SMITH+GARDNER
ENGINEERS

ADDRESS
14 N. Boylan Avenue, Raleigh NC 27603

TEL
919.828.0577

WEB
www.smithgardnerinc.com

Permit No.	Date	Document ID No.
94-04	**October 04, 2013**	**19904**

Received by an e-mail
Date: **October 04, 2013**
Solid Waste Section
Raleigh Central Office

October 4, 2013

Mr. Ming-Tai Chao, P.E.
Environmental Engineer
NC DENR - Division of Waste Management
1646 Mail Service Center
Raleigh, North Carolina 27699

RE: Washington County C&D Landfill (Permit No. 94-04)
Phase 2 Construction
Construction Quality Assurance (CQA) Report

Dear Mr. Chao:

On behalf of Washington County, Smith Gardner, Inc. (S+G) would like to submit the enclosed construction quality assurance (CQA) report for the construction of the County's Phase 2 construction and demolition debris (C&D) landfill unit for your review.

Should you have any questions or comments on this report, please contact me at your earliest convenience.

Sincerely,
SMITH GARDNER, INC.

Pieter K. Scheer, P.E.
Vice-President, Senior Engineer
pieter@smithgardnerinc.com

Enclosure

cc: Lou Manring, Washington County
Carl Critcher, Washington County
Ed Mussler, P.E., NCDWM
Ray Williams, NCDWM

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Construction Quality Assurance Report

Washington County C&D Landfill - Phase 2
Roper, North Carolina

Prepared for:

Washington County Department of Public Utilities
Roper, North Carolina

October 2013

Prepared by:

NC LIC. NO. C-0828 (ENGINEERING)

SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

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Construction Quality Assurance Report

Washington County C&D Landfill - Phase 2
Roper, North Carolina

Prepared For:

Washington County Department of Public Utilities
Roper, North Carolina

S+G Project No. WASH-12-2

NORTH CAROLINA PROFESSIONAL SEAL 021666 ENGINEER PIETER K. SCHEER

10/4/13

Pieter K. Scheer, P.E.
Vice-President, Senior Engineer

October 2013

NC LIC. NO. C-0828 (ENGINEERING)

SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

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Washington County C&D Landfill - Phase 2
Roper, North Carolina

Construction Quality Assurance Report

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APPENDICES

Appendix A Reference Documents (Permits & Approvals)
Appendix B GET Solutions, Inc., Project Testing and Documentation
Appendix C CQA Meeting Minutes
Appendix D Record Drawings

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1.0 OVERVIEW

This Construction Quality Assurance (CQA) Report has been prepared to document the CQA activities performed during the construction of Phase 2 of the Washington County Construction and Demolition Debris (C&D) Landfill. The landfill facility is located at 718 Landfill Road in Roper, North Carolina and is owned and operated by Washington County under State Solid Waste Permit No. 94-04. A Permit to Construct for Phase 2 was issued by the North Carolina Division of Waste Management (NCDWM) on June 28, 2012.

2.0 PROJECT DESCRIPTION

2.1 General

Phase 2 is an unlined C&D landfill unit designed by Smith Gardner, Inc. (S+G). Phase 2 consists of approximately one acre and is a lateral expansion to the south and east of and adjacent to the existing Phase 1 C&D landfill unit. The Phase 2 construction consisted of site and earthwork activities (including the placement of a minimum 2 foot thick layer of select structural fill (USCS Classification: Silty Sand (SM))), installation of erosion and sedimentation control measures, and construction of a small perimeter berm.

2.2 Reference Documents

Phase 2 was constructed in accordance with the following documents:

Construction Documents – Washington County C&D Landfill - Phase 2:
Includes general and technical specifications, CQA manual, and contract addenda prepared by Smith Gardner, Inc. (S+G) and dated December, 2012 (Conformed - March 2013).

Construction Drawings – Washington County C&D Landfill - Phase 2:
Includes construction drawings prepared by S+G and dated December, 2012 (Conformed - April 2013).

Permit Amendment Application – Washington County C&D Landfill - Phase 2:
Includes technical specifications, CQA manual, and permit drawings prepared by S+G as revised through April 2012 (Permit to Construct issued by NCDWM on June 28, 2012 (copy provided in **Appendix A**)).

Erosion and Sedimentation Control Plan for Washington County C&D Landfill - Phase 2 - prepared by S+G dated March, 2012. Letter of approval correspondence dated April 5, 2012 from Land Quality Section (copy provided in **Appendix A**).

2.3 Project Participants

The following parties were involved in the construction and CQA of Phase 2:

2.3.1 Owner

Washington County Department of Public Utilities
396 West Millpond Road
Roper, NC 27970
Phone: (252) 793-7545
Fax: (252) 793-1183

Contacts: Lou Manring, Director
Carl Critcher, Landfill Operator
Gene Biggs, Sr., Assistant Landfill Operator

2.3.2 Engineer/CQA Engineer

Smith Gardner, Inc. (S+G)
14 N. Boylan Ave.
Raleigh, NC 27603
Phone: (919) 828-0577
Fax: (919) 828-3899

Contacts: Pieter Scheer, P.E., Project Manager
Kristofer Baker, Field Manager

2.3.3 CQA Testing - Earthwork & Construction Monitoring

GET Solutions, Inc.
106 Capital Trace, Unit E
Elizabeth City, NC 27909
Phone: (252) 335-9765
Fax: (252) 335-9766

Contacts: Gerald W. Stalls, Jr., P.E., Project Engineer
Brad Gallop, Field Technician

2.3.4 Contractor

Jones & Smith Contractors, LLC (J&S)
1588 NC 102 East
Ayden, NC 28513
Phone: (252) 717-2551
Fax: (252) 746-8892

Contacts: Kenneth Smith, Project Manager

2.3.5 Earthwork Subcontractor

Davenport, Inc.
P.O. Box 164
Plymouth, NC 27962
Phone: (252) 809-2172

Contacts: Keith Davenport, Project Manager

2.3.6 Contractor's Surveyor

Timothy J. Esolen, PLS
105 Hillard Drive
Plymouth, NC 27962
Phone: (252) 793-1349

Contacts: Tim Esolen, PLS

3.0 SUMMARY OF CONSTRUCTION ACTIVITIES

Major elements of the project are discussed below. Photos documenting the construction of Phase 2 can be found in **Appendix B**. Prior to J&S beginning work, a project Pre-Construction Meeting was held on April 26, 2013 (see **Appendix C** for meeting minutes).

3.1 Site Preparation

Construction of Phase 2 began in April 2013 with the surveying/staking of the limits of construction and the initiation of site preparation activities by J&S.

3.2 Erosion and Sedimentation Control Measures

The construction of erosion and sedimentation control measures took place in conjunction with project activities and under the approval issued by the Land Quality Section of the NC Division of Land Resources. A temporary gravel construction

entrance/exit and silt fence were installed. After completion and acceptance of earthwork grades and compaction, erosion control blanket was installed on the perimeter berm. Once areas reached final grade, the areas were vegetated in accordance with project requirements.

3.3 Earthwork

Once the site was staked by the contractor's surveyor and stripped, subgrade preparation activities were performed. J&S's subcontractor Davenport, Inc. graded the Phase 2 area using material from on-site borrow areas to prepare the subgrade to the required subgrade elevations. Select structural fill for Phase 2 was hauled from a local source (Davenport Inc. Borrow Pit located approximately 4 miles northeast of the site on Mackey's Road (NC-308)), placed and compacted in lifts to a minimum thickness of 2 feet.

As-built drawings showing completed subgrade elevations and finished grades are provided in Appendix D.

4.0 CQA PROGRAM

4.1 Scope of Services

In satisfying the requirements of the Project CQA Manual for Phase 2, the following activities were performed:

- Observation and documentation of construction of prepared subgrade and structural fill.
- Field and/or laboratory testing of structural fill.
- Review of submittals from the Contractor for conformance with project specification and CQA requirements.
- Review/preparation of record drawings.
- Preparation of the final CQA report.

5.0 EARTHWORK CQA

The criteria for construction of select structural fill per the project specifications included the following:

Materials:	SM, SM-SC, SC, ML, ML-CL, CL, MH, or CH (ASTM D 2487) with no topsoil or other deleterious material and no stones or rocks in excess of one half the lift thickness as compacted;
Density:	Minimum 95% Standard Proctor Dry Density (ASTM D 698);
Moisture Content:	As necessary for compaction; and
Lift Thickness:	8-inch max. (compacted).

The number and results of material control and record tests performed on the select structural fill are summarized in **Table 1** and **Appendix B**. Other tests performed on an on-going basis during construction included a visual classification of soils (ASTM D 2488) and monitoring of loose lift thickness. Note that the number of tests required was based on an approximate quantity of 3,600 CY of material placed (in-place measure). The results of field and laboratory testing of select structural fill can be found in **Appendix B**.

6.0 RECORD DRAWINGS

The following record (as-built) drawings depicting the construction of Phase 2 can be found in **Appendix D**:

- Subgrade (prepared by Tim Esolen, PLS); and
- Select Structural Fill (Finished Grades) (prepared by Tim Esolen, PLS).

7.0 PROJECT CERTIFICATION

Based on the observations and results of the CQA program documented herein, it is our professional opinion that the construction of the Washington County C&D Landfill - Phase 2 was completed in accordance with the following:

i. The Project CQA Manual;
ii. The conditions of the Permit to Construct Phase 2;
iii. The requirements of 15A NCAC 13B.0541; and
iv. Acceptable engineering practices.

SMITH GARDNER, INC.

NORTH CAROLINA PROFESSIONAL SEAL 021666 ENGINEER PIETER K. SCHEER

10/4/13

Pieter K. Scheer, P.E.
Vice-President, Senior Engineer

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TABLE 1
SUMMARY OF MATERIAL CONTROL AND RECORD TESTS
SELECT STRUCTURAL FILL

	Control Tests	Record Tests			
	Moisture-Density Relationship (Proctor)	Grain Size Analysis	Atterberg Limits	In-Place Density (See Note 1)	In-Place Moisture Content
Units	-----	-----	-----	%	%
Test Method	ASTM D 698	ASTM D 422	ASTM D 4318	ASTM D 2922	ASTM D 3017
Required Test Frequency	5,000 CY	10,000 ft^2	2,000 CY	20,000 ft^2 per lift & 1 per 500 LF of Berms (<200 ft. base width) (+/- 1 Per 370 CY)	20,000 ft^2 per lift & 1 per 500 LF of Berms (<200 ft. base width) (+/- 1 Per 370 CY)
No. of Tests Required	1	4	4	10	10
No. of Tests Performed	2	6	4	58	58
Specified Value	-----	≤ 3"	-----	≥ 95% Std. Proctor	As Required for Density
Minimum Value	-----	Material Classification: Silty Sand (SM)		95	-----
Maximum Value	-----			100	-----
Average Value	-----			97	-----

Quantity of Compacted Soil Liner (In-Place):	3,600	CY
Area of Select Structural Fill:	0.93	AC
Number of Lifts:	4	

Note:
1. Only passing test data is reported above. Three (3) failing tests on 8/6/13 were successfully retested on 9/11/13.

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Appendix A

Reference Documents (Permits & Approvals)

Construction Quality Assurance Report
Washington County C&D Landfill – Phase 2
Roper, North Carolina

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NCDENR

NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
Division of Waste Management

Beverly Eaves Perdue	Dexter R. Matthews	Dee Freeman
Governor	Director	Secretary

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WASTE MANAGEMENT
SOLID WASTE SECTION

CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL
Permit No. 9404-CDLF-1996

WASHINGTON COUNTY
is hereby issued a

PERMIT TO CONSTRUCT - PHASE 2
LATERAL EXPANSION
And
PERMIT TO OPERATE - PHASE 1
WASHINGTON COUNTY CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL

located adjacent to the closed Washington County landfill, at the end of State Route 1363, located off of N.C. Highway 308 between Plymouth and Roper, Washington County, North Carolina, in accordance with Article 9, Chapter 130A, of the General Statutes of North Carolina and all rules promulgated thereunder and subject to the conditions set forth in this permit. The facility is located and described in the approved plans.

_____
Edward F. Mussler, III, P.E.,
Permitting Branch Supervisor
Solid Waste Section

ATTACHMENT 1

PART I: PERMIT HISTORY

Permit Type	Date Issued
Original Issue Permit to Construct (PTC)	August 9, 1995[1]
Original Issue Permit to Operate (PTO) for Scrap Tire Processing and Monofill – Phase 1	January 30, 1996
Permit to Operate (PTO) for C&DLF and Scrap Tire Processing and Monofill – Phase 1	April 9, 1996
Permit Amendment (PTO) for C&DLF - Phase 1	April 30, 2001[2]
Permit Substantial Amendment for C&DLF, (PTC) for Phase 2 & PTO for Phase 1 in compliance with Rule .0547(2)	June 28, 2012[3]

1. The Washington County was originally granted a permit to construct and operate a construction and demolition debris landfill (C&DLF) and a scrap tire processing/monofill, which were immediately located next to each other and separated by an earthen berm.

2. The Washington County ceased disposal of used tires in the tire monofill and converted the remaining air space of the monofill into a C&DLF unit in January 2001. The November 20, 2003 memorandum issued from Washington County to the Division of Waste Management indicated that the remaining combined air spaces of a C&DLF unit and a scrap tire monofill were approximately 117,795 cubic yards.

3. The Washington County submitted a substantial amendment to the existing permit of CDLF in compliance with North Carolina Solid Waste Management Rule 15A NCAC 13B .0547(2) and revising the Facility Plan, which proposed to incrementally develop the landfill by six (6) phases resulting in increasing the total gross capacity from 117,795 cubic yards to 145,965 cubic yards within the originally approved disposal areas of approximately 4.01 acres. This permit substantial amendment is consistent with the resolution passed by the Washington County Board of Commissioners on February 6, 2012.

PART II: LIST OF DOCUMENTS FOR APPROVED PLAN

1. *Site Application Report for Proposed Construction and Demolition Waste Landfill and Tire Monofill for Washington County*. Prepared by Diehl & Philips, P.A. Cary, NC. October 31, 1994, revised through February 17, 1995.

2. *Hydrogeological Report*. Prepared by S&ME, Inc., Raleigh, NC. Received by the Solid Waste Section on February 2, 1995 and revised through July 28, 1995.

3. *Construction Plan Report for Washington County Construction and Demolition Waste Landfill and Tire Monofill.* Prepared by Diehl & Philips, P.A. Cary, NC. October 31, 1994, revised through August 3, 1995.

4. *Permit Amendment Application, Washington County C&D Landfill (Permit 94-04), Phase 2.* Prepared by: Richardson Smith Gardner & Associates (RSG), Raleigh, NC. January 2010, revised through April 2012. Doc ID 16775.

5. *Water Quality Monitoring Plan (revised November 2011) and Landfill Gas Monitoring Plan*, *November 2011*, Washington County C&D Landfill, Doc ID No. 15769.

PART III: PROPERTIES APPROVED FOR THE SOLID WASTE FACILITY

Washington County, N.C. Register of Deeds				
Book	Page	Grantee	Grantor	Acres
324	793 - 795	Washington County, North Carolina	A. Lloyd Owens, Jr. & Wife Candis Owens	71.44
				Total Site Acreage: 71.44 acres

The portions of the landfill facility property of 71.44 acres are occupied by the permitted C&DLF (94-04), the closed MSWLF (94-02), and other miscellanies waste management units. The C&D waste footprints encompass approximately 4.01 acres.

PART IV: GENERAL PERMIT CONDITIONS

1. This permit is issued by the North Carolina Department of Environment and Natural Resources, Division of Waste Management, Solid Waste Section (Section). In accordance with North Carolina Solid Waste Management Rule 15A NCAC 13B .0201(d), a solid waste management facility permit shall have two parts: a Permit to Construct and a Permit to Operate. The Permit to Construct for Phase 2 shall expire December 28, 2013 and must be implemented in accordance with Attachment 2 of this permit. The Permit to Operate for continued operating Phase 1 shall expire June 28, 2017 and must be implemented in accordance with Attachment 3 of this permit.

2. The persons to whom this permit is issued ("permittee") are the owners and operators of the solid waste management facility.

3. The Permit to Construct (Doc ID 16668) for Construction/Demolition Landfill Unit and Scrap Tire Processing/Scrap Tire Monofill has been registered in the Washington County

Register of Deeds on February 16, 1996, in Deed Book No. 356, Page Nos. 777 through 779.

4. When this property is sold, leased, conveyed, or transferred in any manner, the deed or other instrument of transfer must contain in the deed description section, in no smaller type than that used in the body of the deed or instrument, a statement that the property has been used as a sanitary landfill and scrap tire monofill and a reference by book and page to the recordation of the permit.

5. By beginning construction or receiving waste at this facility the permittee shall be considered to have accepted the terms and conditions of this permit.

6. Construction and operation of this solid waste management facility must be in accordance with the Solid Waste Management Rules, 15A NCAC 13B, Article 9 of the Chapter 130A of the North Carolina General Statutes (NCGS 130A-290, et seq.), the conditions contained in this permit, and the approved plan. Should the approved plan and the rules conflict, the Solid Waste Management Rules shall take precedence unless specifically addressed by permit condition. Failure to comply may result in compliance action or permit revocation.

7. This permit is issued based on the documents submitted in support of the application for permitting the facility identified in Attachment 1, "List of Documents for Approved Plan," and which constitute the approved plan for the facility. Where discrepancies exist, the most recent submittals and the Conditions of Permit shall govern.

8. This permit may be transferred only with the approval of the Section, through the issuance of a new or substantially amended permit in accordance with applicable statutes and rules. In accordance with NCGS 130A-295.2(g), the permittee shall notify the Section thirty (30) days prior to any significant change in the identity or business structure of either the owner or the operator, including but not limited to a proposed transfer of ownership of the facility or a change in the parent company of the owner or operator of the facility.

9. The permittee is responsible for obtaining all permits and approvals necessary for the development of this project including approval from appropriate agencies for sedimentation and erosion control, and a General or Individual National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge Permit, if applicable. Issuance of this permit does not remove the permittee's responsibilities for compliance with any other local, state or federal rule, regulation or statute.

- End of Section -

ATTACHMENT 2
CONDITIONS OF PERMIT TO CONSTRUCT

1. This permit approves the new Facility Plan (Attachment 1, Part II, Document No. 4) that defines the comprehensive development of the C&DLF facility including the estimates of a total gross capacity of the entire C&DLF, the estimates of gross capacity each of the six (6) phases of development of the C&DLF, the solid waste stream to be received, the areas served by the facility, all onsite solid waste management facilities and related facility infrastructure in accordance with the North Carolina Solid Waste Management Rule (Rule) 15 NCAC 13B .0537.

2. This facility shall conform to the specific conditions set forth in this permit and the provisions of the Rule 15A NCAC 13B .0534(b)(2).

3. The permittee shall submit an amendment to this permit pursuant to the Rule 15A NCAC 13B .0533(a)(2) for any subsequent phase of development and pay a statutorily required permitting fee.

4. A copy this permit and the approved plans shall be maintained at the facility.

<u>FACILITY CONSTRUCTION CONDITIONS</u>

5. This Permit to Construct for Phase 2 shall expire December 28, 2013, eighteen (18) months from the issuance date as per Rule 15A NCAC 13B .0534(b)(2)(H) if substantial construction of Phase 2 - is not commenced. Substantial construction includes, but is not limited to, issuance of construction contracts, mobilization of equipment on site, and construction activities including installation of sedimentation and erosion control structures. The permittee may reapply for the Permit to Construct prior to the expiration date. The re-application will be subject to the statutes and rules in effect on that date and may be subject to additional fees.

6. This Permit to Construct is issued for Washington County C&DLF facility under the criteria set forth in accordance with Rule 15A NCAC 13B .0533(a)(3) for an expansion of Phase 2 as shown on Drawing No. S2/Sheet No. 3 in the approved Document 4 (Attachment 1, Part II). Development of Phase 2 shall only be in accordance with the Section approved plans and the requirements stipulated in the Rules 15A NCAC 13B .0531 et seq. The construction of Phase 2 is permitted for approximately:

    a. 0.93 acres,

    b. 18,430 cubic yards of total gross volume (from the top of the prepared subgrade/earthen pad to the top of intermediate cover), and

c. 7,500 tons of wastes over the 5-year planning period. The cumulative waste tonnage for the period is based on an average of 1,500 tons per year.

7. Modifications or revisions of the approved documents or changes during construction of any landfill unit/cell require approval by the Section, may constitute a permit modification in accordance with Rule 15A NCAC 13B .0533(a)(4) and be subject to a permitting fee.

8. The permittee shall conduct a preconstruction meeting, on site, prior to initiating construction of Phase 2 at the site and periodic construction progress meetings, as needed. The permittee shall notify the Section 10 days prior to the said meeting.

GEOLOGIC, WATER QUALITY, AND LANDFILL GAS MONITORING REQUIREMENTS

9. Prior to construction of the phase or cell(s) within the phase, all piezometers, borings, and groundwater and landfill gas monitoring wells within the footprint must be properly abandoned by overdrilling first (exception of non-cased borings) and sealed with grout in accordance with 15A NCAC 2C .0113(d)(2), entitled "Abandonment of Wells."

10. In areas where soil is to be undercut, abandoned piezometers, groundwater and landfill gas monitoring wells and borings must not be grouted to pregrade land surface, but to the proposed base grade surface to prevent having to cut excess grout and possibly damage the wells.

11. A Licensed Geologist must report any pertinent geological feature(s) exposed during phase or cell excavation. Prior to placing any landfill liner, the geologist must submit to the Section hydrogeologist a written report that includes an accurate description of the exposed geological feature(s) and effect of the geological feature(s) on the design, construction, and operation of the cell, phase, or unit.

12. A Licensed Geologist must supervise the installation of groundwater monitoring wells and landfill gas monitoring wells. Each groundwater monitoring well and landfill gas well must be surveyed for location and elevation. Each groundwater monitoring well and landfill gas monitoring well must have an identification plate permanently attached to the well in accordance with 15A NCAC 2C .0108(o).

13. Any modification to the approved water quality monitoring, sampling, landfill gas, and analysis plan must be submitted to the Section Hydrogeologist for review and approval.

14. Groundwater and landfill gas monitoring well construction and abandonment must meet the requirements of 15A NCAC 02C.

15. Within 30 days of completed construction of each new groundwater and landfill gas monitoring well, a well construction record, well schematic, boring log, field log and notes, and description of well development activities, certified by a Licensed Geologist, must be submitted to the Section. Form GW-1(b) must be used for both groundwater and landfill gas wells. The submittal must also include a scaled topographic map, showing the location and identification of new, existing, and abandoned wells and piezometers.

16. Within thirty (30) days of the abandonment of any groundwater monitoring well or landfill gas monitoring well, the well abandonment record and any additional information included in the abandonment record must be certified by a Licensed Geologist, and submitted to the Section. Form GW-30 must be used for both groundwater and landfill gas wells.

17. All forms, reports, maps, plans, and data submitted to the Section must include an electronic (pdf) copy.

EROSION AND SEDIMENTATION CONTROL REQUIREMENTS

18. Prior to construction of Phase 2, all sedimentation and erosion control activities shall be constructed and conformed to the requirements shown on Drawing No. S2/Sheet No. 3 and the approved Erosion and Sediment Control Plan (Attachment 1, Part II, Document No. 4), the Sedimentation Pollution Control Law (15A NCAC 04), and any required NPDES permits. During the course of construction Phase 2, the permittee must implement, but not limited to, the following sedimentation and erosion control activities:

    a. All sedimentation and erosion control activities shall be conducted by installing and maintaining adequate structures and measures to manage the run-on and run-off generated by the 24-hour, 25-year storm event, to prevent silt from leaving the site, and to prevent excessive on-site erosion.

    b. Provisions for a vegetative ground cover sufficient to restrain erosion must be accomplished within 30 working days or 120 calendar days upon completion of any phase of C&DLF development.

19. Facility construction, operations or practices must not cause or result in a discharge of pollution, dredged material, and/or fill material into waters of the state in violation of the requirements under Sections 401 and 404 of the Clean Water Act, as amended.

20. Modifications in sedimentation and erosion control activities must be approved by the NCDENR, Division of Land Resources, Land Quality Section. Upon receiving the approval letter, the permittee shall notify the Section of any sedimentation and erosion control modifications.

21. Prior to receiving waste at any unit of this facility, a Permit to Operate must be obtained from the Section in accordance with the Rule 15A NCAC 13B .0201(b).

PRE OPERATIONAL CONDITIONS

22. The following requirements shall be met prior to operation of this facility:

a. Site preparation must meet the requirements stated in Rule 15A NCAC 13B .0540 and the approved plans.

b. A written CQA and certification report including as-built drawings in accordance with the Rules 15A NCAC 13B.0541(c) & (d) and the approved CQA plan shall be submitted to the Section for review and approval.

c. The permittee shall arrange for a site inspection and/or a pre-operative meeting by a representative(s) or regional environmental specialist of the Section for the purpose of demonstrating that the facility construction is consistent with approved plans and specifications.

d. Documentation of financial assurance mechanisms must be submitted to the Section. The financial assurance amount must include closure and post-closure costs including the Phase 2 to receive the PTO, in accordance with Rule 15A NCAC 13B .0546, and must include costs for potential assessment and corrective action, in accordance with NCGS 130A 295.2(h).

e. The edge of the waste footprint must be identified with permanent physical markers, for both existing units and the new unit.

f. The permittee shall completely implement and install site access, security, signs, and safety requirements in accordance with Rule 15A NCAC 13B. 0542(j).

- End of Section -

ATTACHMENT 3
CONDITIONS OF OPERATING PERMIT

PART I: OPERATING CONDITIONS

1. The Permit to Operate of Phase 1 shall expire June 28, 2017. Pursuant to Rules 15A NCAC 13B .0201(g) and .0547(3), no later than December 30, 2016, the permittee must submit the Section a permit amendment application prepared in accordance with Rule 15A NCAC 13B .0535.

2. This permit approves the continued operation of Phase 1 of the C&DLF, as well as the onsite environmental management, miscellaneous waste management units, and protection facilities as described in the approved plans. Operation of future phases or cells requires written approval of the Section after documentation has been submitted that the area has been constructed in accordance with applicable statutes and rules.

3. The following table lists the dimensions and incremental development for the C&DLF, both existing and planned. Total gross capacity is defined as the volume measured from the bottom of waste through the top of final cover. The maximum approved fill elevation for Phase 1 as shown on Drawing No. X1/Sheet No. 7 and Drawing No. P1/Sheet No. 8 is up to the elevation of approximately 20 feet above mean sea level (Attachment 1, Part II, Document No. 4).

C&D Unit	Acres	Gross Capacity (cubic yards)	Status
Phase 1	2.34	45,000	Active
Phase 2	0.93	18,430	To be constructed
Phase 3	0.74	16,783	Not developed
Phase 4 (vertical Expansion)	-	21,571	Not developed
Phase 5 (vertical Expansion	-	20,986	Not developed
Phase 6 (vertical Expansion)	-	23,195	Not developed
Total	4.01	145,965	-

4. The facility is approved to accept average approximately 36 tons per day or up to 10,000 tons per year based on 280 working days per year. Maximum variance shall be in accordance with NCGS 130A-294(b1)(1).

5. The C&DLF is permitted to receive the following waste types:

   a. "Construction or demolition debris" as defined in NCGS 130A-290(a)(4) means solid waste resulting solely from construction, remodeling, repair or demolition operations on pavement, buildings, or other structures, but does not include inert debris, land-clearing debris or yard debris.

b. "Inert debris" as defined in NCGS 130A-290(a)(14) means solid waste that consists solely of material such as concrete, brick, concrete block, uncontaminated soil, rock, and gravel.

c. "Land-clearing debris" as defined in NCGS 130A-290(a)(15) means solid waste that is generated solely from land-clearing activities, such as stumps and tree trunks.

d. "Asphalt" in accordance with NCGS 130-294(m).

6. Regulated-asbestos containing material as defined in 40 CFR 61 must be managed in accordance with 40 CFR 61. Disposal of asbestos waste must be in accordance with Rule 15A NCAC 13B .0542(c).

7. Those wastes listed in Rule 15A NCAC 13B .0542(e) must not be accepted for disposal including, but not limited to, hazardous waste, municipal solid waste, liquid waste, commercial or industrial wastes, and yard trash.

8. Wastewater treatment sludge is not approved for disposal. Wastewater treatment sludge may be accepted, with the approval of the Section, for utilization as a soil conditioner and incorporated into or applied onto the vegetative growth layer. The wastewater treatment sludge must not neither be applied at greater than agronomic rates nor to a depth greater than six inches.

9. This facility is permitted to receive solid waste generated within Washington County, consistent with the resolution passed by the Washington County Board of Commissioners on February 6, 2012.

10. The permittee must not knowingly dispose of C&D waste that is generated within the boundaries of a unit of local government that by ordinance:

    a. Prohibits generators or collectors of C&D waste from disposing of that type or form of C&D waste.

    b. Requires generators or collectors of C&D waste to recycle that type or form of C&D waste.

11. The permittee must actively employ a training and screening program at the facility prepared in accordance with Rule 15 NCAC 13B .0544(e) and the approved Waste Acceptability Plan (Attachment 1, Part II, Document No. 4) for detecting and preventing

the disposal of excluded or unauthorized wastes. At a minimum, the program must include:

a. Random inspections of incoming loads or other comparable procedures.
b. Records of any inspections.
c. Training of personnel to recognize hazardous, liquid, and other excluded waste types.
d. Development of a contingency plan to properly manage any identified hazardous, liquid, MSW, or other excluded or unauthorized wastes. The plan must address identification, removal, storage, and final disposition of these wastes.

12. The use of alternative daily cover requires approval, prior to implementation, by the Section. Requests for alternative daily cover approval must include a plan detailing the comprehensive use and demonstration for the effectiveness of the alternative cover. The plan must be developed according to Section guidelines. Plans that are approved by the Section will be incorporated into, and made a part of, the approved documents found in Attachment 1.

13. The facility must maintain records for all solid waste materials accepted as alternative cover material and used as alternate periodic cover. The records must include: the date of receipt, weight of material, general description of the material, identity of the generator and transporter, and county of origin. Such records must be made available to the Section upon request.

14. The permittee must maintain permanent markers that accurately identify the edge of the approved waste disposal boundary.

15. Financial assurance must be continuously maintained for the duration of the facility in accordance with the Rules 15A NCAC 13B .0546, 15A NCAC 13B .0547 (2), and NCGS 130A-295.2(h). During the active life of the C&DLF, the permittee must annually adjust the cost estimates including closure and post-closure activities and potential assessment and corrective action costs for inflation within 60 days prior to the anniversary date of the establishment of the financial instrument(s).

16. All sedimentation and erosion control activities must be conducted in accordance with the Sedimentation Control Act NCGS 113A-50, et seq. and rules promulgated under 15A NCAC 4. All required sedimentation and erosion control measures must be installed and operable to mitigate excessive on-site erosion and to prevent silt from leaving the area of the landfill unit during the service life of the facility.

17. The facility operator must complete an approved operator training course in compliance with NCGS 130A-309.25.

    a. A responsible individual certified in landfill operations must be on-site during all operating hours of the facility at all times while open for public use to ensure compliance with operational requirements.

    b. All pertinent landfill-operating personnel must receive training and supervision necessary to properly operate the C&D landfill unit in accordance with NCGS 130A-309.25 and addressed by memorandum dated November 29, 2000.

PART II: MONITORING AND REPORTING REQUIREMENTS

18. Groundwater, surface water, and landfill gas monitoring locations must be established and monitored as identified in the approved plans (Doc ID 15769). Any proposed modification to an approved plan must be submitted to the Section and approved prior to implementation.

19. The permittee must obtain approval from the Section for the modification of any groundwater. Design, construction, abandonment, surveying, and well plate identification of groundwater and landfill gas monitoring wells must be implemented in accordance with the conditions in Attachment 2, Geologic, Water Quality, and Landfill Gas Monitoring Requirements.

20. Groundwater monitoring wells must be sampled at least semi-annually in accordance with Rule 15A NCAC 13B .0544, the approved water quality monitoring plan, and the current policies and guidelines of the Section in effect at the time of sampling. In accordance with Rule 15A NCAC 13B .0544(d), landfill gas monitoring must be conducted quarterly, unless otherwise specified by the Section.

21. Monitoring reports of the analytical results for groundwater monitoring sampling events must be submitted to the Section within 120 days of the sample collection date. Analytical laboratory data must be submitted in electronic portable document format (pdf) and in a spreadsheet format in an Electronic Data Deliverable (EDD) Template. All monitoring reports must contain:

    a. a potentiometric surface map for the current sampling event,

    b. analytical laboratory reports and summary tables,

    c. a completed Solid Waste Environment Monitoring Data Form, and

    d. laboratory data submitted in accordance with the EDD Template.

22. A readily accessible unobstructed path must be maintained so that groundwater and landfill gas monitoring wells and surface water sampling locations are accessible using four-wheel drive vehicles.

23. Documentation of well completion, development details, repair, abandonment, and all other pertinent activities associated with each groundwater and landfill gas monitoring well must be maintained in the facility operating record. The permittee must maintain a record of all groundwater, surface water, and landfill gas monitoring events and analytical data in the operating record.

24. All forms, reports, maps, plans, and data submitted to the Section must include an electronic (pdf) copy.

25. All landfill gas monitoring events must be conducted by properly trained personnel and must include monitoring for all explosive gases, including hydrogen sulfide. Landfill gas monitoring must include interior monitoring of onsite buildings.

26. Landfill gas monitoring results must be recorded on forms provided by the Section and be maintained in the facility's operating record.

PART III: REPORTING AND RECORDKEEPING

27. Copies of this permit, the approved plans, and all records required to be maintained by the permittee must be maintained at the facility and made available to the Section upon request during normal business hours

28. The owner or operator must maintain records of the following. Scales must be used to weigh the amount of waste received. The daily reports are to be summarized into a monthly report for use in the required annual reports.

    a. The amount of all accepted solid waste materials as (i) C&D wastes, (ii) material used as alternate periodic cover, and (iii) recyclable material.

    b. Daily records of waste received, and origins of the loads

29. On or before August 1 annually, the Permittee must submit an annual facility report to the Section, on forms prescribed by the Section.

    a. The reporting period shall be for the previous year beginning July 1 and ending June 30.

b. The annual facility report must list the amount of waste received in tons and be compiled:
   i) On a monthly basis.
   ii) By county, city or transfer station of origin.
   iii) By specific waste type.
   iv) By disposal location within the facility.
   v) By diversion to alternative management facilities.

c. A measurement of volume utilized in the landfill cells must be performed during the second quarter of the calendar year. The date and volumes, in cubic yards, must be included in the report.

d. The amount of waste, in tons from scale records, disposed in landfill cells from January 30, 1996 through the date of the annual volume survey must be included in the report.

e. The tons of C&D waste recycled, recovered or diverted from disposal including a description of how and where the material was ultimately managed, as applicable, must be included in the report.

f. The completed report must be forwarded to the Regional Environmental Senior Specialist for the facility by the date due on the prescribed annual facility report form.

g. A copy of the completed report must be forwarded to each county manager for each county from which waste was received the facility. Documentation that a copy of the report has been forwarded to the county managers must be sent to the Regional Environmental Senior Specialist by the date due on the prescribed annual facility report form.

PART IV: CLOSURE AND POST-CLOSURE

30. Closure and post-closure activities must be conducted in accordance with the approved Closure and Post-Closure Plans (Attachment 1, Part II, Document No. 4) and Rule 15A NCAC 13B .0543.

31. The modification of the approved closure plan to construct an alternative cap system is allowed by Rule .0543 of 15A NCAC 13B; but the modified closure plan must be submitted for approval at least ninety (90) days prior to closure or partial closure of any landfill unit. The plan must include all steps and measures necessary to close and maintain the C&D unit in accordance with all rules in effect at that time. At a minimum, the plan must address the following:

a. Design of a final cover system in accordance with Rule 15 NCAC 13B .0543(c), or the solid waste management rules in effect at the time of closure;

b. Construction and maintenance/operation of the final cover system and erosion control structures; and

c. Surface water, ground water, and explosive gas monitoring.

PART V: MISCELLANEOUS WASTE MANAGEMENT AREA SPECIFIC CONDITIONS

GENERAL CONDITIONS

32. The Miscellaneous Solid Waste Management Units, as described in the following Permit Conditions are permitted to receive wastes from Washington County. Received wastes and recyclables shall be stored, stockpiled, or disposed in the designated areas as shown on Drawing No. S1/Sheet No. 2 in the approved Facility Plan (Attachment 1, Part II, Document No. 4). The permittee must obtain Section approval before re-locating any of these operations or revising the operations.

33. The permittee must operate and manage the Miscellaneous Solid Waste Management Units according to the following Permit Conditions, all applicable statutes and rules of the State of North Carolina and the Operation Plan included in Attachment 1, Part II, Document No. 4. Any revisions to the approved plan shall be approved by the Section, prior to implementation.

34. Wastes received and recyclables stored shall be managed and maintained in reasonably sized piles with adequate fire breaks and lanes in accordance with the approved operational plans and the pertinent rules.

35. Surface water shall be diverted from all operational and storage areas to prevent standing water in operational areas and under or around storage piles. Water that comes in contact with solid waste is deemed to be leachate and shall be contained on-site or properly treated prior to discharge.

36. These areas shall be operated and maintained with sufficient dust control measures to minimize airborne emissions and to prevent dust from becoming a nuisance or safety hazard.

37. These areas shall be operated and maintained in a manner so as to minimize odors, prevent the creation of a nuisance, potential health hazard, or a potential fire hazard.

38. Effective vector control measures shall be applied as necessary to control flies, rodents, insects, and vermin.

39. The permittee must keep the contact information of the contract haulers and recyclers of the recyclable in the operating record.

OPERATIONAL CONDITIONS – WHITE GOODS AND SCRAP METAL HANDLING AREA

40. The unit encompassing an approximately 30 feet by 280 feet concrete pad is permitted to receive white goods as defined in NCGS Article 9, Chapter 130A-290(a)(44) and scrap metals. Permittee must manage white goods according to all applicable statutes and rules of the State of North Carolina.

41. Once stockpile reaches 10 feet high at this unit, the permittee must ensure that chlorofluorocarbon refrigerants (Freon) inside the white goods are properly removed by well-trained personnel prior to transporting off-site to a recycling facility.

42. The permittee must separately store the white goods containing Freon from the non-Freon white goods and scrap metal at this area.

OPERATIONAL CONDITIONS – USED TIRE STORAGE AREA

43. This unit shall be operated and managed in accordance with all applicable statutes and rules of the State of North Carolina, the requirements in Rule 15A NCAC 13B .1107, and the Operations Plan included in Attachment 1, Part II, Document No. 4. Any revisions to the approved plan shall be approved by the Section, prior to implementation.

44. The unit is permitted to receive used tires and scrap tires as defined in NCGS Article 9, Chapter 130A-309.53(6) & (7) and must temporary store the used tires inside a trailer at the designated area.

OPERATIONAL CONDITIONS – YARD WASTE PROCESSING AREA

45. The facility is permitted to operate a treatment and processing facility as defined in Rule 15A NCAC 13B .0101(49).

46. The facility is permitted to receive, process, and store land clearing debris and waste, yard waste, and wooden pallet as defined in Rules 15A NCAC 13B .0101(22) & (23) and .0101(56), and NCGS 130A-290(44a), respectively.

47. The permittee must conduct random waste screening processes according to the approved operations plan (Document No. 4, Attachment 1, Part II) to ensure that prohibited wastes are identified and removed to designated areas (either at on-site or off-site facilities) for proper disposal.

48. The permitte must control that the maximum height of the stockpiled wastes is less than 10 feet over the area of approximately one (1)-acre in size at any time and maintain a 25-feet clear distance or perimeter from drainage ditches and swales, around processing area, and between stockpiles of raw wastes and ground material to allow for inspection, monitoring temperature, and fire fighting.

OPERATIONAL CONDITIONS – MOBILE HOME DECONSTRUCTION AREA

49. Mobile homes that are defined in NCGS 105 - 164.3(20) and generated from mobile or modular home manufacturers located in Washington County will be accepted for deconstruction.

50. The permittee must implement the approved plan (Attachment 1, Part II, Document No. 4) to temporary store mobile homes, stockpile recyclable materials, and conduct deconstruction activities. The storage and deconstruction activities shall take place only in the designated areas, which shall be graded areas adjacent to the C&D unit.

51. Regulated-asbestos containing material as defined in 40 CFR 61 must be managed in accordance with 40 CFR 61. The permittee must follow the approved plan to properly remove asbestos-containing material from a mobile home. Disposal of asbestos waste must be in accordance with Rule 15 NCAC 13B .0542 (c).

52. White goods, as defined in NCGS 130A-290(a)(44), which are within mobile homes to be deconstructed, must be properly removed to the White Goods and Scrap Metal Handling Area prior to deconstruction activities. White goods must be managed in accordance with all federal, state, and local applicable statutes and rules and the Permit Condition Nos. 40 through 42, Attachment III, Part V.

53. All mobile homes must be deconstructed within 45 days from acceptance into the deconstruction area. The date of receipt at the landfill shall be posted on the mobile home or its frame.

54. All material not planned for recycling must be placed in an approved disposal unit before the end of the day in which deconstruction takes place.

55. Recyclable materials may be stockpiled at the mobile home deconstruction area for no more than 45 days from the date of deconstruction.

56. Records shall be kept at the facility in accordance with the approved plan (Attachment 1, Part II, Document No. 4).

OPERATIONAL CONDITIONS – CONVENIENCE CENTER

57. The Convenience Center is permitted to receive small loads of municipal solid wastes (MSW) and recyclable wastes.

58. The permittee shall operate and manage the Convenience Center in accordance with all applicable statutes and rules, and the approved included in Attachment 1, Part II, Document No. 4. Any revisions to the approved plan shall be approved by the Section, prior to implementation.

59. Each received wastes must be temporarily stored in the covered and designated containers in accordance with the wastes types. Visible labels of the containers for each collected wastes must be posted on the containers.

60. A proper isle spaces between waste containers - drums or roll-off boxes must be maintained all the time for inspection for leakage, firefighting, and container removal.

61. The permittee must dispose of the received MSW, bulk wastes, and recyclable wastes, after weighted by the scale, at the approved solid waste management facilities. The contact information for waste/recyclable haulers, firms, and/or disposal/recycling facilities, including the applicable solid waste permit number must be placed in the operating record.

- End of Permit Conditions -

RECEIVED APR - 6 2012

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Land Resources
Land Quality Section

James D. Simons, PG, PE
Director and State Geologist

Beverly Eaves Perdue, Governor
Dee Freeman, Secretary

April 5, 2012

LETTER OF APPROVAL WITH MODIFICATIONS

County of Washington
ATTN: Mr. Frank S. Milazi, Finance Officer
116 Adams Street
Plymouth, North Carolina 27962

RE: Erosion and Sedimentation Control Plan No.: Washi-2012-001
Project Name: County C & D Landfill
Location: SR 1363 County: Washington
River Basin: Pasquotank
Date Received by LQS: March 27, 2012
Acres Approved: 14.3 Project Type: Revised
Project Description: This is a revision to the E & S plan approved on July 10, 1995. This plan is for expanding of the current landfill to ± 4.5 acres, increasing its height by ± 20 feet, plus the clearing, grubbing, and grading of the area around the present landfill.

Dear Sir:

This office has reviewed the subject erosion and sedimentation control plan. We find the plan to be acceptable and hereby issue this Letter of Approval with Modifications. The modifications required for approval are listed on the attached page. This plan approval shall expire three (3) years following the date of approval, if no land-disturbing activity has been undertaken, as required by 15A NCAC 4B.0129, unless modified by other legislation.

Please be advised that 15A NCAC 4B.0118(a) requires that a copy of the approved erosion and sedimentation control plan be on file at the job site. Also, you should consider this letter as giving the Notice required by G.S. 113A-61.1(a) of our right of periodic inspection to ensure compliance with the approved plan.

North Carolina's Sedimentation Pollution Control Program is performance oriented, requiring protection of existing natural resources and adjoining properties. If, following the commencement of this project, it is determined that the erosion and sedimentation control plan is inadequate to meet the requirements of the Sedimentation Pollution Control Act of 1973 (G.S. 113A-51 through 66), this office may require revisions to the plan and implementation of the revisions to ensure compliance with the Act.

Acceptance and approval of this plan is conditioned upon your compliance with Federal and State water quality laws, regulations and rules. In addition, local city or county ordinances or rules may also apply to this land-disturbing activity. This approval does not supersede any other permit or approval

Please note that this approval is based in part on the accuracy of the information provided in the Financial Responsibility/Ownership Form, which you have submitted. You are required to file an amended form if there is any change in the information included on the form.

Due to the time that has passed since the original approval for this site and the many changes that have made to the pertinant environmental laws, your project will be covered by the enclosed NPDES General Stormwater Permit NCG010000 (Construction Activities). You should first become familiar with all of the requirements for compliance with the enclosed permit.

Sincerely,

Patrick H. McClain, PE
Regional Engineer

Enclosures

cc w/o enc: Pieter K. Scheer, PE, Richardson Smith Gardner & Associates
Alton Hodge, Division of Water Quality

Erosion and Sedimentation Control Plan No.: Washi-2012-001
Project Name: County C & D Landfill
April 5, 2012
MODIFICATIONS
Page A

1. **AS THE DECLARED RESPONSIBLE PARTY, YOUR LEGAL RESPONSIBILITY** is to understand the Act and comply with the following minimum requirements of the Act:

   A. In the event of a conflict between the requirements of the Sedimentation Pollution Control Act, the submitted plan and/or the contract specifications, the more restrictive requirement shall prevail;

   B. The land disturbing activity shall be conducted in accordance with the approved erosion and sedimentation control plan;

   C. The **LATEST APPROVED** erosion and sediment control plan will be used during periodic unannounced inspections to determine compliance and a copy of the plan must be on file at the job site. If it is determined that the implemented plan is inadequate, this office may require the installation of additional measures and/or that the plan be revised to comply with state law.

   D. All site revisions, including those required by other local, state or federal agencies, which affect site layout, drainage patterns, limits of disturbance and/or disturbed acreage must be submitted to this office for approval a minimum of 15 day prior implementing the revision;

   E. Revisions exceeding the approved scope of this project without this office's prior approval of the plan showing the changes can be considered a violation. Failure to comply with any part of the approved plan or with any requirements of this program could result in appropriate legal action (civil or criminal) against the financially responsible party. Legal actions could include Stop Work Orders, the assessing of a civil penalty of up to $5000 for the initial violation and/or a civil penalty of up to $5000 per day for each day the site is out of compliance.

   F. The **CERTIFICATE OF PLAN APPROVAL must be posted** at the primary entrance to the job site and remain until the site is permanently stabilized

   G. In cases of natural disaster related changes to the proposed land disturbing activity, all appropriate actions and adequate measure installations may be performed to prevent sediment damage, prior to submitting and receiving approval of the revised plan. A revised plan must be submitted for approval as soon as possible, but no later than 15 days after all emergency actions have been performed;

H. Erosion and sediment control measures or devices are to be constructed and/or installed to safely withstand the runoff resulting from a 10 year storm event (25 year storm event in High Quality Zones). The 10 year storm event is generally equivalent to a storm producing 6.5 - 7 inches in 24 hours or at the rate of 6.5 - 7 inches in 1 hour, depending on the location of the project within the region;

I. No earthen material is to be brought on or removed from the project site, until the off-site borrow and/or disposal sites are identified as part of the erosion control plan. If an off-site borrow and/or disposal site is to be utilized, submit the name and identification number (E&SCP# or Mine Permit #), prior to use.

J. A buffer zone, sufficient to restrain visible sedimentation within the 25% of the width closest to the land disturbance, must be provided and maintained between the land-disturbing activity and any adjacent property or watercourse.

K. In order to comply with the intent of the Act, the scheduling of the land-disturbing activities is to be such that both the area of exposure and the time between the land disturbance and the providing of a ground cover is minimized.

L. Unless a temporary, manufactured, lining material has been specified, a clean straw mulch must be applied, at the minimum rate of 2 tons/acre, to all seeded areas. The mulch must cover at least 75% of the seeded area after it is either tacked, with an acceptable tacking material, or crimped in place.

M. New or affected cut or filled slopes must be at an angle that can be retained by vegetative cover or other adequate erosion-control devices or structures appropriate, AND **must be provided with a ground cover** sufficient to restrain erosion **within 21 calendar days of completion of any phase (rough or final) of grading** (**ANNUAL RYE GRASS IS NOT** in the **APPROVED** seeding specifications **NOR** is it an **ACCEPTABLE** substitute for the providing of a temporary ground cover).

N. A **permanent ground cover**, sufficient restrain erosion, **must be provided** within the shorter of 15 working or 90 calendar days (if in a High Quality Zone, the shorter of 15 working or 60 calendar days) after completion of construction or development on any portion of the tract (**ANNUAL RYE GRASS IS NOT** in the **APPROVED** seeding specifications **NOR** is it an **ACCEPTABLE** substitute for the providing of a nurse cover for the permanent grass cover).

O. All sediment and erosion control details for this project must conform to the standards as shown in the current Erosion & Sediment Control Planning and Design Manual; These details must be utilized for construction and incorporated in the plan. The Design Manual may be found on-line at: http://portal.ncdenr.org/web/lr/publications

2. Adequate and appropriate measures must be properly installed downstream, within the limits of disturbance, of any land disturbing activity to prevent sediment from leaving the limits of disturbance, entering existing drainage systems, impacting an on-site natural watercourse or adjoining property

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Appendix B

GET Solutions, Inc., Project Testing and Documentation

Construction Quality Assurance Report
Washington County C&D Landfill – Phase 2
Roper, North Carolina

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August 22, 2013

TO: **SMITH + GARDNER**
14 N. Boylan Avenue
Raleigh, NC 27603

Attn: Mr. Pieter Scheer

RE: Construction Materials Testing Services
Washington County Landfill
Washington County, North Carolina
GET Project No: EC13-162T
Report No. 1

Dear Mr. Scheer:

As requested, a representative of **G E T Solutions, Inc.** visited the above stated site between the dates of May 15, 2013 and August 15, 2013. The purpose of our site visits was to perform construction materials testing services. These evaluations were performed by completing the following tasks:

- Performing bulk soil sampling of the imported borrow materials utilized as fill within the cell expansion area.
- Performing laboratory analysis of the bulk soil samples including natural moisture, #200 sieve, Atterberg Limits, and Standard Proctor analysis.
- Performing compaction testing and re-testing services on the select fill soils within the identified areas.

Bulk Soil Samples:

During our site visits, a total of six (6) bulk samples were collected from the project site. The samples were returned to our laboratory for Standard Proctor, Natural Moisture,–#200 Sieve Wash, and/or Atterberg Limits testing and analysis. More detailed information regarding the approximate sampling elevations and the results of our laboratory testing procedures is provided in the following table.

Sample No.	Sample Type	Sample Elevation (ft. MSL)	Natural Moisture (%)	Percent Silt and/or Clay	LL/PL/PI	Classification (USCS)
1 (Proctor No. 1)	Imported Borrow Materials; Reddish-Tan Sand (Borrow Pit Sampling)	N/A	14.6	22.7	NL/NP	SM
2 (Proctor No. 2)	Imported Borrow Materials; Reddish-Tan Sand	7.5 MSL	10.4	29.1	NL/NP	SM
3	Reddish-Tan Sand	7.5 MSL	13.5	32.4	NL/NP	SM
4	Reddish-Tan Sand	7.5 MSL	14.6	31.0	NL/NP	SM
5	Reddish-Tan Sand	8.5 MSL	13.1	33.5	Not Tested	SM
6	Reddish-Tan Sand	8.5 MSL	16.0	32.6	Not Tested	SM

The results of these laboratory tests are provided on the "Moisture Density Relationship (Proctor Curve)" sheets, included with this report.

Field Density (Compaction) Testing– Building and Pavement Fill:

During our site visits between the dates of May 28, 2013 and August 6, 2013, field density testing was performed on the in place imported borrow materials placed within the cell expansion and berm areas. More specifically, the compaction testing procedures were performed for the materials placed between the elevations of 6.5 feet MSL and 8.5 feet MSL within the cell expansion and the top 12 inches of the fill material within the berm areas. The compaction testing procedures were accomplished by performing field density testing at the established grade elevations at the time of our site visits.

Based on the results of our field and laboratory testing procedures, the imported fill materials were noted to have been compacted to at least 95% of the Standard Proctor (ASTM D698), which met or exceeded the project specification requirement. As an exception, the compaction testing performed on the date of August 6, 2013, indicated that the soils placed within the berm areas were compacted to a range of 90% to 94% of the Standard Proctor (ASTM D 698) maximum dry density, which did not meet the project specified minimum of 95%. As such, it was recommended to apply additional compaction effort to the fill soils. As of the date of this report, re-testing has not been requested nor performed. The test results and locations are identified on the attached "Compaction Test Report" sheets.

We appreciate the opportunity to offer our services to you, and trust that you will call our Elizabeth City office with any questions that you may have.

Respectfully Submitted,
G E T Solutions, Inc.

Gerald W. Stalls Jr., P.E.
Senior Project Engineer
NC Lic. #034336

NORTH CAROLINA PROFESSIONAL SEAL 034336 ENGINEER GERALD W. STALLS, JR.

Attachments: Moisture Density Relationship (Proctor Curves)
Compaction Test Report(s)
Project Photographs with Illustrations

May 28, 2013
Construction Entrance and Cell Expansion Facing East
Approx. 6.5 to 7 feet MSL

May 28, 2013
Cell Expansion Area Facing Northeast
Approx. 6.5 to 7 feet MSL

May 29, 2013
Cell Expansion Facing West
Ranging from Approx. 7 to 7.5 feet MSL

May 29, 2013
Cell Expansion Facing Southwest
Ranging from Approx. 7 to 7.5 feet MSL

106 Capital Trace, Unit E • Elizabeth City, NC 27909 • Phone: (252)335-9765 • Fax: (252)335-9766
info@getsolutionsinc.com

May 30, 2013
Cell Expansion Facing Northeast
Ranging from Approx. 7.5 to 8 feet MSL

May 30, 2013
Cell Expansion Facing East
Ranging from Approx. 7.5 to 8 feet MSL

May 31, 2013
Cell Expansion Facing Northeast
Ranging from Approx. 7.5 to 8 feet MSL

May 31, 2013
Cell Expansion Facing Northeast
Ranging from Approx. 7.5 to 8 feet MSL

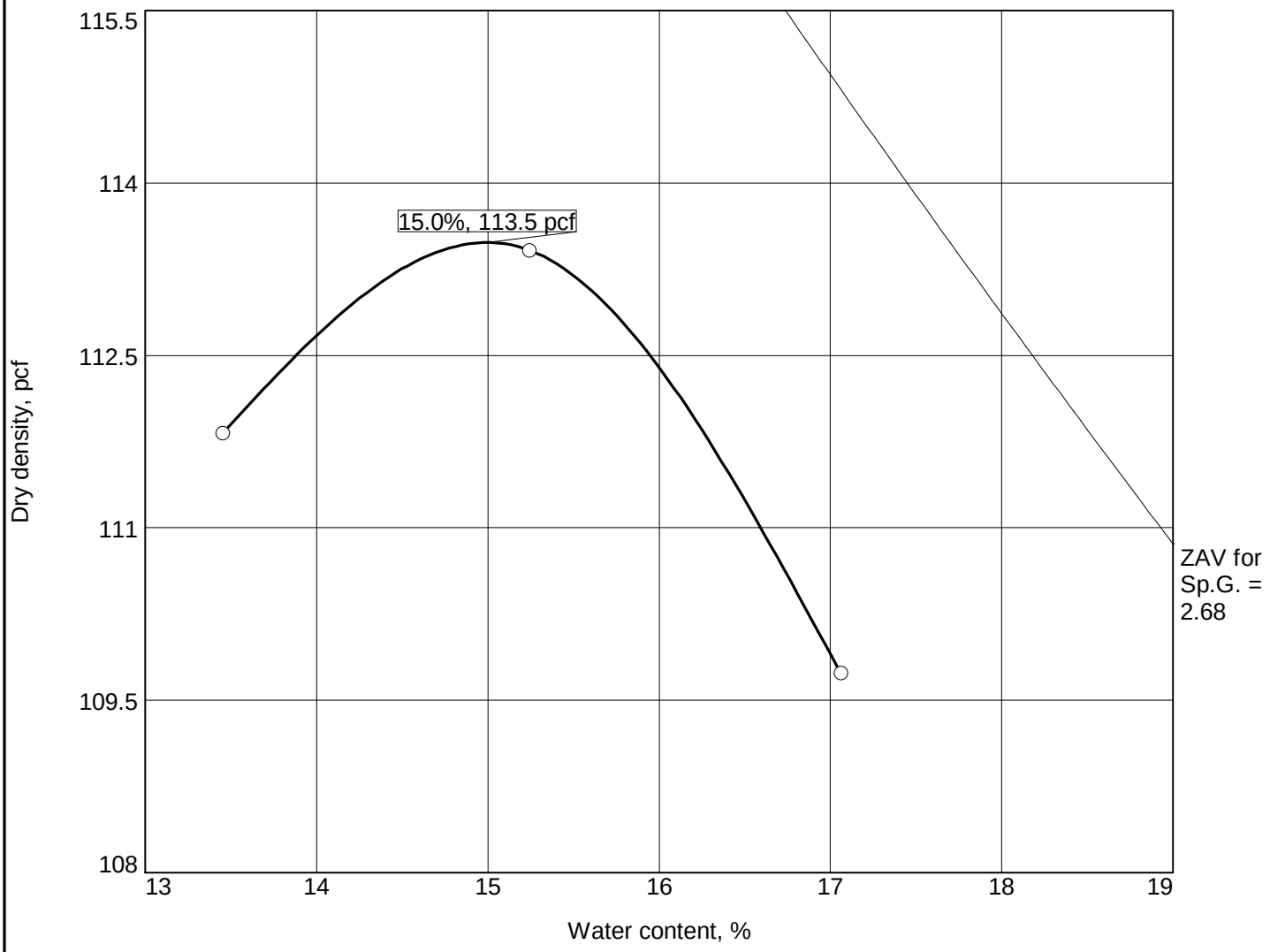
June 18, 2013
Cell Expansion Facing East
Ranging from Approx. 8 to 8.5 feet MSL

June 18, 2013
Cell Expansion Facing West
Ranging from Approx. 8 to 8.5 feet MSL

June 18, 2013
Cell Expansion Facing Northeast
Ranging from Approx. 8 to 8.5 feet MSL

106 Capital Trace, Unit E • Elizabeth City, NC 27909 • Phone: (252)335-9765 • Fax: (252)335-9766
info@getsolutionsinc.com

MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)



Test specification: ASTM D 698-00a Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	SM		14.6		NL	NP	0	22.7

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 113.5 pcf Optimum moisture = 15.0 %	Reddish Tan SAND (SM) with trace Clay

Project No. EC13-162T **Client:** Smith + Gardner

Project: Washington County Landfill Expansion

○ **Location:** Stockpile (sand pit) **Sample Number:** 1

Remarks:

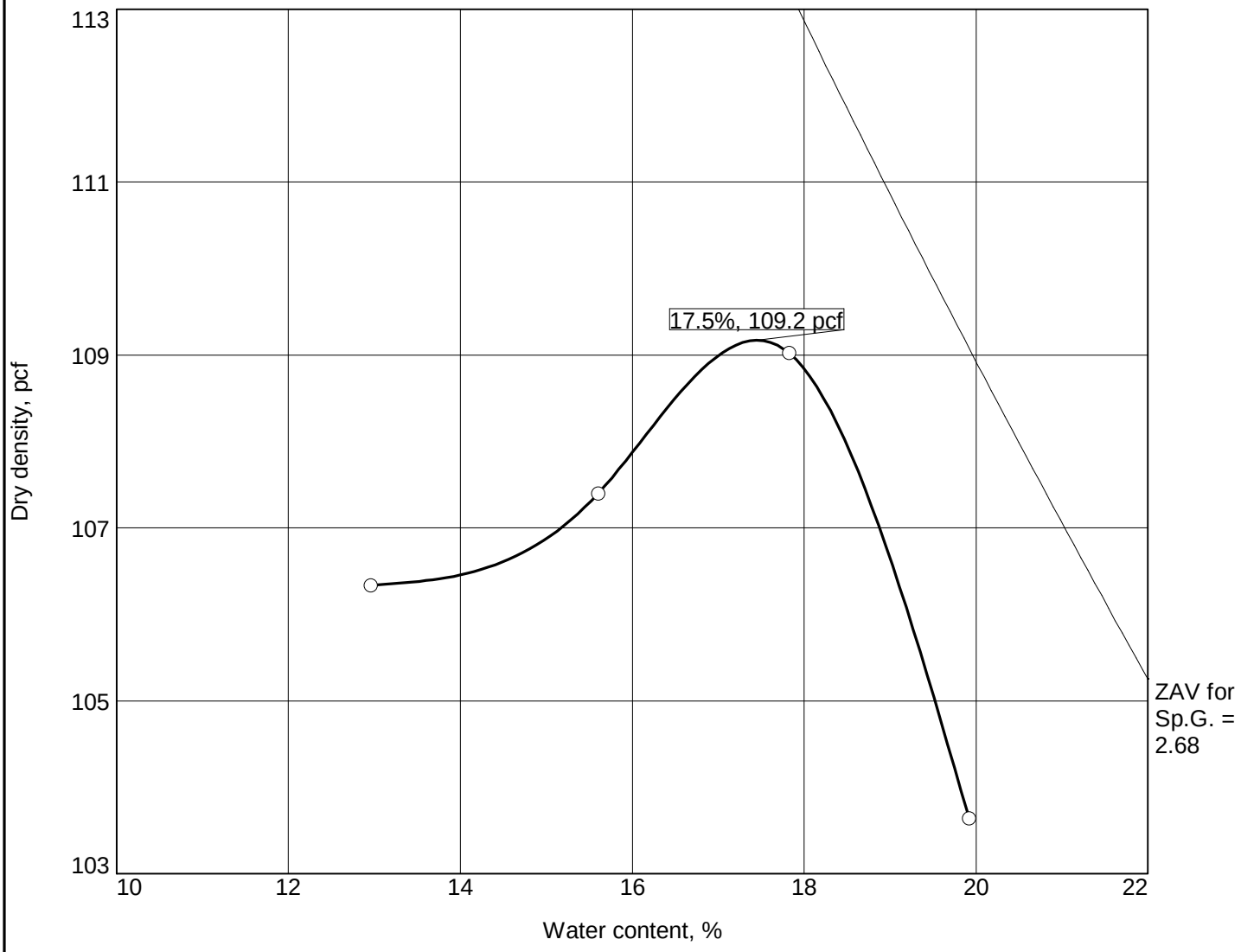
Proctor No. 1
Imported Borrow

GET SOLUTIONS, INC.

Elizabeth City, North Carolina

Figure

MOISTURE DENSITY RELATIONSHIP (PROCTOR CURVE)



Test specification: ASTM D 698-00a Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
1'BFG	SM		10.4		NL	NP	0.0	29.1

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 109.2 pcf Optimum moisture = 17.5 %	Reddish Tan SAND (SM) with Clay

Project No. EC13-162T **Client:** Smith + Gardner

Project: Washington County Landfill Expansion

○ **Loc.:** Approx 150' east and 15' north of southwest corner **Sample No.:** 2

Remarks:

Proctor No. 2
Imported Borrow

GET SOLUTIONS, INC.

Elizabeth City, North Carolina

Figure

G E T Solutions, Inc.
106 Capital Trace, Unit E
Elizabeth City, North Carolina 27909
Tel: (252) 335-9765
Fax:(252) 335-9766

COMPACTION TEST REPORT

Project:	Washington Co. Landfill	Date:	5/28/13
Project Location:	Roper, NC	Technician:	B. Gallop
Client:	Smith + Gardner	Job Number:	13-162T
General Contractor:	Davenport, Inc.	Weather:	Sunny — Temp. (˚F) 70's-80's
Grading Contractor:		General Test Location:	Landfill Pad

Test Number	Moisture (%)	Dry Density (pcf)	Wet Density (pcf)	Proctor Number	% Proctor		Pass	Fail	Test Elevation*	Test Location (Grid, Coordinates, Roadway Station, etc.)
					Spec	Actual				
1	14.2	109.8	125.4	1	95	96	X		18" BFG	N 35° 55.326 W 076° 39.769 from the south west corner of pad APRX 11'N x 17' E
2	13.6	114.8	130.4	1	95	100	X		18" BFG	N 35° 55.329 W 076° 39.760 from the south west corner of pad APRX 23'N x 61' E
3	13.2	108.2	122.5	1	95	95	X		18" BFG	N 35° 55.332 W 076° 39.749 from the south west corner of pad APRX 38'N x 128' E
4	12.6	108.9	122.6	1	95	96	X		18" BFG	N 35° 55.333 W 076° 39.739 from the south east corner of pad APRX 12'N x 162' W
5	13.1	109.1	123.4	1	95	96	X		18" BFG	N 35° 55.341 W 076° 39.744 from the south east corner of pad APRX 64'N x 160' W
6	14.8	108.5	124.5	1	95	95	X		18" BFG	N 35° 55.334 W 076° 39.731 from the south east corner of pad APRX 4'N x 114' W
7	13.1	112.7	127.5	1	95	99	X		18" BFG	N 35° 55.340 W 076° 39.731 from the south east corner of pad APRX 39'N x 104' W
8	13.8	113.0	128.6	1	95	99	X		18" BFG	N 35° 55.339 W 076° 39.722 from the south east corner of pad APRX 23'N x 70' W
9	14.6	108.8	124.7	1	95	95	X		18" BFG	N 35° 55.343 W 076° 39.726 from the south east corner of pad APRX 54'N x 68' W
10	120.0	111.7	125.1	1	95	98	X		18" BFG	N 35° 55.343 W 076° 39.731 from the south east corner of pad APRX 67'N x 93' W

Compaction Equipment Used:	Vibratory Roller	Proctor Number:	1
Field Testing Procedure:	ASTM D 6938	Proctor Type:	ASTM D 698
Field Testing Method:	x Method A — Depth: inches	Material Description:	Reddish-Tan Clay with Sand
	Method B — Depth: Backscatter	Max. Dry Density (pcf):	113.5%
		Optimum Moisture (%):	15.0%

Gauge Standardization Counts:
Moisture: 596 Density: 2580

Gauge Identification:
Make: Troxler Model: 3430 Serial #:

Test locations and test elevations are approximate and are established in the field by the GET Solutions, Inc. technician.

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade

Remarks:

G E T Solutions, Inc.
106 Capital Trace, Unit E
Elizabeth City, North Carolina 27909
Tel: (252) 335-9765
Fax:(252) 335-9766

COMPACTION TEST REPORT

Project:	Washington Co. Landfill	Date:	5/28/13
Project Location:	Roper, NC	Technician:	B. Gallop
Client:	Smith + Gardner	Job Number:	13-162T
General Contractor:	Davenport, Inc.	Weather:	Sunny Temp. (˚F) 70's-80's
Grading Contractor:	Davenport, Inc.	General Test Location:	Landfill Pad

Test Number	Moisture (%)	Dry Density (pcf)	Wet Density (pcf)	Proctor Number	% Proctor		Pass	Fail	Test Elevation*	Test Location (Grid, Coordinates, Roadway Station, etc.)
					Spec	Actual				
11	13.2	108.6	122.9	1	95	95	X		18" BFG	N 35° 55.334 W 076° 39.720 from the south east corner of pad APRX 53'W x 40' W
12	11.6	109.5	122.2	1	95	96	X		18" BFG	N 35° 55.340 W 076° 39.718 from the south east corner of pad APRX 38'W x 20' N
13	14.0	113.5	129.4	1	95	100	X		18" BFG	N 35° 55.338 W 076° 39.711 from the south east corner of pad APRX 12'W x 7' N
14	10.8	110.7	122.6	1	95	97	X		18" BFG	N 35° 55.349 W 076° 39.716 from the south east corner of pad APRX 12'W x 70' N
15	14.3	109.4	125.0	1	95	96	X		18" BFG	N 35° 55.349 W 076° 39.731 from the south east corner of pad APRX 110'N x 58' W
16	10.8	114.4	126.7	1	95	100	X		18" BFG	N 35° 55.345 W 076° 39.732 from the south east corner of pad APRX 67'N x 104' W
17	13.4	110.1	124.8	1	95	97	X		18" BFG	N 35° 55.360 W 076° 39.724 from the north east corner of pad APRX 27'W x 70' S
18	14.1	111.9	127.7	1	95	98	X		18" BFG	N 35° 55.369 W 076° 39.722 from the north east corner of pad APRX 10'W x 30' S
19	11.5	112.6	125.5	1	95	99	X		18" BFG	N 35° 55.337 W 076° 39.754 from the south west corner of pad APRX 57'N x 103' E
20	12.0	108.4	121.4	1	95	95	X		18" BFG	N 35° 55.336 W 076° 39.749 from the south west corner of pad APRX 37'N x 130' E

Compaction Equipment Used:	Vibratory Roller	Proctor Number:	1
Field Testing Procedure:	ASTM D 6938	Proctor Type:	ASTM D 698
Field Testing Method:	x Method A Depth: inches	Material Description:	Reddish-Tan Clay with Sand
	Method B Depth: Backscatter	Max. Dry Density (pcf):	113.5%
		Optimum Moisture (%):	15.0%

Gauge Standardization Counts:
Moisture: 596 Density: 2580

Gauge Identification:
Make: Troxler Model: 3430 Serial #:

Test locations and test elevations are approximate and are established in the field by the GET Solutions, Inc. technician.

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade

Remarks:

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Elizabeth City, North Carolina 27909
Tel: (252) 335-9765
Fax:(252) 335-9766

COMPACTION TEST REPORT

Project:	Washington Co. Landfill	Date:	5/28/13
Project Location:	Roper, NC	Technician:	B. Gallop
Client:	Smith + Gardner	Job Number:	13-162T
General Contractor:	Davenport, Inc.	Weather:	Sunny Temp. (˚F) 70's-80's
Grading Contractor:	Davenport, Inc.	General Test Location:	Landfill Pad

Test Number	Moisture (%)	Dry Density (pcf)	Wet Density (pcf)	Proctor Number	% Proctor		Pass	Fail	Test Elevation*	Test Location (Grid, Coordinates, Roadway Station, etc.)
					Spec	Actual				
21	13.9	109.8	125.1	1	95	96	X		18" BFG	.333 W 076° 39.764 from the south west corner of pad APRX 60
22	14.5	115.0	131.7	1	95	100	X		18" BFG	.337 W 076° 39.768 from the south west corner of pad APRX 41
23	10.2	113.1	124.6	1	95	99	X		18" BFG	.336 W 076° 39.775 from the south west corner of pad APRX 9'

Compaction Equipment Used:	Vibratory Roller	Proctor Number:	1
Field Testing Procedure:	ASTM D 6938	Proctor Type:	ASTM D 698
Field Testing Method:	x Method A Depth: inches	Material Description:	Reddish-Tan Clay with Sand
	Method B Depth: Backscatter	Max. Dry Density (pcf):	113.5%
		Optimum Moisture (%):	15.0%

Gauge Standardization Counts:		Gauge Identification:		
Moisture: 596	Density: 2580	Make: Troxler	Model: 3430	Serial #:

Test locations and test elevations are approximate and are established in the field by the GET Solutions, Inc. technician.

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Remarks:

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Fax:(252) 335-9766

COMPACTION TEST REPORT

Project:	Washington Co. Landfill	Date:	5/29/13
Project Location:	Washington County, Roper, NC	Technician:	J Meads
Client:	Smith + Gardner	Job Number:	13-162T
General Contractor:	Davenport, Inc.	Weather:	Clear — Temp. (˚F) 80's
Grading Contractor:	Davenport, Inc.	General Test Location:	Phase 2

Test Number	Moisture (%)	Dry Density (pcf)	Wet Density (pcf)	Proctor Number	% Proctor		Pass	Fail	Test Elevation*	Test Location (Grid, Coordinates, Roadway Station, etc.)
					Spec	Actual				
1	12.8	107.5	121.2	2	95	98	X		1' BFG	N 35° 55.333 W 76° 39.744; from southwest corner of Phase 2 Expansion: Approx. 153' East & 15' North
2	11.5	108.0	120.4	2	95	99	X		1' BFG	N 35° 55.327 W 76° 39.758 from south west corner of Phase 2 Expansion APRX 89' E x 7' N
3	14.5	107.0	122.5	2	95	98	X		1' BFG	N 35° 55.327 W 76° 39.771 from south west corner of Phase 2 Expansion APRX 18' E x 25' N
4	15.0	108.7	125.0	1	95	96	X		1' BFG	N 35° 55.335 W 76° 39.774 from south west corner of Phase 2 Expansion APRX 15' E x 76' N
5	14.4	109.2	124.9	1	95	96	X		1' BFG	N 35° 55.336 W 76° 39.754 from south west corner of Phase 2 Expansion APRX 100' E x 69' N
6	15.2	109.5	126.1	1	95	96	X		1' BFG	N 35° 55.343 W 76° 39.744 from south west corner of Phase 2 Expansion APRX 178' E x 92' N
7	14.0	108.7	123.9	1	95	96	X		1' BFG	N 35° 55.349 W 76° 39.732 from south west corner of Phase 2 Expansion APRX 240' E x 100' N
8	14.8	106.9	122.7	2	95	98	X		1' BFG	N 35° 55.333 W 76° 39.732 from south west corner of Phase 2 Expansion APRX 216' E x 5' N

Compaction Equipment Used:	Vibratory Roller	Proctor Number:	1 — 2
Field Testing Procedure:	ASTM D 6938	Proctor Type:	ASTM D 698
Field Testing Method:	x Method A — Depth: 6 to 8 inches	Material Description:	Reddish Tan Sand
	Method B — Depth: Backscatter	Max. Dry Density (pcf):	113.5% — 109.2
		Optimum Moisture (%):	15.0% — 17.5%

Gauge Standardization Counts:
Moisture: 603 Density: 2592

Gauge Identification:

Make:	Model:	Serial #:
Troxler	3430	31918

Test locations and test elevations are approximate and are established in the field by the GET Solutions, Inc. technician.

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade

Remarks: Proctor #2 P'UP on this day

G E T Solutions, Inc.
106 Capital Trace, Unit E
Elizabeth City, North Carolina 27909
Tel: (252) 335-9765
Fax:(252) 335-9766

COMPACTION TEST REPORT

Project:	Washington Co. Landfill	Date:	5/30/13
Project Location:	Washington County, Roper, NC	Technician:	J. Meads
Client:	Smith + Gardner	Job Number:	13-162T
General Contractor:	Davenport, Inc.	Weather:	Clear — Temp. (˚F) 80's
Grading Contractor:	Davenport, Inc.	General Test Location:	Phase 2

Test Number	Moisture (%)	Dry Density (pcf)	Wet Density (pcf)	Proctor Number	% Proctor		Pass	Fail	Test Elevation*	Test Location (Grid, Coordinates, Roadway Station, etc.)
					Spec	Actual				
1	15.0	108.2	124.4	1	95	95	X		1' BFG	N 35° 55.369 W 77° 29.725 from south east corner of Phase 2, APRX 145' N x 26' W

Compaction Equipment Used:	Vibratory Roller	Proctor Number:	1
Field Testing Procedure:	ASTM D 6938	Proctor Type:	ASTM D 698
Field Testing Method:	x Method A — Depth: inches	Material Description:	Reddish Tan SAND
	Method B — Depth: Backscatter	Max. Dry Density (pcf):	113.5%
		Optimum Moisture (%):	15.0%

Gauge Standardization Counts:
Moisture: 602 Density: 2614

Gauge Identification:

Make:	Model:	Serial #:
Troxler	3430	31918

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Remarks:

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Fax:(252) 335-9766

COMPACTION TEST REPORT

Project:	Washington Co. Landfill	Date:	5/31/13
Project Location:	Roper, NC	Technician:	JM
Client:	Smith + Gardner	Job Number:	13-162T
General Contractor:	Davenport, Inc.	Weather:	Clear — Temp. (˚F) 80's
Grading Contractor:	Davenport, Inc.	General Test Location:	Phase 2

Test Number	Moisture (%)	Dry Density (pcf)	Wet Density (pcf)	Proctor Number	% Proctor		Pass	Fail	Test Elevation*	Test Location (Grid, Coordinates, Roadway Station, etc.)
					Spec	Actual				
1	150.0	108.8	125.1	2	95	100	X		1' BFG	N 35° 55.357 W 76° 39.722 from south east corner of Phase 2, APRX 135'N x 43' W
2	14.2	107.9	123.2	2	95	99	X		1' BFG	N 35° 55.353 W 76° 39.727 from south east corner of Phase 2, APRX 100'N x 32' W
3	13.5	107.0	121.4	2	95	98	X		1' BFG	N 35° 55.353 W 76° 39.718 from south east corner of Phase 2, APRX 90'N x 8' W
4	14.1	106.7	121.7	2	95	98	X		1' BFG	N 35° 55.349 W 76° 39.718 from south east corner of Phase 2, APRX 70'N x 20' W
3	13.5	107.0	121.4	2	95	98	X		1' BFG	N 35° 55.353 W 76° 39.718 from south east corner of Phase 2, APRX 90'N x 8' W
5	13.9	107.5	122.4	2	95	98	X		1' BFG	N 35° 55.348 W 76° 39.222 from south east corner of Phase 2, APRX 70'N x 33' W
6	14.5	108.5	124.2	2	95	99	X		1' BFG	N 35° 55.346 W 76° 39.715 from south east corner of Phase 2, APRX 46'N x 8' W
7	15.3	107.0	123.4	2	95	98	X		1' BFG	N 35° 55.345 W 76° 39.720 from south east corner of Phase 2, APRX 45'N x 30' W
8	13.0	107.7	121.7	2	95	99	X		1' BFG	N 35° 55.341 W 76° 39.712 from south east corner of Phase 2, APRX 13'N x 15' W
9	15.0	107.0	123.0	2	95	98	X		1' BFG	N 35° 55.339 W 76° 39.718 from south east corner of Phase 2, APRX 6'N x 30' W

Compaction Equipment Used:	Vibratory Roller	Proctor Number:	1 — 2
Field Testing Procedure:	ASTM D 6938	Proctor Type:	ASTM D 698
Field Testing Method:	x Method A — Depth: 6 to 8 inches	Material Description:	Tan Sand w/Clay — Reddish-Tan Sand w/Clay
	Method B — Depth: Backscatter	Max. Dry Density (pcf):	113.5%
		Optimum Moisture (%):	15.0%

Gauge Standardization Counts:
Moisture: 600 Density: 2597

Gauge Identification:

Make:	Model:	Serial #:
Troxler	3430	31918

Test locations and test elevations are approximate and are established in the field by the GET Solutions, Inc. technician.

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade

Remarks:

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Elizabeth City, North Carolina 27909
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Fax:(252) 335-9766

COMPACTION TEST REPORT

Project:	Washington Co. Landfill	Date:	5/31/13
Project Location:	Roper, NC	Technician:	JM
Client:	Smith + Gardner	Job Number:	13-162T
General Contractor:	Davenport, Inc.	Weather:	Clear — Temp. (˚F) 80's
Grading Contractor:	Davenport, Inc.	General Test Location:	Phase 2

Test Number	Moisture (%)	Dry Density (pcf)	Wet Density (pcf)	Proctor Number	% Proctor		Pass	Fail	Test Elevation*	Test Location (Grid, Coordinates, Roadway Station, etc.)
					Spec	Actual				
10	15.2	109.5	126.1	1	95	97	X		1' BFG	N 35° 55.339 W 76° 39.728 from south east corner of Phase 2, APRX 26'N x 77' W
11	13.9	109.0	124.1	1	95	96	X		1' BFG	N 35° 55.347 W 76° 39.727 from south east corner of Phase 2, APRX 60'N x 70' W
12	15.0	109.9	126.4	1	95	97	X		1' BFG	N 35° 55.336 W 76° 39.736 from south east corner of Phase 2, APRX 36'N x 130' W
13	14.0	106.5	121.4	2	95	97	X		1' BFG	N 35° 55.336 W 76° 39.750 from south east corner of Phase 2, APRX 42'N x 200' W
14	13.2	107.0	121.1	2	95	98	X		1' BFG	N 35° 55.331 W 76° 39.772 from south east corner of Phase 2, APRX 48'N x 300' W

Compaction Equipment Used:	Vibratory Roller	Proctor Number:	1 — 2
Field Testing Procedure:	ASTM D 6938	Proctor Type:	ASTM D 698
Field Testing Method:	x Method A — Depth: 6 to 8 inches	Material Description:	Tan Sand w/Clay — Reddish-Tan Sand w/Clay
	Method B — Depth: Backscatter	Max. Dry Density (pcf):	113.5% — 109.2
		Optimum Moisture (%):	15.0% — 17.5%

Gauge Standardization Counts:
Moisture: 600 Density: 2597

Gauge Identification:

Make:	Model:	Serial #:
Troxler	3430	31918

Test locations and test elevations are approximate and are established in the field by the GET Solutions, Inc. technician.

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Remarks:

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COMPACTION TEST REPORT

Project:	Washington Co. Landfill	Date:	8/6/13
Project Location:	Roper, NC	Technician:	R. Haupu
Client:	Smith + Gardner	Job Number:	13-162T
General Contractor:	Davenport, Inc.	Weather:	Overcast Temp. (˚F) 73
Grading Contractor:	Davenport, Inc.	General Test Location:	Pad and Berm

Test Number	Moisture (%)	Dry Density (pcf)	Wet Density (pcf)	Proctor Number	% Proctor		Pass	Fail	Test Elevation*	Test Location (Grid, Coordinates, Roadway Station, etc.)
					Spec	Actual				
1	14.1	107.3	122.4	2	95	98	x		FG	N 35° 55.336 W 76° 39.764
2	12.9	109.2	123.3	2	95	100	x		FG	N 35° 55.338 W 76° 39.745
3	14.2	109.5	125.1	2	95	100	x		FG	N 35° 55.340 W 76° 39.733
4	14.6	108.0	123.8	2	95	99	x		FG	N 35° 55.347 W 76° 39.716
5	17.5	104.9	123.5	2	95	96	x		FG	N 35° 55.358 W 76° 39.728
6	17.5	105.0	123.1	2	95	96	x		FG	N 35° 55.370 W 76° 39.725
7	15.2	98.7	115.1	2	95	90		x	FG	Berm: N 35° 55.369 W 76° 39.722
8	12.9	104.9	118.4	2	95	96	x		FG	Berm: N 35° 55.350 W 76° 39.717
9	12.1	105.0	117.7	2	95	96	x		FG	Berm: N 35° 55.340 W 76° 39.720
10	12.3	104.4	117.3	2	95	95	x		FG	Berm: N 35° 55.335 W 76° 39.732

Compaction Equipment Used:	Vibratory Roller	Proctor Number:	2
Field Testing Procedure:	ASTM D 6938	Proctor Type:	ASTM D 698
Field Testing Method:	x Method A Depth: 12 inches	Material Description:	Reddish-Tan Sand w/Clay
	Method B Depth: Backscatter	Max. Dry Density (pcf):	109.2%
		Optimum Moisture (%):	17.5%

Gauge Standardization Counts:
Moisture: 604 Density: 2588

Gauge Identification:

Make:	Model:	Serial #:
Troxler	3430	31918

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Remarks:

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Fax:(252) 335-9766

COMPACTION TEST REPORT

Project:	Washington Co. Landfill	Date:	8/6/13
Project Location:	Roper, NC	Technician:	R. Haupu
Client:	Smith + Gardner	Job Number:	13-162T
General Contractor:	Davenport, Inc.	Weather:	Overcast — Temp. (˚F) 73
Grading Contractor:	Davenport, Inc.	General Test Location:	Pad and Berm

Test Number	Moisture (%)	Dry Density (pcf)	Wet Density (pcf)	Proctor Number	% Proctor		Pass	Fail	Test Elevation*	Test Location (Grid, Coordinates, Roadway Station, etc.)
					Spec	Actual				
11	12.4	101.0	113.5	2	95	92		x	FG	N 35° 55.329 W 76° 39.763
12	15.0	103.5	119.1	2	95	94		x	FG	N 35° 55.334 W 76° 39.775

Compaction Equipment Used:	Vibratory Roller	Proctor Number:	2
Field Testing Procedure:	ASTM D 6938	Proctor Type:	ASTM D 698
Field Testing Method:	x Method A — Depth: 12 inches	Material Description:	Reddish-Tan Sand w/Clay
	Method B — Depth: Backscatter	Max. Dry Density (pcf):	109.2%
		Optimum Moisture (%):	17.5%

Gauge Standardization Counts:
Moisture: 604 Density: 2588

Gauge Identification:

Make:	Model:	Serial #:
Troxler	3430	31918

Test locations and test elevations are approximate and are established in the field by the GET Solutions, Inc. technician.

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Remarks:

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September 24, 2013

TO: **SMITH + GARDNER**
14 N. Boylan Avenue
Raleigh, NC 27603

Attn: Mr. Pieter Scheer

RE: Construction Materials Testing Services
Washington County Landfill
Washington County, North Carolina
GET Project No: EC13-162T
Report No. 2

Dear Mr. Scheer:

As requested, a representative of **G E T Solutions, Inc.** visited the above stated site on the date of September 11, 2013. The purpose of our site visits was to perform construction materials testing services. These evaluations were performed by completing the following tasks:

- Performing re-testing services on the select fill soils within the berm areas previously noted to be in non-conformance with regards to the minimum specified percent compaction.

Field Density (Compaction) Testing– Building and Pavement Fill:

During our site visit on the date of September 11, 2013, field density re-testing was performed on the in place imported borrow materials that were previously placed within the berm areas at the finished grade elevation. These fill materials were originally tested on the date of August 6, 2013 and found to have been compacted to a range of 90% to 94% of the Standard Proctor (ASTM D 698) maximum dry density, which did not meet the project specified minimum of 95%. Accordingly and as requested, our services performed on the date of September 11, 2013 were performed to re-evaluate the compaction of the fill materials following additional compaction effort.

The compaction testing procedures were accomplished by performing field density testing at the established grade elevations at the time of our site visit. Based on the results of our previously completed laboratory testing procedures and the field re-testing procedures, the imported fill materials were noted to have been re-compacted to at least 95% of the Standard Proctor (ASTM D698). The test results and locations are identified on the attached “Compaction Test Report” sheet.

We appreciate the opportunity to offer our services to you, and trust that you will call our Elizabeth City office with any questions that you may have.

Respectfully Submitted,
G E T Solutions, Inc.

Gerald W. Stalls Jr., P.E.
Senior Project Engineer
NC Lic. #034336

NORTH CAROLINA PROFESSIONAL SEAL 034336 ENGINEER GERALD W. STALLS, JR.

Attachments: Compaction Test Report(s)

G E T Solutions, Inc.
106 Capital Trace, Unit E
Elizabeth City, North Carolina 27909
Tel: (252) 335-9765
Fax:(252) 335-9766

COMPACTION TEST REPORT

Project:	Washington Co. Landfill	Date:	9/11/13
Project Location:	Roper, NC	Technician:	J. Meads
Client:	Smith + Gardner	Job Number:	13-162T
General Contractor:	Davenport, Inc.	Weather:	Clear — Temp. (˚F) 80's
Grading Contractor:	Davenport, Inc.	General Test Location:	Berm Re-testing

Test Number	Moisture (%)	Dry Density (pcf)	Wet Density (pcf)	Proctor Number	% Proctor		Pass	Fail	Test Elevation*	Test Location (Grid, Coordinates, Roadway Station, etc.)
					Spec	Actual				
1	8.0	106.2	114.7	2	95	97	x		FG	Berm; N 35° 55.369 W 76° 39.722
2	9.5	105.5	115.5	2	95	97	x		FG	Berm; N 35° 55.329 W 76° 39.763
3	10.2	108.1	119.1	2	95	99	x		FG	Berm; N 35° 55.334 W 76° 39.775

Compaction Equipment Used:	Vibratory Roller	Proctor Number:	2
Field Testing Procedure:	ASTM D 6938	Proctor Type:	ASTM D 698
Field Testing Method:	x Method A — Depth: 12 inches	Material Description:	Reddish-Tan Sand w/Clay
	Method B — Depth: Backscatter	Max. Dry Density (pcf):	109.2%
		Optimum Moisture (%):	17.5%

Gauge Standardization Counts:
Moisture: 604 Density: 2588

Gauge Identification:

Make:	Model:	Serial #:
Troxler	3430	31918

Test locations and test elevations are approximate and are established in the field by the GET Solutions, Inc. technician.

* Note: BFF = Below Finish Floor, BFG = Below Finish Grade, FG = Finished Grade

Remarks:

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Appendix C

CQA Meeting Minutes

Construction Quality Assurance Report
Washington County C&D Landfill – Phase 2
Roper, North Carolina

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SMITH+GARDNER
ENGINEERS

ADDRESS
14 N. Boylan Avenue, Raleigh NC 27603

TEL
919.828.0577

WEB
www.smithgardnerinc.com

MEMORANDUM

Date:	May 1, 2013
To:	Meeting Attendees
From:	Pieter K. Scheer, P.E. Smith Gardner, Inc.
RE:	**Washington County C&D Landfill - Phase 2** **Pre-Construction Meeting Summary – April 26, 2013**

Attendees:

Washington County:	Lou Manring, Carl Critcher, Gene Biggs
Jones & Smith:	Kenneth Smith
Davenport, Inc.:	Keith Davenport
Smith Gardner, Inc.:	Pieter Scheer

Meeting Summary:

A pre-construction meeting was held Friday April 26th at the site to discuss the plans for the construction of Phase 2 of the Washington County Construction and Demolition Debris (C&D) Landfill. The meeting began at 11:00 a.m. and the following items were discussed:

A. Tentative Construction Schedule/Milestones &
B. Work Sequencing

The Notice to Proceed (NTP) was discussed. The NTP was issued with an official start date of May 6th and completion date of August 4th, 2013 (90 Day Schedule). The required maximum time for placement and compaction of 20 days was also noted.

The general work requirements were discussed including site preparation, preparation of subgrade (Elevation 6.5) using on-site materials, and placement and compaction of select structural fill (2 foot minimum thickness). Surveys will be required upon completion of the subgrade and select structural fill (finished grade).

Project meetings will be held periodically as needed during active construction.

C. Designation of Responsible Personnel

Washington County:

Lou Manring, Director of Public Utilities
Carl Critcher, Landfill Operator
Gene Biggs, Assistant Landfill Operator

Smith Gardner, Inc. (S+G) (Design Engineer)
Pieter Scheer, P.E., Project Manager
Kristofer Baker, Field Manager
Soil Technician(s), GET Solutions

Jones & Smith Contractors, LLC (J & S)
Kenneth Smith, Project Manager
Keith Davenport, Project Manager (Davenport, Inc. - Earthwork Sub.)

D. Field Decisions and Change Orders

Mr. Scheer noted the following:

- All design changes and/or change orders need to be approved in advance by the County and S+G.
- Conflicts between drawings and field conditions shall be brought to the attention of the County and S+G ASAP.
- If required, appropriate regulatory agencies will be notified of proposed changes.

E. Distribution of Contract Documents

Mr. Scheer provided copies to J&S and the County (Subsequent to the meeting, S+G also provided a CAD file of the site design drawing to Tim Esolen - Contractor's surveyor). S+G will provide additional copies as needed.

F. Submittals

Mr. Scheer noted the following regarding submittals.

- Shop drawings should be submitted to S+G as outlined in the project specifications (Section 01300).

G. Record Documents

Mr. Scheer noted the following:

- J&S is responsible for as-built survey requirements (subgrade and finished grades).
- S+G is responsible for CQA testing of earthwork. GET Solutions will provide a soil technician during placement and compaction of select structural fill.

H. Use of Site and Owner's Requirements

Mr. Scheer noted the following:

- Coordinate with County (Carl Critcher) for access and use of site.
- The general work hours will be the same as site operating hours. These are 8 a.m. to 4:30 p.m. Monday through Friday and 8 a.m. to 1:00 p.m on Saturday.
- The County will be flexible if work needs to occur outside of normal site operating hours.

I. Major Equipment Deliveries and Priorities

Mr. Scheer noted the following:

- Storage of materials will need to be coordinated with Carl Critcher.

J. Safety and First Aid Procedures

Safety was discussed. J&S has an internal safety program including daily tailgate meetings.

K. Security Procedures

Mr. Scheer noted that although work will occur generally during regular operating hours, J&S will be responsible for securing material and equipment on-site.

L. Housekeeping Procedures

Mr. Scheer noted that J&S will be responsible for returning the site to its original condition (i.e. litter control).

M. Pay Requests

Mr. Scheer noted the following:

- Pay requests should be submitted at/near the end of each month to S+G (Attn: Pieter Scheer) (1 original and 2 copies will be acceptable).

N. Other Issues

Mr. Scheer noted that coordination between S+G, the County, and J&S during the early stages of work will be very important.

Mr. Scheer noted that notification of S+G and the County is required prior to any overexcavation/backfill (if required) activities such that quantities can be agreed upon.

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Appendix D

Record Drawings

Construction Quality Assurance Report
Washington County C&D Landfill – Phase 2
Roper, North Carolina

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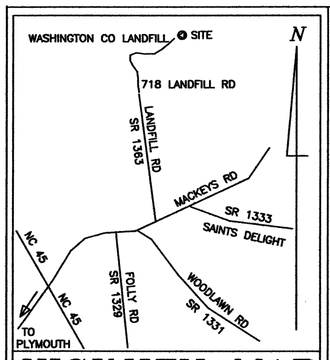


VICINITY MAP
(NOT TO SCALE)

NOTES

SUBJECT TO ALL R/W'S, EASEMENTS, ZONING REGS. AND/OR RESTRICTIVE COVENANTS OF RECORD.

NORTH CAROLINA GRID COORDINATES ARE FROM TRADITIONAL TRAVERSE FROM GRID MONUMENTS "DUTCH"
N = 792,078.4300 FT / E = 2,686,539.7900 FT
NAD 1983 (2001) AND "WESTOVER"
N = 792,138.3500 FT / E 2,689,013.1800 FT
NAD 1983 (2001).

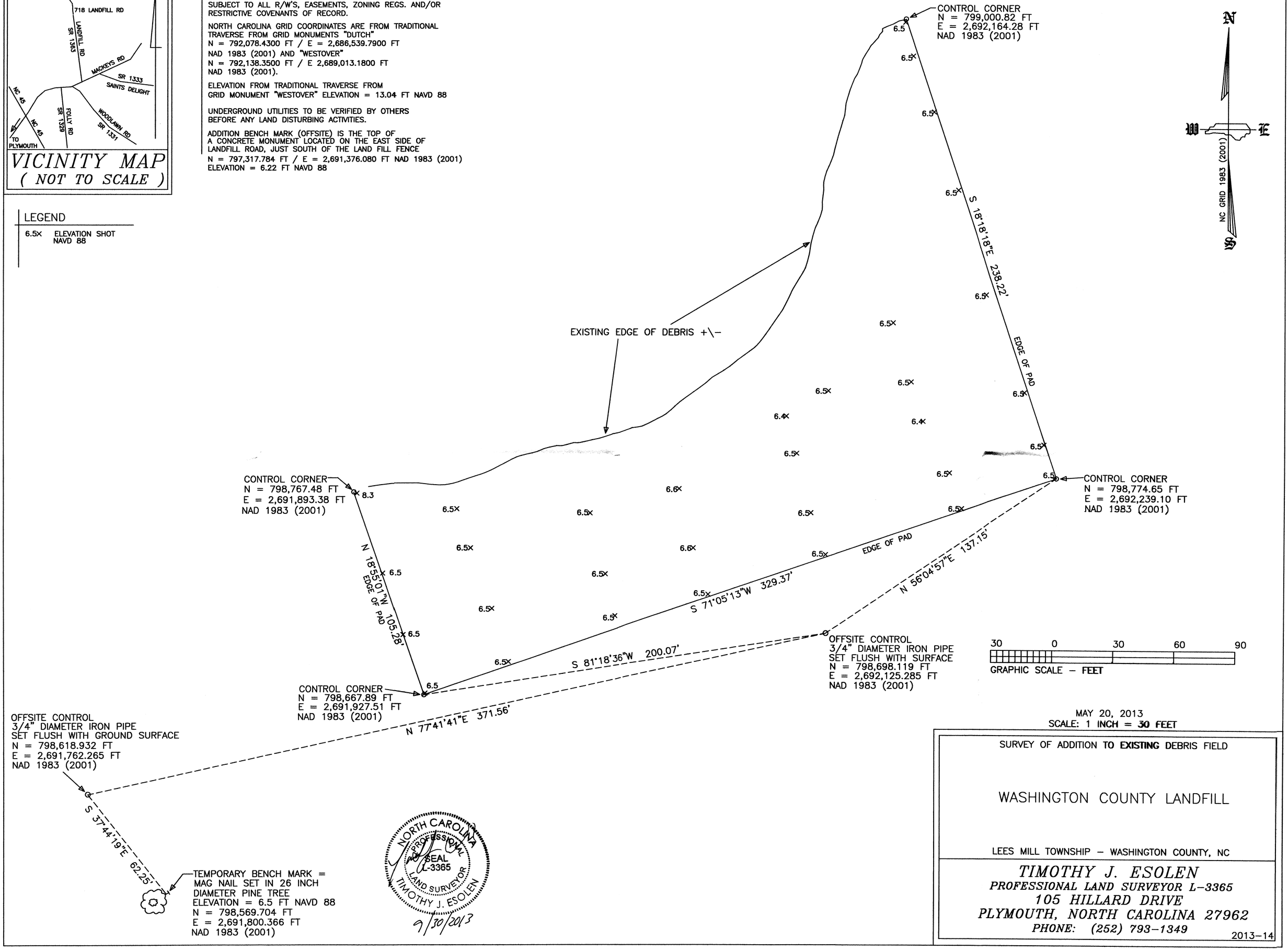
ELEVATION FROM TRADITIONAL TRAVERSE FROM GRID MONUMENT "WESTOVER" ELEVATION = 13.04 FT NAVD 88

UNDERGROUND UTILITIES TO BE VERIFIED BY OTHERS BEFORE ANY LAND DISTURBING ACTIVITIES.

ADDITION BENCH MARK (OFFSITE) IS THE TOP OF A CONCRETE MONUMENT LOCATED ON THE EAST SIDE OF LANDFILL ROAD, JUST SOUTH OF THE LAND FILL FENCE
N = 797,317.784 FT / E = 2,691,376.080 FT NAD 1983 (2001)
ELEVATION = 6.22 FT NAVD 88

LEGEND

6.5× ELEVATION SHOT NAVD 88



MAY 20, 2013
SCALE: 1 INCH = 30 FEET

SURVEY OF ADDITION TO **EXISTING** DEBRIS FIELD

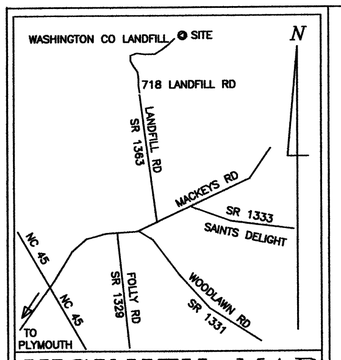
WASHINGTON COUNTY LANDFILL

LEES MILL TOWNSHIP – WASHINGTON COUNTY, NC

TIMOTHY J. ESOLEN
PROFESSIONAL LAND SURVEYOR L-3365
105 HILLARD DRIVE
PLYMOUTH, NORTH CAROLINA 27962
PHONE: (252) 793-1349

2013-14

SUBGRADE AS-BUILT



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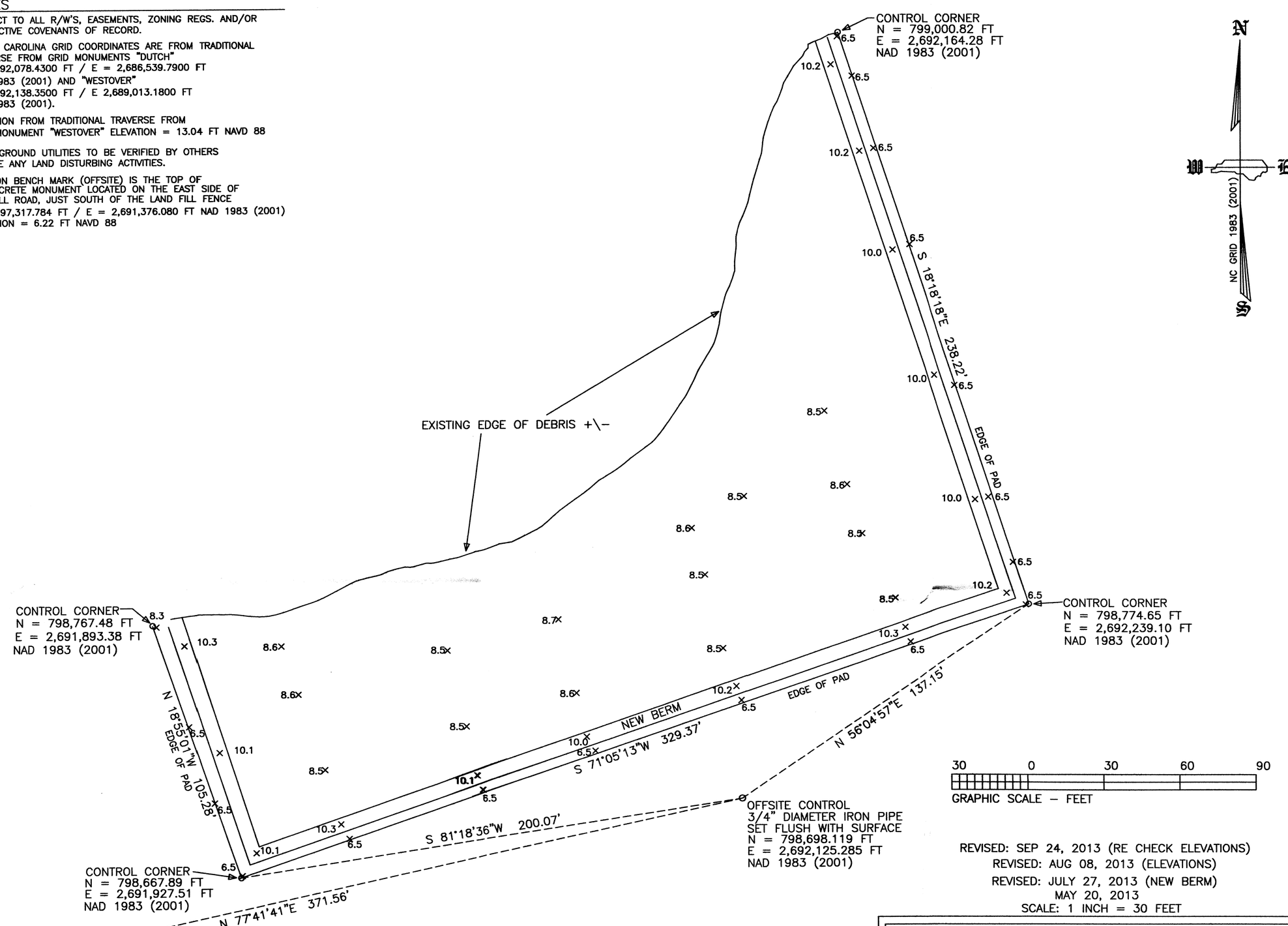

NORTH CAROLINA PROFESSIONAL SEAL L-3365 LAND SURVEYOR TIMOTHY J. ESOLEN
9/30/2013

REVISED: SEP 24, 2013 (RE CHECK ELEVATIONS)
REVISED: AUG 08, 2013 (ELEVATIONS)
REVISED: JULY 27, 2013 (NEW BERM)
MAY 20, 2013
SCALE: 1 INCH = 30 FEET

SURVEY OF ADDITION TO EXISTING DEBRIS FIELD

WASHINGTON COUNTY LANDFILL

LEES MILL TOWNSHIP – WASHINGTON COUNTY, NC

TIMOTHY J. ESOLEN
PROFESSIONAL LAND SURVEYOR L-3365
105 HILLARD DRIVE
*PLYMOUTH, **NORTH** CAROLINA 27962*
PHONE: (252) 793-1349

2013-14

SELECT STRUCTURAL FILL AS-BUILT