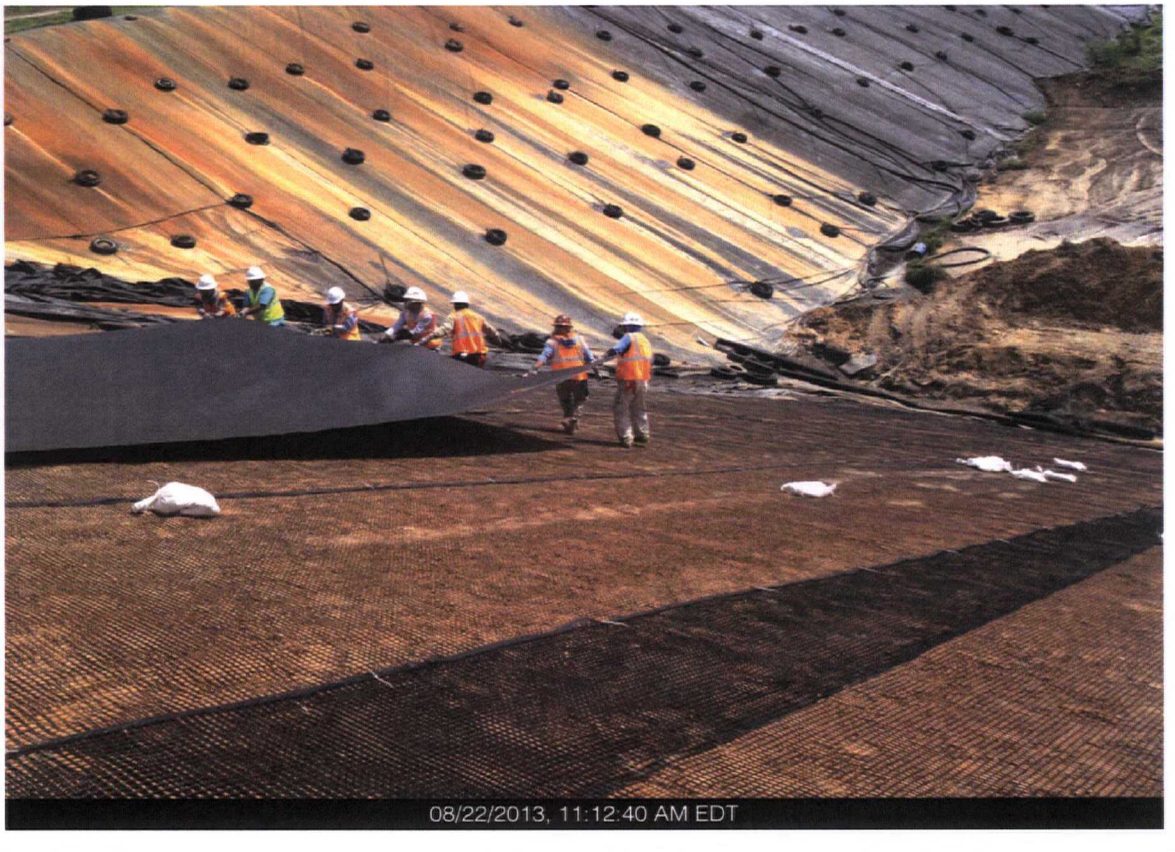
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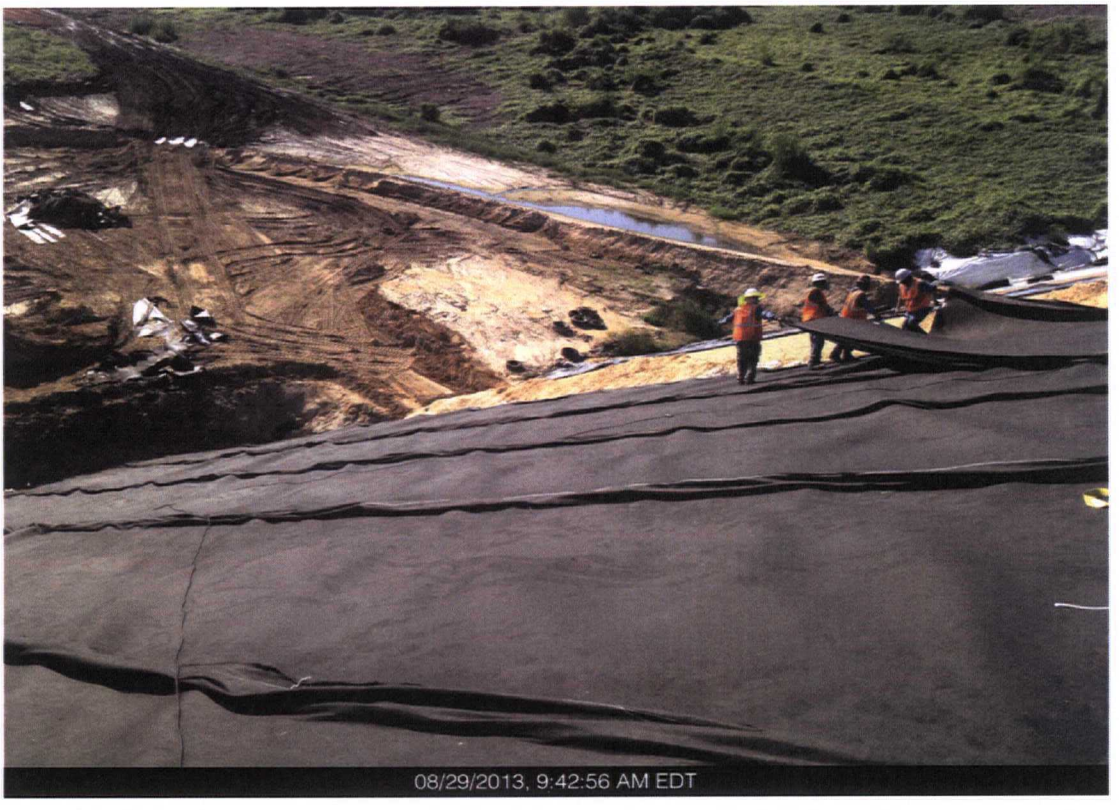
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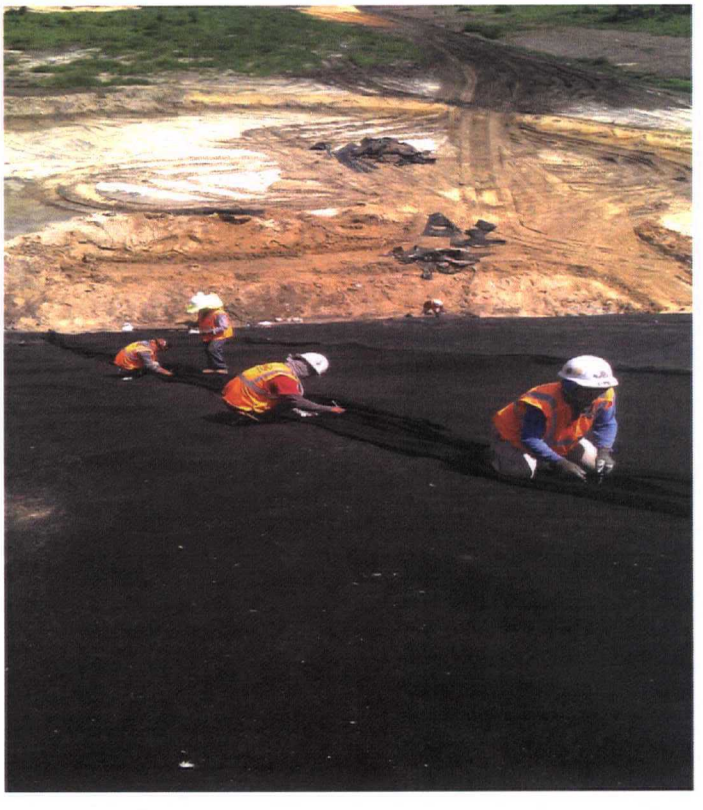

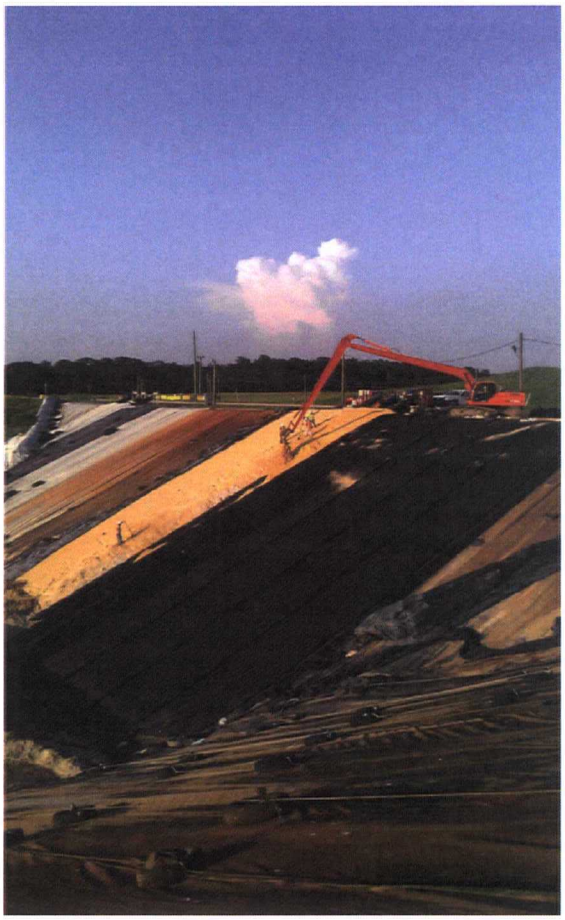


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09/09/2013, 2:24:27 PM EDT


09/09/2013, 12:58:28 PM EDT


09/09/2013, 1:12:28 PM EDT

ATTACHMENT F

Certification of Acceptance Forms

CERTIFICATION OF ACCEPTANCE

OF SOIL SUBGRADE BY GEOSYNTHETIC

INSTALLER AND CQA CONSULTANT

OWNER: CITRUS COUNTY

SITE: CITRUS COUNTY LANDFILL

LOCATION: LECANTO, FL.

PROJECT: PHASE 3 FIRE REPAIR

GEOSYNTHETIC INSTALLER: COMANCO

CQA CONSULTANT: SCS ENGINEERS

CERTIFICATION:

A. I, Gary Mitchell Jr, the authorized representative of COMANCO, do hereby accept the soil subgrade area described below for geosynthetic installation:

SECONDARY S-1 THRU S-3

Gary Mitchell 8-22-13
Signature Date

B. I, KEITH VANGENNIP, the authorized representative of SCS ENGINEERS, do hereby certify that the above described area is suitable for geosynthetic installation.

Keith VanGennip 8/22/13
Signature Date

CERTIFICATION OF ACCEPTANCE

OF SOIL SUBGRADE BY GEOSYNTHETIC

INSTALLER AND CQA CONSULTANT

OWNER: CITRUS COUNTY

SITE: CITRUS COUNTY LANDFILL

LOCATION: LECANTO, FL.

PROJECT: PHASE 3 FIRE REPAIR

GEOSYNTHETIC INSTALLER: COMANCO

CQA CONSULTANT: SCS ENGINEERS

CERTIFICATION:

A. I, Daryl Mitchell, the authorized representative of Comanco, do hereby accept the soil subgrade area described below for geosynthetic installation:

PROTECTIVE COVER OVER LDS RISER PIPE.

Daryl Mitchell 8-28-13
Signature Date

B. I, KEITH VANGENNIP, the authorized representative of SCS ENGINEERS, do hereby certify that the above described area is suitable for geosynthetic installation.

Keith VanGennip 8/28/13
Signature Date

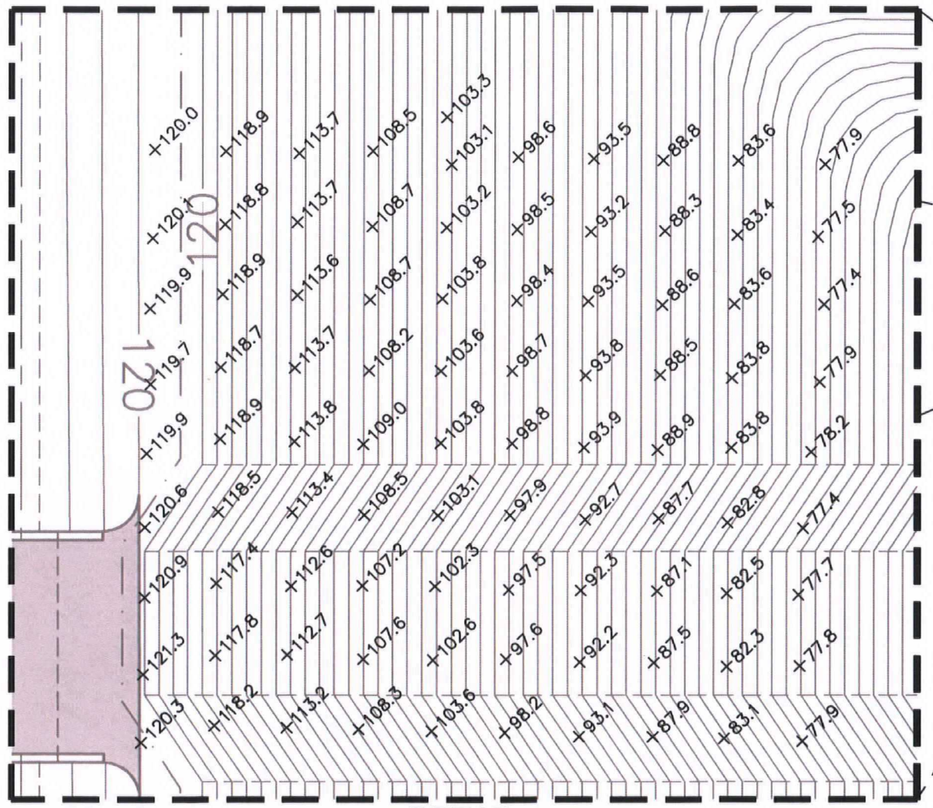
ATTACHMENT G

Record Drawings

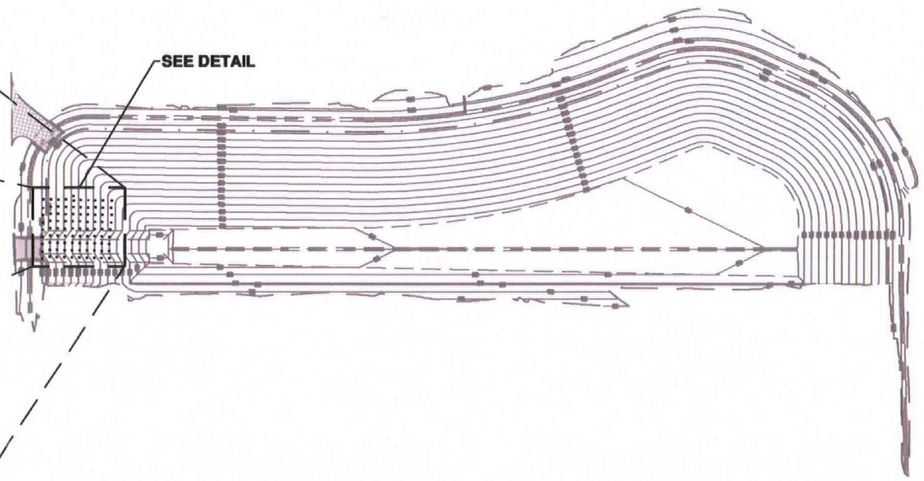
SPECIFIC PURPOSE SURVEY

EXISTING CONDITIONS TOPOGRAPHIC SURVEY

PREPARED FOR: COMANCO ENVIRONMENTAL CORPORATION



DETAIL
SCALE: 1"=20'



200' 100' 0

SCALE: 1" = 200'

LEGEND

+100.00 – EXISTING ELEVATION

SURVEYOR'S REPORT

1. THIS SURVEY NOT VALID UNLESS EMBOSSED WITH THE RAISED SEAL OF THE UNDERSIGNED SURVEYOR.
2. UNDERGROUND ENCROACHMENTS SUCH AS UTILITIES AND FOUNDATIONS, THAT MAY EXIST, HAVE NOT BEEN LOCATED.
3. FIELD WORK COMPLETED AUGUST 13, 2013.
4. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.
5. GRAYSCALE GRAPHICS SHOWN HEREON HAVE BEEN TAKEN FROM DIGITAL DRAWING FILES PREPARED BY STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, PROJECT No. 09207049.06, DATED APRIL 2010.

SURVEY CONTROL POINTS

NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP–1	4"X4" CONCRETE MONUMENT	1641568.661	516999.059	118.07'
CP–2	NAIL & DISK	1642239.306	515796.814	119.55'
CP–3	CAPPED IRON ROD	1643105.783	515765.763	120.08'

SURVEYOR'S CERTIFICATE:

I, the undersigned Professional Land Surveyor, hereby certify that this As–Built Survey was prepared under my direct supervision, that to the best of my knowledge, information and belief is a true and accurate representation of the land shown and described, and that it meets the Minimum Technical Standards for Land Surveying in the State of Florida Chapter 5J–17, Florida Administrative Code.

STATE OF FREDERICK S. BACHMANN NO. 5174 STATE OF FLORIDA PROFESSIONAL SURVEYOR

9/16/13

Frederick S. Bachmann, Professional Land Surveyor No. 5174 — Date
ATI Surveying & Mapping, LLC
Licensed Business No. 7718

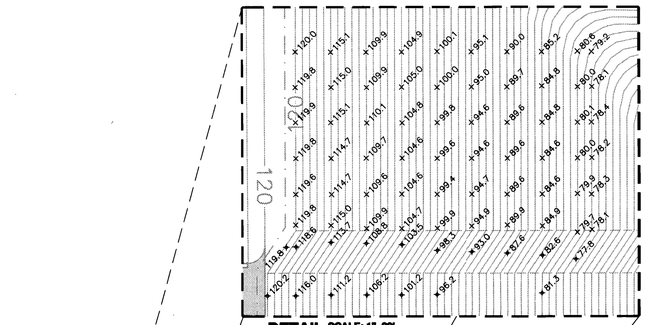
ATI COMPANIES Surveying & Mapping

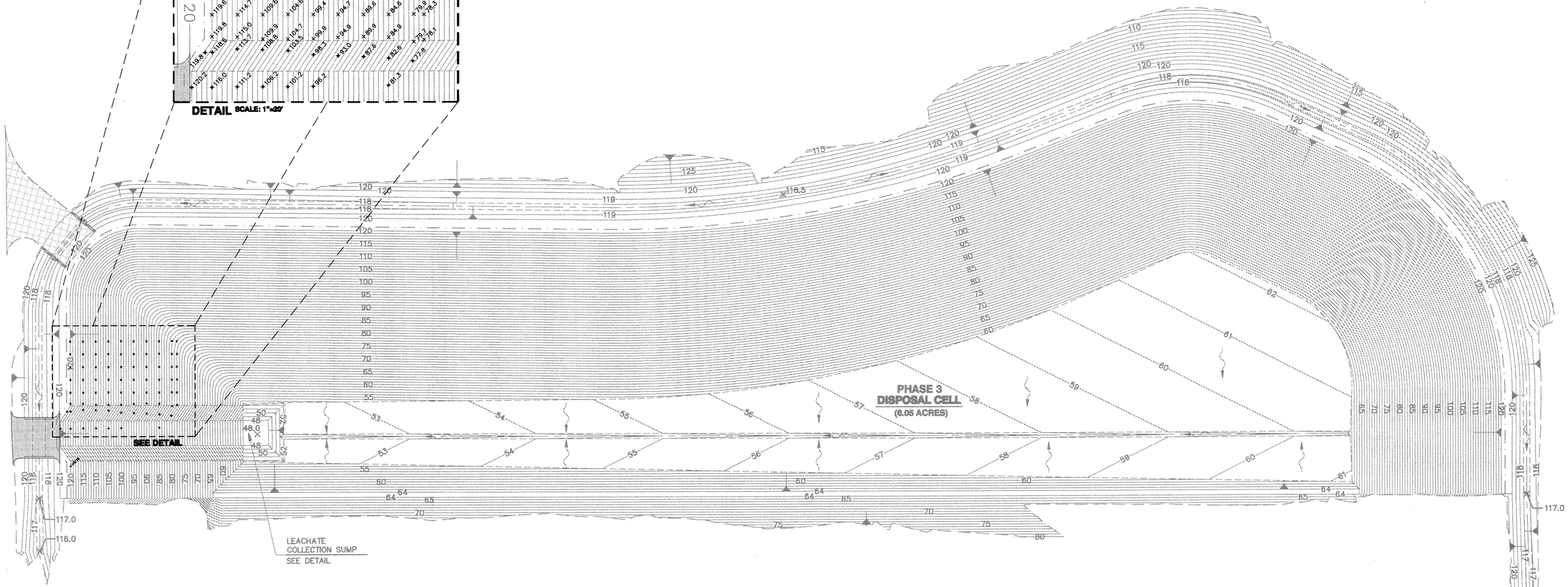
4610 CENTRAL AVENUE ST. PETERSBURG, FL 33711
TEL: (727) 328–0268 FAX: (727) 328–2477
LICENSED BUSINESS No. 7718

AS-BUILT SURVEY

POST-EXCAVATION TOPOGRAPHIC SURVEY
PREPARED FOR: COMANCO ENVIRONMENTAL CORPORATION

1301981 (1)





N

40' 20' 0 40'
SCALE IN FEET
1" = 40'

AS-BUILT LEGEND

×100.0 – PRIMARY LINER AS-BUILT ELEVATION

+100.0 – AS-BUILT GRADE

LEGEND

55 — TOP OF SUBGRADE LAYER CONTOUR (5 FOOT INTERVAL)

TOP OF SUBGRADE LAYER CONTOUR (1 FOOT INTERVAL)

×116.0 SPOT ELEVATION

90 — EXISTING GRADE CONTOUR (5 FOOT INTERVAL) 04/08/09 SURVEY

EXISTING GRADE CONTOUR (1 FOOT INTERVAL) 04/08/09 SURVEY

SURFACE WATER FLOW/SLOPE DIRECTION

SURVEY CONTROL POINTS

NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP-1	4"X4" CONCRETE MONUMENT	1641568.661	516999.059	118.07'
CP-2	NAIL & DISK	1642239.306	515796.814	119.55'
CP-3	CAPPED IRON ROD	1643105.783	515765.763	120.08'

NOTES:

1. EXISTING PHASE 2 LINER LIMITS SHOWN ARE APPROXIMATE. CONTRACTOR TO CAREFULLY EXCAVATE EXISTING SOIL AND/OR MUNICIPAL WASTE TO EXPOSE EXISTING PHASE 2 LINER FOR PHASE 3 LINER TIE-IN.
2. TOPOGRAPHIC SURVEY PERFORMED BY PICKETT & ASSOCIATES, INC., 475 SOUTH FIRST AVENUE, BARTOW, FLORIDA, 33830, TEL: (863) 533-9095. SURVEY INFORMATION SHOWN WAS DEVELOPED BY PHOTOGRAMMETRIC METHODS BASED ON AN AERIAL PHOTO DATE OF APRIL 8, 2009.
3. CONTRACTOR SHALL PROVIDE TEMPORARY FACILITIES COMPATIBLE WITH PROPOSED IMPROVEMENTS AND COMPATIBLE WITH COUNTY OPERATIONS, FOR DIVERTING STORM WATER RUNOFF FROM ACTIVE LANDFILL, SO THAT CONSTRUCTION CAN BE ACCOMPLISHED IN ACCORDANCE WITH SPECIFICATIONS. SEE SPECIFICATION SECTION 312000 FOR EXCAVATION PLAN REQUIREMENTS.
4. ALL FINISHED SLOPES GREATER THAN 10% OUTSIDE THE ANCHOR TRENCH LIMIT SHALL BE SODDED. SOD ON SLOPES GREATER THAN 3:1 SHALL BE PINNED. CONTRACTOR SHALL STABILIZE ALL TEMPORARY SLOPES TO MINIMIZE EROSION.

SURVEYOR'S REPORT

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2. UNDERGROUND ENCROACHMENTS SUCH AS UTILITIES AND FOUNDATIONS, THAT MAY EXIST, HAVE NOT BEEN LOCATED.
3. FIELD WORK COMPLETED AUGUST 20, 2013.
4. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.
5. GRAYSCALE GRAPHICS SHOWN HEREON HAVE BEEN TAKEN FROM DIGITAL DRAWING FILES PREPARED BY STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, PROJECT No. 09207049.06, DATED APRIL 2010.

SURVEYOR'S CERTIFICATE:

I, the undersigned Professional Land Surveyor, hereby certify that this As-Built Survey was prepared under my direct supervision, that to the best of my knowledge, information and belief is a true and accurate representation of the land shown and described and that it meets the Minimum Technical Standards for Land Surveying in the State of Florida, Chapter 5J-17, Florida Administrative Code.

Frederick S. Bachmann, Professional Land Surveyor No. 5174
ATI Surveying & Mapping, LLC
Licensed Business No. 7718

FREDERICK S. BACHMANN NO. 5174 STATE OF FLORIDA PROFESSIONAL SURVEYOR AND MAPPER

AS-BUILT SURVEY PREPARED BY:
ATI COMPANIES Surveying & Mapping
4610 CENTRAL AVENUE ST. PETERSBURG, FL 33711
TEL: (727) 328-0268 FAX: (727) 328-2477

REV	DATE	DESCRIPTION	BY
1			
2			
3			
4			
5			

LICENSE NO. 61829

DRAWING TITLE: **SITE GRADING PLAN**

PROJECT TITLE: **CENTRAL LANDFILL PHASE 3 EXPANSION PROJECT CONSTRUCTION DRAWINGS**

CLIENT: **CITRUS COUNTY SOLID WASTE MANAGEMENT DIVISION CITRUS COUNTY, FLORIDA**

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS
4041 PARK OAKS BLVD., SUITE 150, TAMPA, FL 33610
813 621-0080 FAX 813 623-4787
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004892

PROJ. NO. 09207049.06 | DWN. BY: SDA | Q/A R/W BY: CEH
DSN. BY: DHB | CHK. BY: CEH | APP. BY: DHB

CADD FILE: 074906GRADING

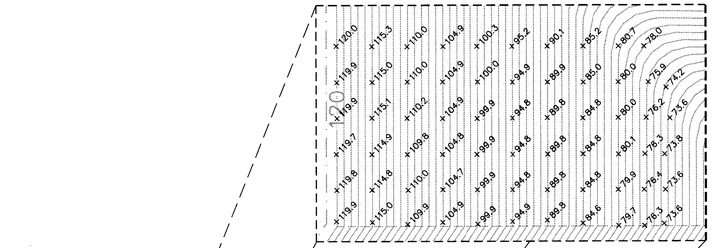
DATE: APRIL 2010

SCALE: AS SHOWN

DRAWING NO. **4** of **19**

AS-BUILT SURVEY

SUB-GRADING TOPOGRAPHIC SURVEY
PREPARED FOR: COMANCO ENVIRONMENTAL CORPORATION



N

40' 20' 0 40'
SCALE IN FEET
1" = 40'

SURVEY CONTROL POINTS

NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP-1	4"X4" CONCRETE MONUMENT	1641568.661	516999.059	118.07'
CP-2	NAIL & DISK	1642239.306	515796.814	119.55'
CP-3	CAPPED IRON ROD	1643105.783	515765.763	120.08'

AS-BUILT LEGEND

+100.0 – AS-BUILT GRADE

LEGEND

- 55 — TOP OF SUBGRADE LAYER CONTOUR (5 FOOT INTERVAL)
- TOP OF SUBGRADE LAYER CONTOUR (1 FOOT INTERVAL)
- × 116.0 — SPOT ELEVATION
- 90 — EXISTING GRADE CONTOUR (5 FOOT INTERVAL) 04/08/09 SURVEY
- EXISTING GRADE CONTOUR (1 FOOT INTERVAL) 04/08/09 SURVEY
- SURFACE WATER FLOW/SLOPE DIRECTION

NOTES:

1. EXISTING PHASE 2 LINER LIMITS SHOWN ARE APPROXIMATE. CONTRACTOR TO CAREFULLY EXCAVATE EXISTING SOIL AND/OR MUNICIPAL WASTE TO EXPOSE EXISTING PHASE 2 LINER FOR PHASE 3 LINER TIE-IN.
2. TOPOGRAPHIC SURVEY PERFORMED BY PICKETT & ASSOCIATES, INC., 475 SOUTH FIRST AVENUE, BARTOW, FLORIDA, 33830, TEL: (863) 533-9095. SURVEY INFORMATION SHOWN WAS DEVELOPED BY PHOTOGRAMMETRIC METHODS BASED ON AN AERIAL PHOTO DATE OF APRIL 8, 2009.
3. CONTRACTOR SHALL PROVIDE TEMPORARY FACILITIES COMPATIBLE WITH PROPOSED IMPROVEMENTS AND COMPATIBLE WITH COUNTY OPERATIONS, FOR DIVERTING STORM WATER RUNOFF FROM ACTIVE LANDFILL, SO THAT CONSTRUCTION CAN BE ACCOMPLISHED IN ACCORDANCE WITH SPECIFICATIONS. SEE SPECIFICATION SECTION 312000 FOR EXCAVATION PLAN REQUIREMENTS.
4. ALL FINISHED SLOPES GREATER THAN 10% OUTSIDE THE ANCHOR TRENCH LIMIT SHALL BE SODDED. SOD ON SLOPES GREATER THAN 3:1 SHALL BE PINNED. CONTRACTOR SHALL STABILIZE ALL TEMPORARY SLOPES TO MINIMIZE EROSION.

SURVEYOR'S REPORT

1. THIS SURVEY NOT VALID UNLESS EMBOSSED WITH THE RAISED SEAL OF THE UNDERSIGNED SURVEYOR.
2. UNDERGROUND ENCROACHMENTS SUCH AS UTILITIES AND FOUNDATIONS, THAT MAY EXIST, HAVE NOT BEEN LOCATED.
3. FIELD WORK COMPLETED ON AUGUST 22, 2013.
4. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.
5. GRAYSCALE GRAPHICS SHOWN HEREON HAVE BEEN TAKEN FROM DIGITAL DRAWING FILES PREPARED BY STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, PROJECT No. 09207049.06, DATED APRIL 2010.

SURVEYOR'S CERTIFICATE:

I, the undersigned Professional Land Surveyor, hereby certify that this As-Built Survey was prepared under my direct supervision, that to the best of my knowledge, information and belief is a true and accurate representation of the land shown and described, and that it meets the Minimum Technical Standards for Land Surveying in the State of Florida Chapter 5J-17, Florida Administrative Code.

Frederick S. Bachmann, Professional Land Surveyor No. 5174
ATI Surveying & Mapping, LLC
Licensed Business No. 7718

FREDERICK S. BACHMANN — 5174 — STATE OF FLORIDA — REGISTERED LAND SURVEYOR

AS-BUILT SURVEY PREPARED BY:
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4610 CENTRAL AVENUE ST. PETERSBURG, FL 33711
TEL: (727) 328-0268 FAX: (727) 328-2477

(9)

REV	DATE	DESCRIPTION	BY

LICENSE NO. 61829

DRAWING TITLE: SITE GRADING PLAN

PROJECT TITLE: CENTRAL LANDFILL PHASE 3 EXPANSION PROJECT CONSTRUCTION DRAWINGS

CLIENT: CITRUS COUNTY SOLID WASTE MANAGEMENT DIVISION CITRUS COUNTY, FLORIDA

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS
4041 PARK OAKS BLVD, SUITE 100, TAMPA, FL 33610
813 621-0080 FAX 813 925-0757
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00004892

PROJ. NO. 09207049.06 | DWN. BY: SDA | CHK. BY: CEH | O/A RVW BY: CEH | APP. BY: DHB | DSN. BY: DHB

CADD FILE: 074906GRADING

DATE: APRIL 2010

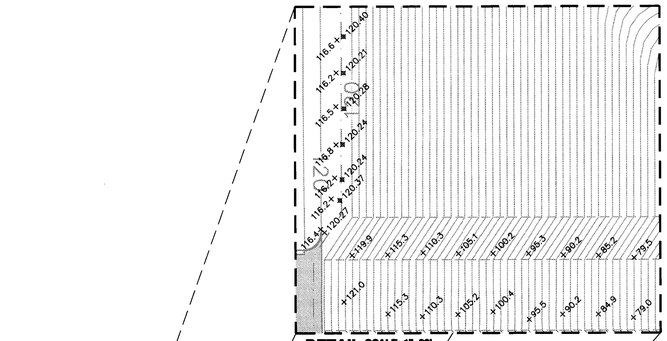
SCALE: AS SHOWN

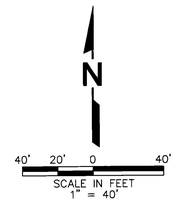
DRAWING NO. 4 of 19

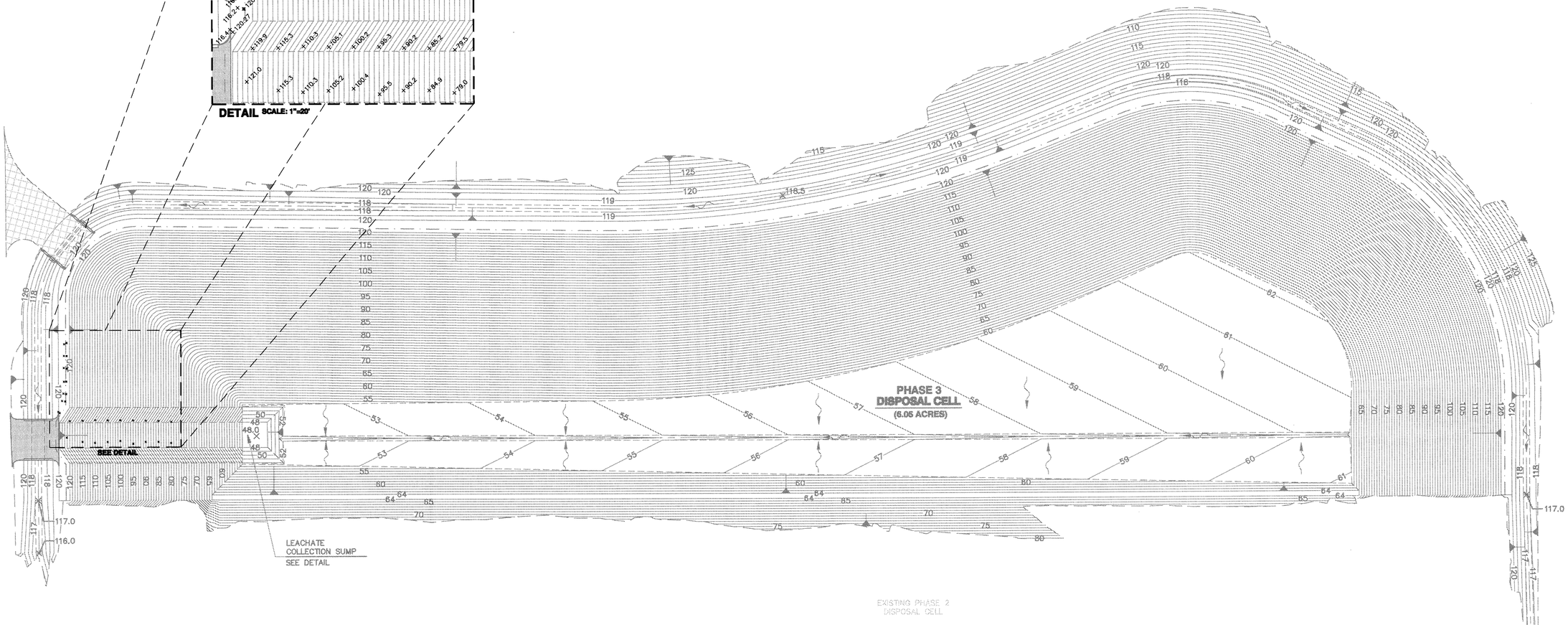
X:\2013 Survey & Mapping\Contract Projects\521041 - Comanco - Citrus County Landfill\dwg\ATI_ASB_Sub Grading Topo_(8-22-13).dwg Sep 13, 2013 - 4:06pm Layout Name: Subgrade Grading Plan By: Administrator

AS-BUILT SURVEY

PROTECTIVE COVER TOPOGRAPHIC SURVEY
PREPARED FOR: COMANCO ENVIRONMENTAL CORPORATION







AS-BUILT LEGEND

+100.00 – PRIMARY LINER AS-BUILT ELEVATION

+100.0 – AS-BUILT GRADE

LEGEND

- 55 — TOP OF SUBGRADE LAYER CONTOUR (5 FOOT INTERVAL)
- TOP OF SUBGRADE LAYER CONTOUR (1 FOOT INTERVAL)
- ×116.0 — SPOT ELEVATION
- 90 — EXISTING GRADE CONTOUR (5 FOOT INTERVAL) 04/08/09 SURVEY
- EXISTING GRADE CONTOUR (1 FOOT INTERVAL) 04/08/09 SURVEY
- SURFACE WATER FLOW/SLOPE DIRECTION

SURVEY CONTROL POINTS

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NOTES:

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SURVEYOR'S REPORT

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2. UNDERGROUND ENCROACHMENTS SUCH AS UTILITIES AND FOUNDATIONS, THAT MAY EXIST, HAVE NOT BEEN LOCATED.
3. FIELD WORK COMPLETED AUGUST 28, 2013.
4. ELEVATIONS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.
5. GRAYSCALE GRAPHICS SHOWN HEREON HAVE BEEN TAKEN FROM DIGITAL DRAWING FILES PREPARED BY STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, PROJECT No. 09207049.06, DATED APRIL 2010.

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Frederick S. Bachmann, Professional Land Surveyor No. 5174
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FREDERICK S. BACHMANN PROFESSIONAL SURVEYOR NO. 5174 STATE OF FLORIDA REGISTERED LAND SURVEYOR

AS-BUILT SURVEY PREPARED BY:

ATI COMPANIES Surveying & Mapping

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X:\2013 Survey & Mapping\Comanco Projects\521.1041 - Comanco - Citrus County Landfill\dwg\A1.0_ASB_Protective Cover Topo_(8-28-13).dwg, Sep 13, 2013 - 4:03pm Layout Name: Subgrade Grading Plan By: Administrator

(3)

REV	DATE	DESCRIPTION	BY

LICENSE NO. 61829

DRAWING TITLE: **SITE GRADING PLAN**

PROJECT TITLE: **CENTRAL LANDFILL PHASE 3 EXPANSION PROJECT CONSTRUCTION DRAWINGS**

CLIENT: **CITRUS COUNTY SOLID WASTE MANAGEMENT DIVISION CITRUS COUNTY, FLORIDA**

SCS ENGINEERS
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PROJ. NO. 09207049.06
DSN. BY: DHB
DWN. BY: SDA
CHK. BY: CEH
QA RVW BY: CEH
APP. BY: DHB

CADD FILE: 074906GRADING

DATE: APRIL 2010

SCALE: AS SHOWN

DRAWING NO. **4** of **19**

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Notes:

CLASS 1 CENTRAL LANDFILL

CITRUS COUNTY