

January 8, 2014

Fac/Perm/Co ID #	Date	Doc ID#
06-03	1,10,14	20380

Mr. Allen Gaither, P.E.
Environmental Engineer II
NCDENR – Solid Waste Section
2090 U.S. Highway 70
Swannanoa, North Carolina 28778

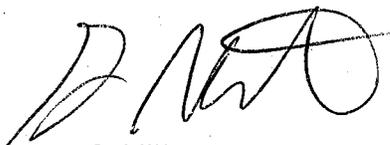
Re: Phases I & II Closure Event No. 2
Avery County C&D Landfill
NC Solid Waste Permit No. 06-03

Dear Allen:

On behalf of Avery County, Smith Gardner, Inc. (S+G) is hereby submitting the enclosed Construction Quality Assurance (CQA) Report [one (1) hard copy and one (1) electronic] for the above referenced facility for your review and records. Additionally, please find an updated financial assurance estimate (attached) to include the removal of this closed area (0.75 acres) from the closure construction estimate. Based on our telephone conversation today, I understand that upon approval of this estimate, the County will update their financial test.

We appreciate your attention and we are prepared to respond to any questions or concerns regarding this information. Please feel free to contact me at (919) 828-0577 or by email below.

Sincerely,
SMITH GARDNER, INC.



Gregory G. Mills, P.E.
Sr. Project Engineer
gregm@smithgardnerinc.com

Attachment

Cc: Mr. Henry "Buddy" Norris, Avery County Solid Waste Department
Ms. Deb Aja, NCDENR
File

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JAN 10 2014

SOLID WASTE SECTION
ASHEVILLE REGIONAL OFFICE

Avery County CGO Landfill (NC SW Permit No. 06-03) Engineer's Post Closure Estimate

Item	Quantity or Cost	Unit	Comments
A. Groundwater Monitoring			
Monitoring wells	4	wells	Reference 1
Surface water point	2	points	Reference 1
Sampling frequency	2	events	Reference 1
Field sampling, collection, and shipping.	\$ 800.00	per event	S+G estimate
Laboratory Analysis	\$ 325.00	per well	S+G estimate
Data review, statistics, and reporting	\$ 2,000.00	per event	S+G estimate
Maintenance and repair	\$ 1,000.00	per well	S+G historical estimate
Subtotal Cost	\$ 13,500.00	per year	
B. Landfill Gas Management			
Control System Vents	7	vents	Per Ref. 1 (pro-rated @ one (1) per acre)
Sub-Surface Perimeter Monitoring Probes	4	probes	Per Ref. 1
Control system monitoring, maintenance and repair	\$ 50.00	per vent per year	S+G estimate
Semi-Annual Perimeter Monitoring	\$ 50.00	per probe per year	S+G estimate
Subtotal Cost	\$ 559.50	per year	Averaged over post-closure period
C. Final Cover Management			
Area of maintenance	7.19	acres	Extends to area immediately around landfill.
Mowing	\$ 100.00	per acre	Site historical estimate
Erosion and sediment control maintenance	\$ 200.00	per acre	Site historical estimate
Topdressing (seed & fertilizer)	\$ 150.00	per acre	Site historical estimate
Vector and rodent control	\$ 10.00	per acre	Site historical estimate
Maintenance Mobilization	\$ 1,000.00	per year	Site historical estimate
Subtotal Cost	\$ 4,307.40	per year	
D. Administration, Inspections, and Reporting			
Administration and record keeping	\$ 1,000.00	per year	Site historical estimate
Inspection	\$ 1,000.00	per year	Site historical estimate
Miscellaneous engineering	\$ 1,500.00	per year	Site historical estimate
Subtotal Cost	\$ 3,500.00	per year	
E. Subtotal Post-Closure Costs			
Number of Years for Post-Closure	30	years (see Note 1)	
Estimated Average Annual Costs	\$ 21,867	per year (2013\$)	
Cost per Acre	\$ 3,041.29	per year	
Subtotal Post Closure Costs	\$ 656,007.00	(2013\$) (See Note 2)	
F. Potential Assessment and Corrective (Remedial) Action			
Minimum amount required by NCDENR Division of Waste	\$ 2,000,000	lump sum	Regulatory requirement (Session Law 2011-262)
Subtotal Remedial Cost	\$ 2,000,000	lump sum	
Total Post Closure and Remedial Costs	\$ 2,760,595	(2013\$) (See Note 2)	
Total Closure, Post Closure, and Remedial Costs	\$ 2,975,904	(2013\$) (See Note 2)	

Notes:

- All costs are presented in current dollars and should be increased at the inflation rate prescribed by the NCDENR Division of Waste Management website at <http://portal.ncdenr.org/web/wm/sw/financialassurance> if additional review is not performed annually.
- This ESTIMATE has been prepared for financial assurance purposes only and shall not be considered a replacement for an actual bid from a licensed contractor. The estimate is intended to be accurate to within +/- 10% of the Total Estimated Cost.

References:

- Avery County Construction and Demolition Landfill Phase III Permit to Construct Application by Richardson Smith Gardner & Associates, Inc. dated February 2009 with revisions through August 2009.

**Avery County CSD Landfill (NC SW Permit No. 06-03)
Engineer's Closure Construction Cost Estimate**

Year	Inflation Factor
2012	1.021
2013	1.018

Item No.	Item Description	Unit	Quantity	Unit Price	Total Price	Comments
Closure Area (Horizontal Plan) ----->						
1.0	Pre-Construction					
1.1	Construction Documents & Bidding	AC	3.75	\$12k + \$500/AC	17,539.50	S+B Estimate
				Pre-Construction Subtotal:	\$ 17,539.50	
2.0	Construction					
2.1	Surveys and Layout	AC	3.75	\$1,559.07	5,846.50	References 1, 2, and 3.
2.2	Mobilization	AC	3.75	\$1,039.38	3,897.67	Inflation Adjusted 2011 Estimate
2.3	Site Preparation (repairs to intermediate cover layer)	AC	3.75	\$519.69	1,948.83	Inflation Adjusted 2011 Estimate
2.4	18" On-site Low Permeability Soil	CY	9,075.00	\$7.90	71,685.90	Inflation Adjusted 2011 Estimate
2.5	18" Vegetative Support Layer	CY	9,075.00	\$5.98	54,236.04	Inflation Adjusted 2011 Estimate
2.6	Landfill Gas Venting System	AC	3.75	\$1,247.25	4,677.20	Inflation Adjusted 2011 Estimate
2.7	Cap Drainage Structures (berms, piping, etc.)	AC	3.75	\$5,196.89	19,488.34	Inflation Adjusted 2011 Estimate
2.8	Erosion & Sediment Control (grading, silt fence, maintenance, etc.)	AC	3.75	\$311.50	3,118.13	Inflation Adjusted 2011 Estimate
2.9	Revegetation	AC	3.75	\$3,118.13	11,693.00	Inflation Adjusted 2011 Estimate
				Construction Subtotal:	\$ 176,591.62	
3.0	Quality Assurance, Certification, & Deed Notation					
3.1	Field Monitoring	AC	3.75	\$1,559.07	5,846.50	Inflation Adjusted 2011 Estimate
3.2	Laboratory Testing	AC	3.75	\$1,039.38	3,897.67	Inflation Adjusted 2011 Estimate
3.3	Surveying and Deed Notation	AC	3.75	\$103.94	389.77	Inflation Adjusted 2011 Estimate
3.4	Engineering Certification	AC	3.75	\$5k + \$250/AC	6,171.31	S+B Estimate
				COA Subtotal:	\$ 16,305.24	
4.0	Miscellaneous Costs to Close					
4.1	Erosion and Stormwater Control (outside landfill footprint)	AC	3.75	\$1,039.38	3,897.67	Inflation Adjusted 2011 Estimate
4.2	Engineering and Reporting	AC	3.75	\$259.84	974.42	Inflation Adjusted 2011 Estimate
				Misc. Costs Subtotal:	\$ 4,872.08	
5.0	Total Closure Costs					
				Construction Estimate ----->	\$ 215,308.45 (2013\$)	
				Cost per Acre ----->	\$ 57,415.59	
				Total Estimate ----->	\$ 215,308.45 (2013\$) (See Note 1)	

Notes:

- All costs are presented in current dollars and should be increased at an inflation rate prescribed by the NCDENR Division of Waste Management per <http://portal.ncdenr.org/web/wm/sw/financialassurance> if additional review is not performed annually.
- This ESTIMATE has been prepared for financial assurance purposes only and shall not be considered a replacement for an actual bid from a licensed contractor. The ESTIMATE is intended to be accurate to within +/- 10% of the Total Estimated Cost.
- The unit price for each line item as adjusted from the submitted 2012 Financial Assurance documents to show the inflation factor.
- Some rounding errors may occur due to multiplying the inflation factors and the acreage.

References:

- Avery County Construction and Demolition Landfill Phase III Permit to Construct Application by Richardson Smith Gardner & Associates, Inc. dated February 2009 with revisions through August 2009.
- Correspondence dated March 17, 2010 regarding approval of the site suitability including lateral expansion of Phase 2 following purchase of the Lechler parcel to Mr. Buddy Norris, Avery County from Mr. Zimith Barbee, NCDENR.

Construction Quality Assurance Report

Closure Event No. 2 Avery County C&D Landfill

Prepared for:

Avery County
Newland, North Carolina



January 2014

Prepared by:

SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577



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Construction Quality Assurance Report

Closure Event No. 2 Avery County C&D Landfill

Prepared For:
Avery County
Newland, NC

S+G Project No. AVERY-13-2



Gregory G. Mills, P.E.
Senior Project Engineer



John R. Fearington, E.I.
Staff Engineer

January 2014

SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

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Closure Event No. 2 Newland, North Carolina

Construction Quality Assurance Report

Table of Contents

		<u>Page</u>
1.0	OVERVIEW	1
2.0	PROJECT DESCRIPTION	1
2.1	General	1
2.2	Reference Documents.....	2
2.3	Design Modifications	2
2.4	Project Participants.....	2
2.4.1	Owner	2
2.4.2	Engineer/CQA Engineer	3
2.4.3	CQA Testing - Earthwork & Construction Monitoring	3
2.4.4	Contractor	3
2.4.5	Surveyor.....	3
3.0	SUMMARY OF CONSTRUCTION ACTIVITIES	4
3.1	Site Preparation.....	4
3.2	Erosion and Sedimentation Control Measures	4
3.3	Earthwork	4
3.4	Gas Vent	4
3.5	Soil Liner.....	5
3.6	Vegetative Soil Layer	5
3.7	Other Construction Activities	5
4.0	CQA PROGRAM	6
4.1	Scope of Services	6
5.0	SOIL LINER CQA	6
6.0	VEGETATIVE SOIL LAYER CQA	7
7.0	RECORD DRAWINGS.....	8
8.0	PROJECT CERTIFICATION	8

TABLES

Table 1	Major Milestones - Closure Event No. 2
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APPENDICES

Appendix A	Reference Documents (Permits)
Appendix B	Photographic Log
Appendix C	Soil Testing
Appendix D	As-Built Survey and Record Drawings
Appendix E.	Correspondence

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1.0 OVERVIEW

This Construction Quality Assurance (CQA) Report has been prepared to document the CQA activities performed during the closure of approximately 0.7 acres of the southern end of Phase 1 (noted as "Closure Event No. 2") at the Avery County C&D Landfill, NC Solid Waste Permit No. 06-03.

The facility is located at 2175 Brushy Creek Road in Ingals, North Carolina approximately 1.8 miles northeast of the intersection of Highway 19 East and Brushy Creek Road or 1.5 miles northeast of the Avery County Airport. The facility is owned and operated by the Avery County Solid Waste Department and operated by Avery County under NC Solid Waste Permit No. 06-03.

2.0 PROJECT DESCRIPTION

2.1 General

The Avery County C&D Landfill facility permit for Phase I includes a total footprint of approximately three (3) acres. This report documents Closure Event No. 2 in accordance with the current permits and supporting documents. Closure Event No. 2 includes the construction of erosion control measures and the final cover consisting of (bottom-up):

- 18-inch thick low-permeability compacted soil liner;
- 18-inch thick vegetative cover soil; and
- Revegetation.

Additional work items associated with the construction included:

- repairs to drop inlet DI-3B; and
- installation of a cut-off trench, made of low-permeable soil; and
- installation of a French drain.

Major milestones associated with Closure Event No. 2 are summarized in **Table A**.

Date	Task
August 21, 2013	Pre-Construction Meeting
September 4, 2013	Erosion & Sedimentation Control Measures Installed
September 27, 2013	Waste Relocation / Soil Liner Subgrade Complete
October 4, 2013	Soil Liner 100% Complete
October 22, 2013	Substantial Completion
November 2013	Final Completion

2.2 Reference Documents

Closure Event No. 2 was constructed in accordance with the following documents. NCDENR approved permits are provided in **Appendix A**.

- Ref. 1. **Construction Documents - Avery County C&D Landfill - Closure Event No. 2**; Includes general and technical specifications, contract addenda prepared by Smith Gardner, Inc. (S+G), July, 2013.
- Ref. 2. **Construction Drawings - Avery County C&D Landfill - Closure Event No. 2**; drawings prepared by S+G, July, 2013.
- Ref. 3. **Construction Quality Assurance Report - Avery County C&D Landfill -Phases I & II Closure Event No. 1**, prepared by Richardson Smith Gardner (RSG), November 18, 2011.
- Ref. 4. **Phase III Permit to Operate - Avery County C&D Landfill Permit No. 06-03** prepared by RSG dated April 1, 2011. Plan approval by NCDENR Division of Waste Management, Solid Waste Section, April 13, 2011
- Ref. 5. **Stormwater Management Plan - Avery County C&D Landfill Permit No. 06-03** prepared by RSG dated September 2008 with revisions through May 2009. Plan approval by NCDENR Division of Land Resources, Land Quality Section, August 19, 2009.

2.3 Design Modifications

During construction, it is typically necessary to make modifications to the design and construction documents to accommodate field conditions, enhance design components, and/or improve constructability based on practical considerations. Two change orders were issued during Closure Event No. 1. Change Order No. 1 modified the landfill gas (LFG) passive vent use in the closure, and Change Order No. 2 modified the cut-off trench included in the bid drawings and added the French Drain.

2.4 Project Participants

The following parties were involved in Closure Event No. 2:

2.4.1 Owner

Avery County Solid Waste Department
175 Linville Street
Newland, NC 28657
Phone: (828) 737-5420
Contact: Buddy Norris, Solid Waste Director

2.4.2 Engineer/CQA Engineer

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

Contacts: Greg Mills, P.E., Project Manager
John Fearrington, Project Engineer

2.4.3 CQA Testing - Earthwork & Construction Monitoring

Froehling & Robertson, Inc. (F&R)
503 Sweeten Creek Industrial Park
Asheville, North Carolina 28803
Phone: (828) 274-0742
Fax: (828) 274-8917

Contacts: William Davidson, P.E., Engineering Manager
Jimmy Bartlett, Field Technician

2.4.4 Contractor

Bryant's Land & Development, Inc. (BLDI)
159 Depot St.
Burnsville, NC 28714
Phone: (828) 678-9966

Contacts: Kenny Goodson, Vice President, Construction Estimator

2.4.5 Surveyor

Ed Holmes and Associates Land Surveyors, PA
200 Ridgefield Ct., Ste. 215
Asheville, NC 28806
Phone: (828) 225-6562
Fax: (828) 225-6579

Contacts: Ed Holmes, P.L.S.

3.0 SUMMARY OF CONSTRUCTION ACTIVITIES

Major elements of the project are discussed below.

3.1 Site Preparation

The final cover construction began in September 2013 with mobilization by BLDI. Initial site work included: surveying, site preparation and cleanup of existing vegetation over the intermediate slopes of Phase I. The site preparation area included approximately 0.7 acres of landfill area.

3.2 Erosion and Sedimentation Control Measures

The construction and sedimentation control measures began in conjunction with site preparation activities. The existing silt fence around the closure area had deteriorated in sunlight, so it was removed and replaced. In four (4) locations, stone and wire outlets were installed in the silt fence along the perimeter of the work area. No other stormwater features were necessary on the final cover.

3.3 Earthwork

The initial phase of the final cover project focused on excavation from the borrow area to obtain necessary soils. General earthwork was minimal on the project as the predominant effort is further classified under **Section 3.4 Soil Liner** and **Section 3.5 Vegetative Soil Layer** of this report. Waste was also removed from the closure area to allow the construction of the full thickness of the closure soils without intruding into any adjacent stream buffers. The contractor placed approximately 1,100 CY of relocated waste in the active disposal area.

3.4 Landfill Gas Collection and Venting

The landfill gas (LFG) vent detail was modified from the original permitted detail. The permit drawings included two LFG vents in Closure area, with each vent having approximately 64 cubic feet of stone (8 feet by 8 feet) in contact with waste for LFG collection, as shown in **Figure 1**. The revision used a collection trench 2 feet wide by 200 feet long (**Figure 2**). The collection trench provides LFG relief with 400 square feet of direct contact with waste, which is more than 3 times the contact area of the original permit detail. The LFG trench is an improved collection method, since the collection stone was not concentrated in a specific location. The vent structure, consisting of a 6-inch diameter PVC (SCH 40) pipe with a turbine vent on top, is the same as the the permitted design. The base of each vent is embedded in a stone collection area 6 feet by 6 feet by 1 foot thick and buried under the cover soil (**Figure 3**).

3.5 Soil Liner

Placement of the soil liner followed site preparation and earthwork activities. The final soil liner—consisting of an 18-inch thick, low-permeability, compacted soil—was installed over the southern portion of Phase I. The soil liner was constructed from on-site borrow soil that was field identified as sandy silt. Note that the laboratory test results showed the material to be fined-grained soil with sand, although the specific Unified Soil Classification System (USCS) identifications for the material varied from sandy silt (SM) to silty sand (SM) to silty-clayey sand (SC-SM). Three (3) hand auger samples were collected to confirm depth of the soil liner. Limits of closure are shown in **Appendix D1**. Survey documentation by Ed Holmes and Associates Land Surveyors, P.A. is included in **Appendix D2**. Construction monitoring and testing of this layer is discussed in **Section 6.0 CQA Program**.

3.6 Vegetative Soil Layer

Vegetative Soil Layer (VSL) placement followed placement of the compacted soil liner. The VSL consisted of an 18-inch thick layer and consisted of clayey, silty sand (SC-SM) and/or sandy silt (SM). Three (3) hand auger samples were collected to confirm depth of the vegetative soil layer. Construction monitoring of this layer is discussed in **Section 6.0 CQA Program**.

3.7 Other Construction Activities

In conjunction with Final Closure Event No. 2 site improvements were made outside the closure limits under the contract. East of the current operating face of Phase III, BLDI constructed a cut-off trench and French drain. These measures were installed to prevent stormwater that infiltrated soil uphill from the landfill and from discharging onto the active disposal area. As shown on the Record Drawings in **Appendix D** (Sheet 4, Drawing X1) the cut off trench was installed over a length of 160 feet, east of the drop inlet (DI-3B) and culverts (C-3A and C-3B) that were installed during the construction of Phase III, Cell 1 (2010, Ref. 4). The cutoff trench was constructed by excavating below the known elevation of C-3A and C-3B, as well as below DI-3B. Water was observed at approximately Station 0+60. The trench was extended to approximately 2 feet lower than the elevation where water was observed. No other water was observed during the trench excavation. The excavated soil was replaced with the low-permeable soil from the same source that was used for the final cover clay liner.

At the north (upslope) end of the cut off trench, the excavation was extended to approximately 10 feet deep for a length of 40 feet to see if water was infiltrating from other areas. No water was observed. The 40-feet of exploratory excavation was backfilled with the excavated soil, rather than using the material from the clay liner borrow source. It should be noted that the soil used to backfill the exploratory trench was field identified as sandy silt, but no laboratory tests were required or performed.

In addition to the cut-off trench, a French drain, consisting of 4-inch diameter perforated pipe, NCDOT No. 57 stone, and a filter geotextile, was installed approximately 10 feet east of the cutoff trench. The French drain was approximately 2 feet wide, the width of the excavator bucket used by BLDI. Approximately 110 feet of the upslope length of the French Drain (from STA 0+00 to STA 1+10) was constructed with stone placed 3 feet thick by 2 feet wide. The downhill segment from approximately STA 1+10 to STA 2+00 was constructed with stone at 1 foot thick by 2 feet wide. The thicker segment of the French drain was constructed near the location where seepage was observed. The 1-foot thick segment creates a discharge path for water potentially collected by the French drain.

BLDI also made repairs to the existing drop inlet DI-3B, which is a 4 foot by 4 foot precast concrete box approximately 8 feet deep. The bottom of the box is solid. The top is solid with weir-style inlets on 4 sides. A round access hole is on top of the box. During an inspection of the existing drop inlet structure, cracks were apparent in the grout at the junction of the upstream culvert C-3A and DI-3B. Because the drop inlet is less than 20 feet uphill from the limit of disposal, the repairs were made to prevent stormwater from getting out of DI-3B and creating leachate in the nearby waste. The existing drop inlet was removed, and additional foundation stone was placed to prevent future settlement. A new lower section of the drop inlet was installed and Culverts C-3A and C-3B were grouted. The upper section and lid of the drop inlet were re-used.

4.0 CQA PROGRAM

4.1 Scope of Services

In satisfying the requirements of the project specifications for the closure project, the following activities were performed:

- Observation and documentation of construction of the compacted soil liner and the vegetative soil layer (VSL).
- Field and/or laboratory testing of soil liner and VSL.
- 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 SOIL LINER CQA

The criteria for construction of soil liner per the project specifications included the following:

Materials:	Clean soil type as required to achieve the hydraulic conductivity;
Clod Size:	Max. ¾ inch;
Gradation:	Max. = ½ inch (finished soil liner surface) and Max. = 1½

	inches (below finished soil liner surface);
Lift Thickness:	6-inch max. (compacted);
Density:	Minimum 95% Maximum Standard Proctor Dry Density (ASTM D 698) (or as required to achieve conductivity);
Moisture Content:	≥ optimum moisture content (ASTM D 698);
Hydraulic Conductivity:	≤ 1 x 10 ⁻⁵ cm/sec; and
Thickness:	18 inches min.

S+G reviewed and approved the soil liner system testing results provided by F&R Engineering, Inc. During the pre-construction meeting, S+G and BLDI discussed the difficulty achieving 95% compaction on 3H:1V side slopes over low density waste. The CQA Manual requires the soil liner to be compacted to 95% of the standard Proctor maximum dry density (MDD), or as otherwise determined to achieve the hydraulic conductivity criteria. S+G said that density of 92% of MDD would be accepted, provided that the required permeability is achieved. Based on experience gained during Closure Event No. 1, the soil liner material would be able to meet the hydraulic conductivity criteria at 92% MDD, if the lifts were compacted with sufficient moisture. All in-place density results met or exceeded the compaction requirement of 92% of MDD. All laboratory results for hydraulic conductivity were below the maximum allowable value. The number and results of material control and record tests performed on the soil liner are summarized in **Appendix C**. Note that the number of tests required was based on an approximate quantity of 1,700 CY of material placed (in-place measure).

Other tests performed on an on-going basis during construction included a visual classification of soils (ASTM D 2488) and monitoring of clod size and loose lift thickness. The results of field and laboratory testing of the soil liner can be found in **Appendix C**.

6.0 VEGETATIVE SOIL LAYER CQA

The criteria for construction of vegetative soil layer (VSL) per the project specifications included the following:

Materials:	MH, ML, SC, or CL (ASTM D2487);
Gradation:	Max. = 3 inch; and
Thickness:	18 inches min.

The VSL material was taken from the same borrow source used for Closure Event No. 1 (2011). Approximately 6,400 CY of VSL material was used in Closure Event No. 1, and approximately 1,700 CY in Closure Event No. 2. The CQA manual requires particle size testing of the VSL at a frequency of 1 test per 5,000 CY of material. The two (2) tests particle size tests performed in 2011 are sufficient to identify 10,000 CY of VSL material; therefore, no additional gradation tests were performed. Visual classification of soils (ASTM D 2488) was conducted to confirm that the

VSL material classification. The results of laboratory testing of VSL are copied from Ref. 2, and can be found in **Appendix C** for reference.

The resulting soil classification for the VSL material is SC-SM. SC-SM is a clayey, silty sand that is not listed above. However, the material is native to the site and has successfully established vegetation in the past and is not believed to create veneer stability problems within the cover system.

7.0 RECORD DRAWINGS

After completion of construction, an as-built survey was conducted by Ed Holmes and Associates Land Surveyors, PA (**Appendix D**). Record Drawings with the details used in the construction are also included in **Appendix D**.

8.0 PROJECT CERTIFICATION

Based on the observations and results of the CQA program documented herein, it is our professional opinion that the construction of Phase I Closure Event No. 2 of the Avery County C&D Landfill was completed in accordance with the following:

- i. The Project CQA Manual;
- ii. The conditions of the Permit to Construct Phase 3;
- iii. The requirements of 15A NCAC 13B.1624; and
- iv. Acceptable engineering practices.

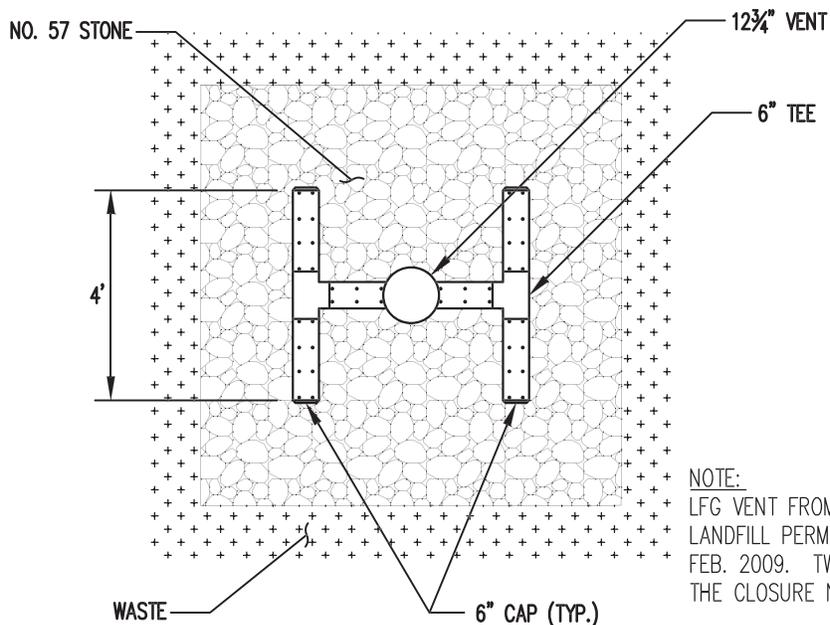
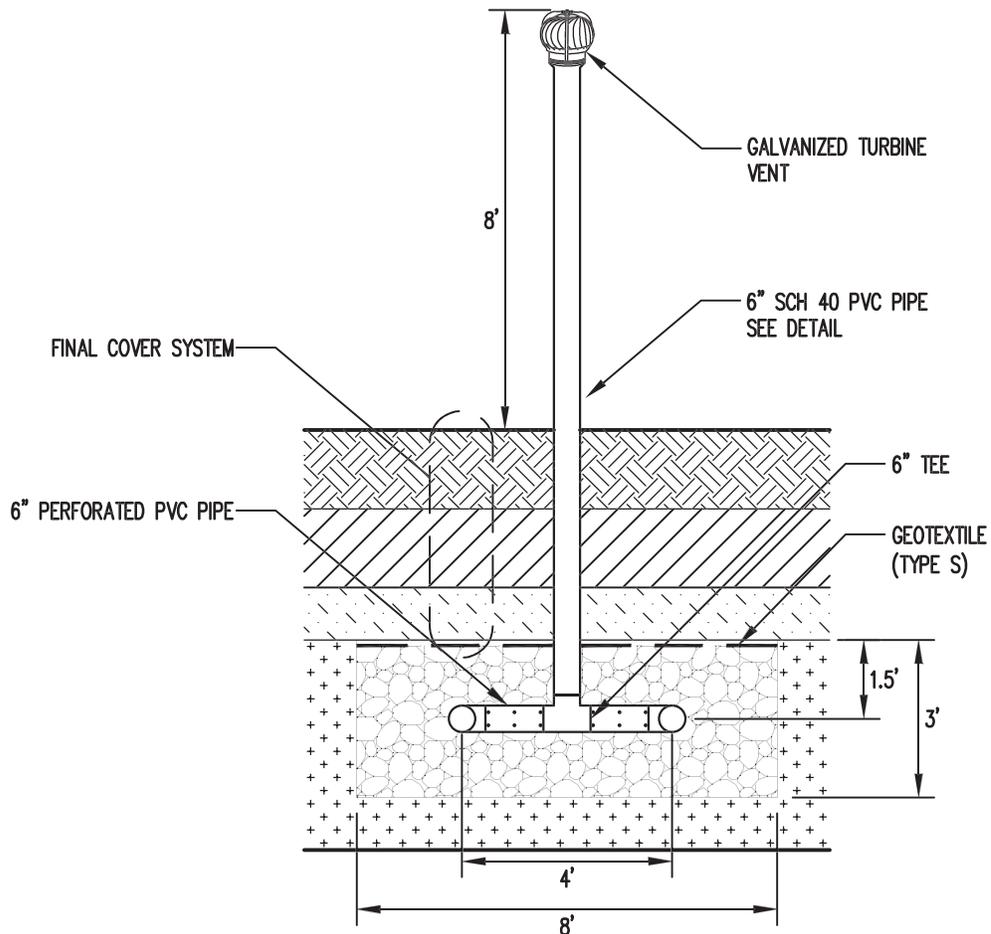
SMITH GARDNER, INC.



Gregory G. Mills, P.E.
Senior Project Engineer



John R. Fearrington, E.I.
Staff Engineer



NOTE:
 LFG VENT FROM THE AVERY COUNTY C&D
 LANDFILL PERMIT TO CONSTRUCT APPLICATION,
 FEB. 2009. TWO VENTS WERE PROPOSED FOR
 THE CLOSURE NUMBER 2 AREA.

PREPARED FOR:

**AVERY COUNTY C&D LANDFILL
 DESIGN GAS VENT
 FROM PHASE III APPLICATION
 FEBRUARY 2009**

PREPARED BY:

NC LIC. NO. C-0828 [ENGINEERING]

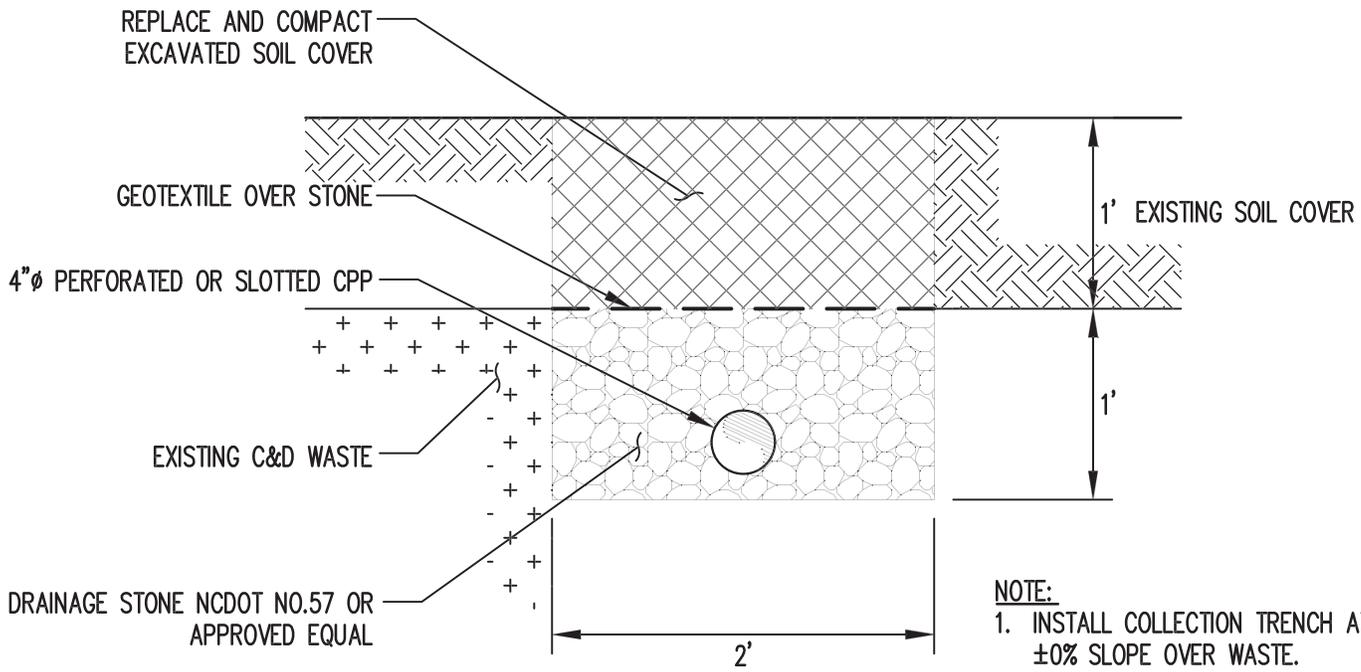
SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

DRAWN: J.A.L.	APPROVED: G.G.M.	SCALE: NOT TO SCALE	DATE: Jan 2014	PROJECT NO.: AVERY 13-2	FIGURE NO.: 1	FILE NAME: AVERY-A0224
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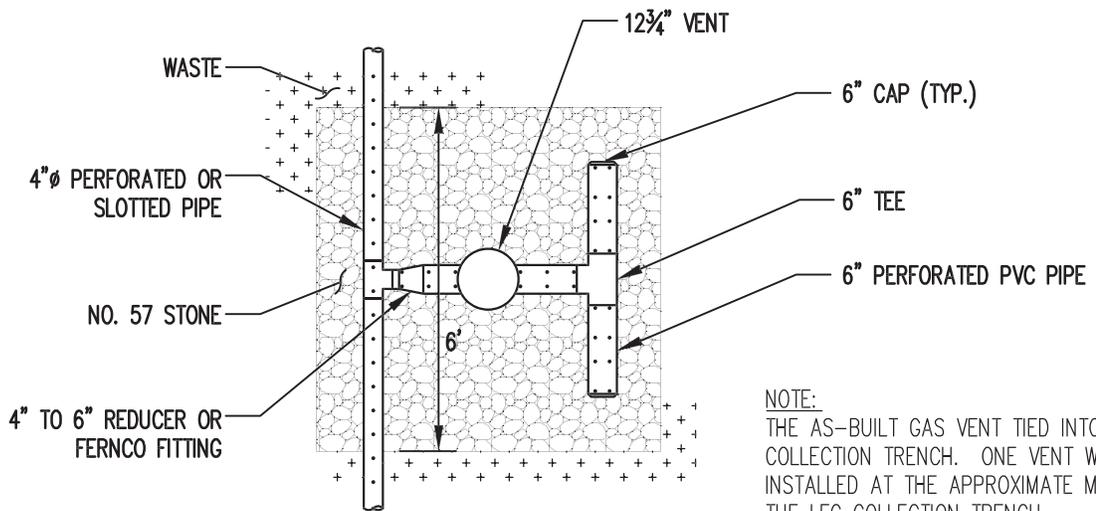
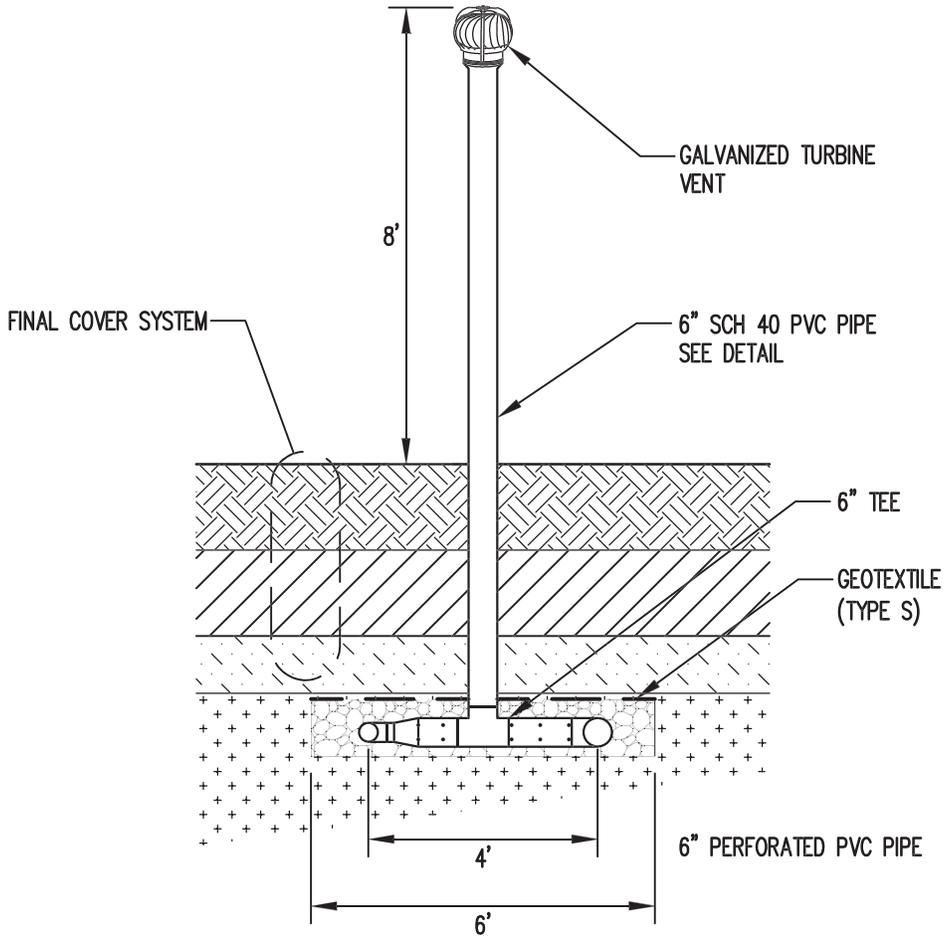
NOTE:
 1. INSTALL COLLECTION TRENCH AT ±0% SLOPE OVER WASTE.

NOTE:
 THE 200-FOOT LONG LFG COLLECTION TRENCH WAS USED IN CONSTRUCTION BECAUSE IT INCREASED THE CONTACT AREA WITH WASTE.

PREPARED FOR:
**AVERY COUNTY C&D LANDFILL
 AS-BUILT LFG COLLECTION TRENCH
 CLOSURE EVENT NO. 2**

PREPARED BY: _____ NC LIC. NO. C-0828 [ENGINEERING]
SMITH+GARDNER
 14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

DRAWN: J.A.L.	APPROVED: G.G.M.	SCALE: NOT TO SCALE	DATE: Jan 2014	PROJECT NO.: AVERY 13-2	FIGURE NO.: 2	FILE NAME: AVERY-A0224
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NOTE:
 THE AS-BUILT GAS VENT TIED INTO THE LFG COLLECTION TRENCH. ONE VENT WAS INSTALLED AT THE APPROXIMATE MIDPOINT OF THE LFG COLLECTION TRENCH.

PREPARED FOR:

**AVERY COUNTY C&D LANDFILL
 AS-BUILT GAS VENT
 CLOSURE EVENT NO. 2**

PREPARED BY:

NC LIC. NO. C-0828 [ENGINEERING]

SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

DRAWN:

J.A.L.

APPROVED:

G.G.M.

SCALE:

NOT TO SCALE

DATE:

Jan 2014

PROJECT NO.:

AVERY 13-2

FIGURE NO.:

3

FILE NAME:

AVERY-A0224

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Appendix A

Reference Documents (Permits)

**Construction Quality Assurance Report
Closure Event No. 2
Avery County C&D Landfill**

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North Carolina Department of Environment and Natural Resources

Division of Waste Management

Beverly Eaves Perdue
Governor

Dexter R. Matthews
Director

Dee Freeman
Secretary

May 5, 2011

Mr. Buddy Norris
Avery County – Solid Waste Director
PO Box 640
Newland, North Carolina 28657

Subject: Facility Property Correction
Avery County C&D Landfill
Avery County, Permit #06-03, Document ID No. 13772

Mr. Norris:

This letter is being issued to correct an omission regarding the properties approved for the Avery County C&D landfill facility listed in the most recent Permit to Operate (DIN 13546) issued on April 13, 2011. The Permit only listed one of the properties incorporated within the facility boundary. The following table amends the properties approved for the Avery County C&D landfill facility using data from the Avery County GIS website accessed May 2011:

Avery County, N.C. Register of Deeds				
Book	Page	Acreage	Grantee	Parcel No.
266	646	±78.12	Avery County	182100088310
440	2195	±1.27	Avery County	182100174202
Total Site Acreage: ±79.4 acres				

The property information will be added to the Permit to Operate during the next permitting activity for this facility. This letter should be maintained on site and added to the operating record for the facility.

If you should have any other questions regarding this matter please contact me at (828) 296-4703, or by email at allen.gaither@ncdenr.gov.

Sincerely,

Allen Gaither
Environmental Engineer

Cc: Mr. Stacey Smith – Richardson, Smith, Gardner & Associates
Mr. Bill Wagner – SWS/ARO

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Facility Permit No: 06-03
Permit to Construct and Operate
Construction & Demolition Debris Landfill
Transfer Station
Avery County
April 13, 2011
Doc ID: 13546
Page 1 of 13

North Carolina Department of Environment and Natural Resources
Division of Waste Management

Beverly Eaves Perdue
Governor

Dexter R. Matthews
Director

Dee Freeman
Secretary

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

SOLID WASTE MANAGEMENT FACILITY
Permit No. 06-03

AVERY COUNTY
is hereby issued a

PERMIT TO OPERATE
CONSTRUCTION & DEMOLITION DEBRIS LANDFILL PHASE 3
AND TRANSFER FACILITY

Located at 2175 Brushy Creek Road, Spruce Pine, North Carolina in Avery County, 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 legal description of the site is identified on the deeds recorded for this property listed in Attachment No. 1 of this permit.

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

ATTACHMENT 1

PART I: PERMITTING HISTORY

1. On October 25, 1996 a Permit to Construct/Operate was issued for a Construction and Demolition Debris landfill.
2. On October 16, 2009 an amendment was made to the permit for construction of Phase 3 and continued operation of Phases 1 and 2 for waste mitigation and relocation purposes.
3. On August 12, 2010 a modification was made to the permit for operation of Phase 3.
4. On April 13, 2011 an amendment was made to the permit for the addition and operation of the Transfer Facility.

Permit Type	Date Issued	DIN
Original Permit to Construct/Operate	October 25, 1996	
Permit Amendment	October 16, 2009	8705
Permit Modification	August 12, 2010	11315
Permit Modification	April 13, 2011	13546

PART II: LIST OF DOCUMENTS FOR THE APPROVED PLAN

NO.	DOCUMENT DESCRIPTION	DOCUMENT ID NO.
1.	<i>Trout Stream Buffer Variance Request and 401/404 Nationwide Permit No. 39 Application, Avery County C&D Landfill Expansion.</i> Prepared by: Richardson, Smith, Gardner & Associates. Prepared for: Avery County. September 2008.	5911
2.	<i>Transition Application, Avery County Landfill.</i> Prepared by: Richardson, Smith, Gardner & Associates. Prepared for: Avery County. October 23, 2008.	6095
3.	<i>Waste Relocation and Mitigation Plan, Avery County C&D Landfill.</i> Prepared by: Richardson, Smith, Gardner & Associates. Prepared for: Avery County. October 2008.	6097
4.	<i>Response to Comments-Transition Application.</i> Prepared by: Richardson, Smith, Gardner & Associates. Prepared for: Avery County. January 9, 2009.	6625
5.	<i>Permit To Construct Application, Phase III, Avery County C&D Landfill.</i> Prepared by: Richardson, Smith, Gardner & Associates. Prepared for: Avery County. February 2009.	6894
6.	<i>Letter of Approval with Modifications, Avery County C&D Landfill-Stormwater Management Plan.</i> Prepared by: Starr Silvis. Prepared for: Division of Land Resources, Land Quality Section. June 9, 2009.	7943

7.	<i>Response to Engineering Technical Review, Permit To Construct, Construction and Demolition Landfill Phase III.</i> Prepared by: Richardson, Smith, Gardner & Associates. Prepared for: Avery County. August 7, 2009.	8220
8.	<i>Stormwater Management Plan Modification, Permit To Construct, Avery County C&D Landfill Expansion.</i> Prepared by: Richardson, Smith, Gardner & Associates. Prepared for: Avery County. August 31, 2009.	8557
9.	<i>Operations Manual.</i> Prepared by: Richardson, Smith, Gardner & Associates. Prepared for: Avery County. February 2009.	11333
10.	<i>Operating Permit Renewal-Response to Comments (revised Operations Manual).</i> Prepared by: Richardson, Smith, Gardner & Associates. Prepared for: Avery County. April 1, 2011	13455

PART III: PROPERTIES APPROVED FOR THE SOLID WASTE FACILITY

Avery County, N.C. Register of Deeds				
Book	Page	Acreage	Grantee	Parcel No.
266	646	±78.12	Avery County	182100088310
Total Site Acreage: ±78.12 acres				

Notes:

1. Deed book references are from the Avery County Register of Deeds office GIS website (<http://arcims.webgis.net/nc/avery/default.asp>) accessed September, 2009.

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 must be implemented in accordance with Attachment 2 of this permit. The Permit to Operate 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. (Intentionally blank)
4. When this property is sold, leased, conveyed, or transferred in any manner, the deed or other instrument of transfer shall contain in the 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 a reference by book and page to the recordation of the permit.

5. By initiating 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.
7. This permit is issued based on the documents submitted in support of the application for permitting the facility including those 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 must 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 a General or Individual NPDES Stormwater Discharge Permit. 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

PART I: GENERAL FACILITY CONDITIONS

Not Applicable

PART II: MUNICIPAL SOLID WASTE LANDFILL UNIT SPECIFIC CONDITIONS

Not Applicable

PART III: CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL UNIT SPECIFIC CONDITIONS

Not Applicable

PART IV: LAND CLEARING AND INERT DEBRIS LANDFILL UNIT SPECIFIC CONDITIONS

Not Applicable

PART V: MISCELLANEOUS SOLID WASTE MANAGEMENT SPECIFIC CONDITIONS

Not Applicable

ATTACHMENT 3
CONDITIONS OF PERMIT TO OPERATE

PART I: GENERAL FACILITY CONDITIONS

1. The Permit to Operate shall expire **April 13, 2016**. Pursuant to 15A NCAC 13B .0201(g), no later than **October 13, 2015**, the owner or operator must submit a permit amendment application prepared in accordance with 15A NCAC 13B.0535(b) to the Section for review.
2. All sedimentation and erosion control activities must be conducted in accordance with the Sedimentation Control Act N.C.G.S. 113A-50, et seq., and rules promulgated under 15A NCAC 4.
3. The edge of the waste footprint for all disposal units must be identified and maintained with permanent physical markers.
4. The permittee must not knowingly dispose of any type or form of municipal solid waste that is generated within the boundaries of a unit of local government that by ordinance:
 - a. Prohibits generators or collectors of municipal solid waste from disposing of that type or form of municipal solid waste.
 - b. Requires generators or collectors of municipal solid waste to recycle that type or form of municipal solid waste.
5. 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.
6. Financial assurance as required by NCGS 130A-295.2 must be continuously maintained for the duration of the facility in accordance with applicable rules and statutes. Closure and Post-Closure cost estimates and financial instruments must be updated annually pursuant to 15A NCAC 13B.0543.
7. Closure or partial closure of any CDLF unit must be in accordance with the Closure Plans described in the approved plans and 15A NCAC 13B.0543. Any revisions to the Closure Plans must be submitted to the Division at least 90 days prior to implementation for approval.

Operational Requirements

8. This facility is permitted to receive solid waste generated within the following counties:
North Carolina – Avery, Burke, Caldwell, McDowell, Mitchell, Watauga;
Tennessee – Carter, Johnson, Unicoi;

consistent with the local government waste management plan and with local government approval except where prohibited by the N. C. General Statutes Article 9 of Chapter 130A, and the rules adopted by the Commission for Health Services. Proposed changes to the service area must be approved by the Section and will constitute a permit modification and be subject to the applicable permitting fee.

9. The facility operator must complete an approved operator training course in compliance with G.S. 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 landfill units in accordance with G.S. 130A-309.25 and addressed by memorandum dated November 29, 2000.
10. The use of different alternative daily cover requires approval, prior to implementation, by the Solid Waste Section. Requests for alternative daily cover approval must include a plan detailing the comprehensive use and a demonstration of the effectiveness of the alternative daily cover. The plan must be developed according to Section guidelines. Plans which are approved by the Section will be incorporated into, and made a part of, the approved documents listed in Attachment 1.
11. The facility must maintain records for all solid waste materials accepted as alternative cover material and used as alternate daily 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 Solid Waste Section upon request.

Monitoring and Reporting Requirements

12. Groundwater, surface water, and landfill gas monitoring locations must be established and monitored as identified in the approved plans.
13. A licensed geologist must be present to supervise installation of groundwater and landfill gas monitoring wells and probes. The location, screen interval, spacing, diameter, depth, seal, cap, clustering and nesting, and other criteria for the wells must be established after consultation with the SWS Hydrogeologist at the time of well installation.
14. Ground water monitoring wells and surface water sampling locations must be sampled for Appendix I constituents at least semi-annually according to the specifications outlined in the approved water quality monitoring plan and the current policies and guidelines of the Section in effect at the time of sampling.

15. Landfill gas monitoring wells must be sampled for explosive gases at least quarterly and according to specifications outlined in 15A NCAC 13B .544(d), entitled "Gas Control Plan", and current policies and guidelines of the Section in effect at the time of sampling.
16. Reports of the analytical data for each monitoring event must be submitted to the Section within 120 days of the respective sampling event. Analytical data must be submitted in a manner prescribed by the Section. Records of all groundwater, surface water, landfill gas, and leachate analytical data must be kept as part of the permanent facility record.
17. A readily accessible unobstructed path must be cleared and maintained so that four-wheel vehicles may access monitoring well locations at all times.
18. A field log book which details all development, sampling, repair, and all other pertinent activities associated with each monitoring well and all sampling activities associated with each groundwater, surface water, landfill gas, and leachate sampling location must be kept as part of the permanent facility record.
19. All well construction records and soil boring logs for new wells and probes must be submitted to the Solid Waste Section Hydrogeologist for review within 30 days of completion.
20. The owner or operator must maintain a record of the amount of solid waste received at the landfill unit, compiled on a monthly basis. Scales must be used to weigh the amount of waste received.
21. On or before August 1 annually, the Permittee must submit an annual facility report to the Solid Waste 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 and landfilled 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 October 8, 1993 through the date of the annual volume survey must be included in the report.

- e. The completed report must be forwarded to the Regional Waste Management Specialist for the facility by the date due on the prescribed annual facility report form.
- f. A copy of the completed report must be forwarded to each county manager for each county from which waste was received at the facility. Documentation that a copy of the report has been forwarded to the county managers must be sent to the Regional Waste Management Specialist by the date due on the prescribed annual facility report form

PART II: MUNICIPAL SOLID WASTE LANDFILL UNIT SPECIFIC CONDITIONS

Not Applicable

PART III: CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL UNIT SPECIFIC CONDITIONS

- 22. This permit approves the operation of Phase 3, as well as the onsite environmental management and protection facilities as described in the approved plans.
- 23. This permit is for operational approval of a remaining gross capacity of 96,000 cubic yards. The facility is approved for an average annual disposal rate of approximately 10,000 tons per year (approximately 40 tons per day based on 260 operating days per year) as set forth in Attachment 1, Part II: "List of Documents for the Approved Plan". The maximum variance should be in accordance with GS 130A-294(b1)(1) and consistent with local government approval.
- 24. The following table lists the details for the landfill units. Gross capacity is defined as the volume of the landfill calculated from the elevation of the initial waste placement through the top of the final cover, including any periodic cover.

MSW Unit	Acres	Gross capacity (cubic yards)	Status
Phase 1	2.95	39,750	Closed
Phase 2	2.06	65,500	Closed
Phase 3, Cell 1	0.84	49,000	Operational
Phase 3, Cell 2	0.36	47,000	Operational
Phase 3, Cell 3	0.90	27,200	Future
Total	7.11	228,450	

Note: Phase 3, Cell 3 has not been constructed.

- 25. The following, at a minimum, must not be accepted for disposal at the facility: hazardous waste, yard trash, liquid wastes, regulated medical waste, sharps not properly packaged,

PCB waste as defined in 40 CFR 761, and wastes banned from disposal in North Carolina by G.S. 130A-309.10(f).

26. The C&D landfill units are 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).

PART IV: LAND CLEARING AND INERT DEBRIS LANDFILL UNIT SPECIFIC CONDITIONS

Not Applicable

PART V: MISCELLANEOUS SOLID WASTE MANAGEMENT SPECIFIC CONDITIONS

General Conditions

27. Wastes received and product stored shall be maintained in reasonably sized piles with adequate fire breaks and lanes in accordance with the approved operational plans and the pertinent rules.
28. 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 shall be contained on-site or properly treated prior to discharge.
29. 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.
30. 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.
31. Effective vector control measures shall be applied as necessary to control flies, rodents, insects, or vermin.

Operational Conditions – Transfer Facility

32. The facility is permitted to receive solid waste as defined in NCGS 130A -290 (35).

33. The facility must meet the requirements of 15A NCAC 13B.0105. In addition, the following, at a minimum, must not be accepted at the facility; hazardous waste, liquid wastes, regulated medical waste, sharps not properly packaged, regulated-asbestos containing material as defined in 40 CFR 61, PCB waste as defined in 40 CFR 761.
34. The facility must transport waste to one of the following facilities for disposal:
 - a. Bristol Integrated Waste management Facility, Bristol, VA – Permit No. 588,
 - b. Iris Glen Environmental Center, Johnson City, TN – Permit No. SNL-901040262,
 - c. Caldwell County Foothills Landfill, Lenoir, NC – Permit No. 14-03 (*NC originated wastes only*).

Proposed changes to the disposal facility must be approved by the Section and will constitute a permit modification and be subject to the applicable permitting fee.
35. A responsible individual trained and certified in facility operations must be on-site at all times during all operating hours of the facility, in accordance with G.S. 130A-309.25.
36. The permittee must develop, and use, a training and screening program at the facility for detecting and preventing unauthorized wastes from being accepted at the facility. At a minimum, the program must include:
 - a. Random inspections of incoming loads or other comparable procedures.
 - b. Records of all inspections.
 - c. Training of personnel to recognize hazardous, liquid and other excluded waste types.
37. The facility must not cause nuisance conditions.
 - a. The tipping floor and transfer trailer loading area must be maintained in a clean, sanitary condition at all times and must be cleaned at least daily in accordance with the approved Operational Plan.
 - b. Waste must only be deposited on a “tipping floor” or directly into a transfer container. Waste must not be stored on the “tipping floor” after operating hours.
 - c. Waste may be stored on-site, in leak proof transfer trailers, with watertight covers, a maximum of 24 hours except that a minimal amount of waste may be stored for a maximum of 72 hours when the facility is closed during a weekend or holiday. Storage of the waste must not cause any nuisance, such as odor or attraction of vectors.
 - d. Effective vector control measures must be applied at all times to control any potential vectors including flies, rodents, insects, and other vermin.
 - e. Control measures must be utilized to minimize and eliminate visible dust emissions and blowing litter.

- i) Fugitive dust emissions are prohibited.
 - ii) Windblown materials must be collected by the end of the day and no windblown material may be allowed to leave the facility boundary.
38. All water that comes in contact with solid waste, including vehicle wash-down water, is leachate and must be captured and properly treated before release to the environment.
- a. The leachate control system, such as floor drains, leachate collection devices, sanitary sewer connections and leachate storage tanks, must be operational during facility operations.
 - b. The tipping floor must drain away from the building entrance and into the leachate collection system.
39. The permittee must maintain a record of the amount of solid waste received at the facility, including daily records of waste received and origins of the loads. Scales must be used to weigh the amount of waste received. The daily records are to be summarized into a monthly report for use in the required annual reports.
40. On or before August 1 annually, the Permittee must submit an annual facility report to the Solid Waste 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 receiving disposal facility.
 - v) By diversion to alternative management facilities.
 - c. The completed report must be forwarded to the Regional Environmental Specialist for the facility by the date due on the prescribed annual facility report form.
 - d. 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 Specialist by the date due on the prescribed annual facility report form.

Operational Conditions – White Goods

41. The facility is permitted to receive white goods as defined in North Carolina General Statute Article 9, Chapter 130A-290(44).

42. The facility must manage white goods according to the Operation Plan included in Attachment 1, Part II "List of Documents for the Approved Plan". This document is included in the approved plan. Any revisions to the approved plan shall be approved by the North Carolina Division of Waste Management (DWM), Solid Waste Section, prior to implementation.
43. White goods collection areas shall provide for the proper removal of chlorofluorocarbon refrigerants.

Operational Conditions – Scrap Tires

44. The facility is permitted to receive tires and scrap tires as defined in North Carolina General Statute Article 9, Chapter 130A-309.53(6) & (7).
45. Scrap tire collection areas shall be operated in accordance with the requirements of 15A NCAC 13B.1107.
46. The facility must manage tires according to the Operation Plan included in Attachment 1, Part II, "List of Documents for the Approved Plan". This document is included in the approved plan. Any revisions to the approved plan shall be approved by the North Carolina Division of Waste Management (DWM), Solid Waste Section, prior to implementation.

- *End of Permit Conditions* -

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Facility Permit No: 06-03
Permit to Construct and Operate
Construction & Demolition Debris Landfill
Avery County
October 16, 2009
Doc ID: 8705
Page 1 of 12

North Carolina Department of Environment and Natural Resources

Division of Waste Management

Beverly Eaves Perdue
Governor

Dexter R. Matthews
Director

Dee Freeman
Secretary

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

SOLID WASTE MANAGEMENT LANDFILL FACILITY
Permit No. 06-03

AVERY COUNTY
is hereby issued a

PERMIT TO OPERATE
CONSTRUCTION & DEMOLITION DEBRIS LANDFILL PHASES 1 AND 2
PERMIT TO CONSTRUCT
CONSTRUCTION & DEMOLITION DEBRIS LANDFILL PHASE 3

Located at 2175 Brushy Creek Road, Spruce Pine, North Carolina in Avery County, 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 legal description of the site is identified on the deeds recorded for this property listed in Attachment No. 1 of this permit.

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

ATTACHMENT 1

PART I: PERMITTING HISTORY

1. On October 25, 1996 a Permit to Construct/Operate was issued for a Construction and Demolition Debris landfill.
2. On October 16, 2009 an amendment was made to the permit for construction of Phase 3 and continued operation of Phases 1 and 2 for waste mitigation and relocation purposes.

Permit Type	Date Issued	DIN
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Permit Amendment	October 16, 2009	8705

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NO.	DOCUMENT DESCRIPTION	DOCUMENT ID NO.
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7.	<i>Response to Engineering Technical Review, Permit To Construct, Construction and Demolition Landfill Phase III.</i> Prepared by: Richardson, Smith, Gardner & Associates. Prepared for: Avery County. August 7, 2009.	8220

8.	<i>Stormwater Management Plan Modification, Permit To Construct, Avery County C&D Landfill Expansion.</i> Prepared by: Richardson, Smith, Gardner & Associates. Prepared for: Avery County. August 31, 2009.	8557
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PART III: PROPERTIES APPROVED FOR THE SOLID WASTE FACILITY

Avery County, N.C. Register of Deeds				
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Total Site Acreage: ±78.12 acres				

Notes:

1. Deed book references are from the Avery County Register of Deeds office GIS website (<http://arcims.webgis.net/nc/avery/default.asp>) accessed September, 2009.

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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 must be implemented in accordance with Attachment 2 of this permit. The Permit to Operate 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. (Intentionally blank)
4. When this property is sold, leased, conveyed, or transferred in any manner, the deed or other instrument of transfer shall contain in the 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 a reference by book and page to the recordation of the permit.
5. By initiating 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.
7. This permit is issued based on the documents submitted in support of the application for permitting the facility including those 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 must 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 a General or Individual NPDES Stormwater Discharge Permit. 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

PART I: GENERAL FACILITY CONDITIONS

1. The issuance date of the Permit to Construct is October 16, 2009. The initial, substantial, construction authorized by this Permit to Construct must commence within 18 months from the issuance date of this permit. If substantial construction does not begin within 18 months from the issuance date of this permit, then the permit to construct shall expire. 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.
2. Construction of all solid waste management units within this facility must be in accordance with the pertinent approved plans and only for those phases of development approved for construction as described in Attachment I, Part II List of Documents for the Approved Plan.
3. The permittee must conduct a preconstruction meeting at the facility prior to initiating construction of any unit/cell and must notify the Section at least 10 days prior to the meeting.
4. Modifications or revisions of the approved documents or changes during construction of any landfill unit/cell require approval by the Section, and may constitute a permit modification and be subject to a permitting fee.

Geologic, Groundwater, Surface water, Landfill Gas, and Monitoring Requirements

5. (Intentionally blank)
6. Prior to construction of the phase or cell(s) within the phase, all piezometers, borings, probes, landfill gas monitoring wells, and groundwater monitoring wells within the footprint must be properly abandoned in accordance with 15A NCAC 2C.0113(b), entitled "Abandonment of Wells."
7. In areas where soil is to be undercut, abandoned piezometers, 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.
8. 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), subsurface soil condition, and effect of the geological feature(s) on the design, construction, and operation of the cell, phase, or unit.

9. A Licensed Geologist must supervise installation of groundwater monitoring wells, landfill gas monitoring wells and probes, and surface water sampling stations.
10. Any modification to the approved water quality and landfill gas monitoring, sampling, and analysis plans must be submitted to the Section Hydrogeologist for review.
11. Within 30 days of completed construction of any new groundwater and/or landfill gas monitoring well, a well construction record (GW-1 form), typical well schematic, boring log, field log and notes, and description of well development activities must be submitted to the Section.
12. The permittee must provide a legible plan sheet-sized, scaled topographical map with a legend, showing the location and identification of all new, existing, and abandoned wells, probes, and piezometers after installation of groundwater and landfill gas monitoring wells.
13. Within thirty (30) days of the completed permanent abandonment of a groundwater or landfill gas monitoring well, the well abandonment record (GW-30 form) and any additional information included in the abandonment record) must be submitted to the Section. The well abandonment records must be submitted to the Solid Waste Section in accordance with 15A NCAC 2C .0114(b) and be certified by a Licensed Geologist.

Erosion and Sedimentation Control Requirements

14. 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.
15. All earth disturbing activities must be conducted in accordance with the Sedimentation Pollution Control Act of 1973 (15 NCAC 4) and consistent with any other local, state or federal requirements.
16. 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.
17. Modifications to the approved sedimentation and erosion control activities require approval by the North Carolina Land Quality Section. The Section must be notified of any sedimentation and erosion control plan modifications.

PART II: MUNICIPAL SOLID WASTE LANDFILL UNIT SPECIFIC CONDITIONS

Not Applicable

PART III: CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL UNIT SPECIFIC CONDITIONS

18. Pursuant to the NC Solid Waste Management Rules (Rule) 15A NCAC 13B .0201(c) and (d)(1), this permit approves construction for Phase 3 consisting of approximately 2.1 acres with a calculated gross capacity of approximately 129,000 cubic yards.
19. Pursuant to the NC Solid Waste Management Rule (Rule) 15A NCAC 13B .542(i)(2) burning of land-clearing debris generated on site as a result of construction activities requires approval by the Section prior to initiating the burn. In addition, the Division of Air Quality and local fire department must approve the activity prior to burning.
20. The following conditions must be met prior to operation of the Phase 3:
 - a. The Permittee must obtain a Permit to Operate for Phase 3 from the Section in accordance with 15A NCAC 13B .0201(d).
 - b. Construction Quality Assurance (CQA) documentation as well as a certification by the project engineer that the landfill was built in accordance with approved plans and the conditions of the permit must be submitted to the Section for review and approval.
 - c. The Permittee must contact the appropriate regional environmental specialist and permitting engineer to determine whether the Section chooses to hold a pre-operative meeting with key landfill personnel and representatives of the Section.
 - d. The edge of the waste footprint must be identified with permanent physical markers.
 - e. A permit activity fee (Modification) must be paid prior to receiving the Permit to Operate for Phase 3.
 - f. The Financial Assurance instrument for approved Closure and Post-closure Care costs must be submitted to the Section.

PART IV: LAND CLEARING AND INERT DEBRIS LANDFILL UNIT SPECIFIC CONDITIONS

Not Applicable

PART V: MISCELLANEOUS SOLID WASTE MANAGEMENT SPECIFIC CONDITIONS

Not Applicable

ATTACHMENT 3
CONDITIONS OF PERMIT TO OPERATE

PART I: GENERAL FACILITY CONDITIONS

1. (Intentionally blank)
2. All sedimentation and erosion control activities must be conducted in accordance with the Sedimentation Control Act N.C.G.S. 113A-50, et seq., and rules promulgated under 15A NCAC 4.
3. The edge of the waste footprint for all disposal units must be identified and maintained with permanent physical markers.

Operational Requirements

4. This facility is permitted to receive solid waste generated within Avery County, consistent with the local government waste management plan and with local government approval except where prohibited by the N. C. General Statutes Article 9 of Chapter 130A, and the rules adopted by the Commission for Health Services.
5. The C&D landfill units are 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. The facility operator must complete an approved operator training course in compliance with G.S. 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 landfill units in accordance with G.S. 130A-309.25 and addressed by memorandum dated November 29, 2000.
7. The use of different alternative daily cover requires approval, prior to implementation, by the Solid Waste Section. Requests for alternative daily cover approval must include a plan detailing the comprehensive use and a demonstration of the effectiveness of the alternative daily cover. The plan must be developed according to Section guidelines. Plans which are approved by the Section will be incorporated into, and made a part of, the approved documents listed in Attachment 1.
8. The facility must maintain records for all solid waste materials accepted as alternative cover material and used as alternate daily 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 Solid Waste Section upon request.

Monitoring and Reporting Requirements

9. Groundwater, surface water, and landfill gas monitoring locations must be established and monitored as identified in the approved plans.
10. A licensed geologist must be present to supervise installation of groundwater and landfill gas monitoring wells and probes. The location, screen interval, spacing, diameter, depth, seal, cap, clustering and nesting, and other criteria for the wells must be established after consultation with the SWS Hydrogeologist at the time of well installation.
11. Ground water monitoring wells and surface water sampling locations must be sampled for Appendix I constituents at least semi-annually according to the specifications outlined in the approved water quality monitoring plan and the current policies and guidelines of the Section in effect at the time of sampling.
12. Landfill gas monitoring wells must be sampled for explosive gases at least quarterly and according to specifications outlined in 15A NCAC 13B .544(d), entitled "Gas Control Plan", and current policies and guidelines of the Section in effect at the time of sampling.
13. Reports of the analytical data for each monitoring event must be submitted to the Section within 120 days of the respective sampling event. Analytical data must be submitted in a manner prescribed by the Section. Records of all groundwater, surfacewater, landfill gas, and leachate analytical data must be kept as part of the permanent facility record.
14. A readily accessible unobstructed path must be cleared and maintained so that four-wheel vehicles may access monitoring well locations at all times.

15. A field log book which details all development, sampling, repair, and all other pertinent activities associated with each monitoring well and all sampling activities associated with each groundwater, surfacewater, landfill gas, and leachate sampling location must be kept as part of the permanent facility record.
16. All well construction records and soil boring logs for new wells and probes must be submitted to the Solid Waste Section Hydrogeologist for review within 30 days of completion.
17. 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.
18. The owner or operator must maintain a record of the amount of solid waste received at the landfill unit, compiled on a monthly basis. Scales must be used to weigh the amount of waste received.
19. On or before August 1 annually, the Permittee must submit an annual facility report to the Solid Waste 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 and landfilled 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 October 8, 1993 through the date of the annual volume survey must be included in the report.
 - e. The completed report must be forwarded to the Regional Waste Management Specialist for the facility by the date due on the prescribed annual facility report form.
 - f. A copy of the completed report must be forwarded to each county manager for each county from which waste was received at the facility. Documentation that a

copy of the report has been forwarded to the county managers must be sent to the Regional Waste Management Specialist by the date due on the prescribed annual facility report form

PART II: MUNICIPAL SOLID WASTE LANDFILL UNIT SPECIFIC CONDITIONS

Not Applicable

PART III: CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL UNIT SPECIFIC CONDITIONS

- 20. This permit approves the continued operation of Phases 1 and 2, as well as the onsite environmental management and protection facilities as described in the approved plans.
- 21. The facility is only approved to receive material generated during waste relocation in accordance with the Waste Relocation and Mitigation Plan as listed in Attachment 1, Part II: List of Documents for the Approved Plan, Document No. 3.
- 22. The following table lists the details for the landfill units. Gross capacity is defined as the volume of the landfill calculated from the elevation of the initial waste placement through the top of the final cover, including any periodic cover.

MSW Unit	Acres	Gross capacity (cubic yards)	Status
Phase 1	2.95	10,800	Closed
Phase 2	2.06	11,500	Closed
Phase 3, Cell 1	0.84	49,000	Future
Phase 3, Cell 2	0.36	47,000	Future
Phase 3, Cell 3	0.90	33,000	Future
Total	7.11	151,300	

- 23. The following, at a minimum, must not be accepted for disposal at the facility: hazardous waste, yard trash, liquid wastes, regulated medical waste, sharps not properly packaged, PCB waste as defined in 40 CFR 761, and wastes banned from disposal in North Carolina by G.S. 130A-309.10(f).
- 24. The permittee must not knowingly dispose of any type or form of municipal solid waste that is generated within the boundaries of a unit of local government that by ordinance:
 - a. Prohibits generators or collectors of municipal solid waste from disposing of that type or form of municipal solid waste.
 - b. Requires generators or collectors of municipal solid waste to recycle that type or form of municipal solid waste.

25. Financial assurance as required by state rules and statutes must be continuously maintained for the duration of the facility in accordance with applicable rules and statutes. Closure and Post-Closure cost estimates and financial instruments must be updated annually pursuant to 15A NCAC 13B .1628.
26. Closure or partial closure of any landfill unit must be in accordance with the Closure Plans described in the approved plans. Final Closure Plans must be submitted to the Division at least 90 days prior to implementation.

PART IV: LAND CLEARING AND INERT DEBRIS LANDFILL UNIT SPECIFIC
CONDITIONS

Not Applicable

PART V: MISCELLANEOUS SOLID WASTE MANAGEMENT SPECIFIC CONDITIONS

Not Applicable

- *End of Permit Conditions* -



REC'D AUG 24 2009

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

August 19, 2009

LETTER OF APPROVAL WITH MODIFICATIONS

Avery County
ATTN: Henry C. Norris, Solid Waste Director
Post Office Box 640
Newland, North Carolina 28657

RE: Project Name: Avery County C&D Landfill - Stormwater Management Plan - Modification
Acres Approved: 15
Project ID: AVERY-2009-003
County: Avery
Street and City: Brushy Creek Road, Toe River
River Basin: Catawba
Stream Classification: c, Tr
Latitude: 35.9619 Longitude: -81.9719
Submitted By: Richardson, Smith, Gardner & Associates, Inc
Date Received by LQS: 5/20/2009
Plan Type: New Submittal

Dear Mr. Norris:

This office has reviewed the subject erosion and sedimentation control plan. We find the plan to be acceptable with modifications 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 is required by Title 15A NCAC 4B .0129.

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

2090 US Highway 70, Swannanoa, North Carolina, 28778-8211
Telephone 828-296-4500 Fax 828-299-7043

www.enr.state.nc.us

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One
North Carolina
Naturally

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 (North Carolina General Statute 113A-51 through 66), this office may require revisions to the plan and implementation of the revisions to insure compliance with the Act.

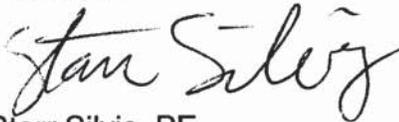
Acceptance and approval of this plan is conditioned upon your compliance with Federal and State water quality laws, regulations, and rules. In addition, local city or county ordinances or rules may also apply to this land-disturbing activity. This approval does not supersede any other permit or approval.

Please be aware that 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 general permit.

Please note that this approval is based in part on the accuracy of the information provided in the Financial Responsibility Form, which you have provided. You are requested to file an amended form if there is any change in the information included on the form. In addition, it would be helpful if you notify this office of the proposed starting date for this project. Please notify **William Beck** or myself if you plan to have a pre-construction conference.

Your cooperation is appreciated.

Sincerely,



Starr Silvis, PE
Land Quality Section

Enclosures: Certificate of Approval
Modifications Required for Approval
NPDES Permit

cc: Richardson Smith Gardner & Associates, Inc. Attn: Mr. Stacey A. Smith PE

MODIFICATIONS REQUIRED FOR APPROVAL

Project Name: Avery County C&D Landfill - Stormwater Management Plan - Modification
Project ID: AVERY-2009-003
County: Avery
Reviewed By: Starr Silvis, PE

1. Appropriate sediment control measures in accordance with *The State of North Carolina Erosion and Sediment Control Planning and Design Manual* shall be constructed in the area between the creek and Phase 2 upslope of the road crossing and in the vicinity of the road crossing.
2. This plan approval is valid for portions of the project outside the required trout buffer zone. Work may not be initiated inside the trout buffer zone without written approval from the director of the Division of Land Resources. A copy of Trout Buffer Zone Waiver dated May 1, 2009, is on file in the Asheville Regional Office.
3. All silt fence shall be designed and constructed in accordance with *The State of North Carolina Erosion and Sediment Control Planning and Design Manual Practice Standards and Specification 6.62*.
4. Rolled erosion control fabric is required on all slopes completed between the dates of October 15th and March 15th.
5. Skimmer sediment basins shall be designed and constructed in accordance with *The State of North Carolina Erosion and Sediment Control Planning and Design Manual Practice Standards and Specification 6.64*.

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Appendix B

Photographic Log

**Construction Quality Assurance Report
Closure Event No. 2
Avery County C&D Landfill**

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Client Name: Avery County C&D Landfill	Site Location: Closure Event No. 2	Project No. AVERY-13-2
--	--	----------------------------------

Photo No. 1	Date: 9/24/13
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Direction Photo Taken: South
--

Description:

The final cover subgrade on the southern end of closure area. The silt fence and stone outlet are visible at the toe of the slope.



Photo No. 2	Date: 10/10/13
-----------------------	--------------------------

Direction Photo Taken: N/A
--

Description:

Depth check of the both the 18-inch soil liner and the 18 inch vegetative soil liner from the top of final cover to the waste.



Client Name: Avery County C&D Landfill	Site Location: Closure Event No. 2	Project No. AVERY-13-2
--	--	----------------------------------

Photo No. 3	Date: 10/22/13
------------------------------	--------------------------

Direction Photo Taken:

South

Description:

Final cover termination at the toe of the slope, with the anchor trench for the erosion control blanket and silt fence at the toe of the slope.



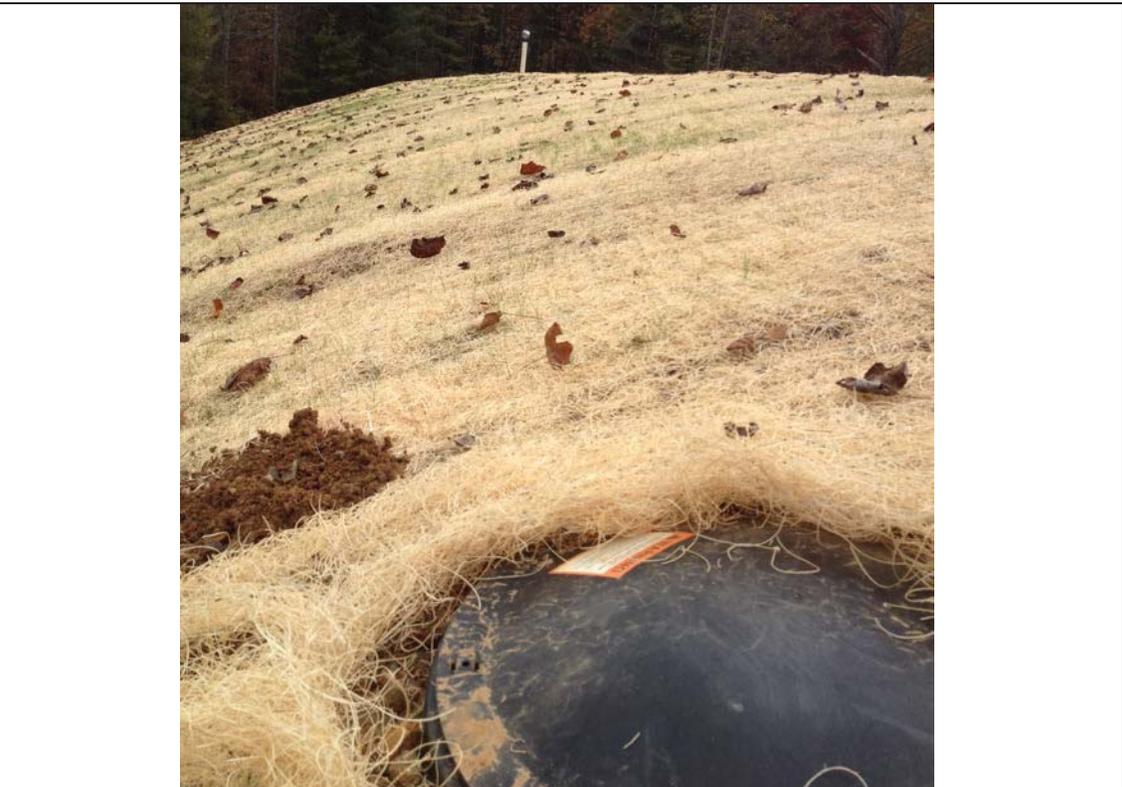
Photo No. 4	Date: 10/22/13
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Direction Photo Taken:

South

Description:

Landfill gas vent in the background, with valve vault for landfill gas trench in the foreground.



Client Name: Avery County C&D Landfill	Site Location: Closure Event No. 2	Project No. AVERY-13-2
--	--	----------------------------------

Photo No. 5	Date: 9/18/13
------------------------------	-------------------------

Direction Photo Taken:

South

Description:

The cut-off trench excavated outside of the disposal area, east of the Phase III operations area.



Photo No. 6	Date: 10/10/13
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Direction Photo Taken:

N/A

Description:

Replacement of Drop Inlet DI-3B. New aggregate subbase was installed to prevent settling. The existing pipes were re-grouted to prevent stormwater from leaking from the box into the operations area.



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Appendix C

Soils Liner CQA Data

**Construction Quality Assurance Report
Closure Event No. 2
Avery County C&D Landfill**

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FROEHLING & ROBERTSON, INC.

Engineering Stability Since 1881

503 Sweeten Creek Industrial Park
Asheville, North Carolina 28803-1530
T 828.274.0742 | F 828.274.8917
NC License #F-0266

October 8, 2013

Mr. Kenny Goodson
Bryant Land and Development
159 Depot Street
Burnsville, North Carolina 28714

**Re: Field Density Summary
Landfill Closure #2
Avery County, North Carolina
F&R File No: 70R-0060**

Dear Mr. Goodson:

Froehling and Robertson, Inc. (F&R) is pleased to present the results of our field density tests performed at the referenced project on October 3, 2013.

During this period, a member of our technical staff performed twelve field density tests on compacted fill materials for the "Soil Liner" in general compliance with applicable ASTM standards. Based on the results of the moisture density tests performed, two of the twelve tests met, or exceeded, the applicable project specifications of 95 percent of maximum dry density as determined by a Laboratory Compaction Characteristic of Soil Using Standard Effort Test, ASTM D-698. The specific results and test locations for the field density tests performed are listed on the attached SOIL FIELD DENSITY SUMMARY SHEET(s).

F&R appreciates the opportunity to be of service to you, if you have any questions, please call.

Respectfully,

FROEHLING & ROBERTSON, INC.

William J. Davidson, P.E.
Engineering Manager

Ross R. Deaver, P.E.
Vice President



SOIL FIELD DENSITY SUMMARY SHEET

Project: Avery County Landfill Closure #2
Client: Bryant's Land & Development

Date: 3 October 13
Project No.: 70R-0060

Test No.	Test Location Soil Liner	Elev./ Depth (in)(±)	Field Moisture Content (%)	Field Dry Density (pcf)	Percent of Maximum Dry Density		Field Test Type	Proctor No.
					Act.	Spec.		
1	20 feet off North End	-12	24.2	95.3	93.3	95.0	NG	CTP-2-1
2	45 feet off North End	-12	23.0	96.4	94.4	95.0	NG	CTP-2-1
3	70 feet off North End	-12	25.6	93.9	92.0	95.0	NG	CTP-2-1
4	105 feet off North End	-12	25.3	94.9	92.9	95.0	NG	CTP-2-1
5	20 feet off North End	-6	25.0	95.6	93.6	95.0	NG	CTP-2-1
6	48 feet off North End	-6	24.4	94.9	92.9	95.0	NG	CTP-2-1
7	75 feet off North End	-6	27.2	94.3	92.4	95.0	NG	CTP-2-1
8	110 feet off North End	-6	24.6	96.1	94.1	95.0	NG	CTP-2-1
9	100 feet off North End	SG	23.6	96.0	94.0	95.0	NG	CTP-2-1
10	70 feet off North End	SG	22.8	96.8	94.8	95.0	NG	CTP-2-1
11	40 feet off North End	SG	22.6	97.2	95.2	95.0	NG	CTP-2-1
12	10 feet off North End	SG	22.4	97.8	95.8	95.0	NG	CTP-2-1

Proctor No.	Max. Dry Density (pcf)	Optimum Moisture (%)	Soil Class.	Lab Test Type	Remarks:	Key: SC - Sand Cone (ASTM D1556) NG - Nuclear Gauge (ASTM D2922 & D3017) DC - Drive Cylinder (ASTM D2937) STD - Standard Proctor (ASTM D698) MOD - Modified Proctor (ASTM D1557)
CTP-2-1	102.1	20.3	SM	STD		



FROEHLING & ROBERTSON, INC.

Engineering Stability Since 1881

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NC License #F-0266

October 14, 2013

Mr. Kenny Goodson
Bryant Land and Development
159 Depot Street
Burnsville, North Carolina 28714

**Re: Soil Laboratory Test Results
Landfill Closure #2
Avery County, North Carolina
F&R File No: 70R-0060**

Dear Mr. Goodson:

Froehling and Robertson, Inc. (F&R) is pleased to present our Soil Laboratory Test Results for the above referenced project. Three Hydraulic Conductivity (ASTM-5084) tests were performed on the Shelby Tube samples collected from the referenced project. As requested, one Shelby Tube sample was obtained from each in-place lift of the "Soil Liner". In addition, bulk soil samples were collected from each "Soil Liner Lift" and the "Vegetative Layer" for Grain Size, Atterberg Limits, and water content lab testing. Please find attached to this letter the laboratory test results.

F&R appreciates the opportunity to be of service to you, if you have any questions, please call.

Respectfully,

FROEHLING & ROBERTSON, INC.

William J. Davidson, P.E.
Engineering Manager

Ross R. Deaver, P.E.
Vice President



HYDRAULIC CONDUCTIVITY
Using A Flexible Wall Permeameter
ASTM D-5084

CELL NO. 2

Project: Avery Co. Landfill Closure #2
 Client: Bryants Land & Development
 Project No: 70R-0060

Date: N.A.
 Sample No: Lift #1
 Depth: N.A.

Moisture Content	Initial	Final
Tare Number	G-58	H-05
wt. tare & wet sample (gm)	155.35	1123.67
wt. tare & dry sample (gm)	131.04	902.11
wt. of Water (gm)	24.31	221.56
wt. of tare (gm)	30.83	109.25
wt. of dry sample (gm)	100.21	792.86
Water content (%)	24.3	27.9

Sample Parameters	Initial	Final
wt. wet sample + tube (gm)	976.64	1014.54
wt. of tube (gm)	0.00	0.00
wt. of wet sample (gm)	976.64	1014.54
wt of dry sample (gm)	785.97	792.95

Dimensions - Inches	Initial	Final
Diameter 1	2.843	2.820
Diameter 2	2.838	2.826
Diameter 3	2.834	2.850
Average Diameter	2.838	2.832
Length 1	5.007	5.047
Length 2	5.078	4.945
Length 3	5.035	5.013
Average Length	5.040	5.002
Volume (pcf)	0.0185	0.0182

Wet Density (pcf)	116.7	122.7
Dry Density (pcf)	93.9	95.9
Void Ratio	0.761	
Porosity	0.432	
Hydraulic Gradient	14.3	

Specific Gravity
 Assumed 2.65

Sample Condition
 Undisturbed X
 Remolded _____

(B Coefficient)
 Saturation (%) 93

Confining Pressure
10.0

Initial	Final
Area	Area
(cm)	(cm)
40.82	40.64
Length	Length
(cm)	(cm)
12.80	12.70
Diameter	Diameter
(cm)	(cm)
7.21	7.19

Visual Description: Brown, Sandy Silt.

Performed By: Dave Jenks

Date: 10/8/2013



HYDRAULIC CONDUCTIVITY
Using A Flexible Wall Permeameter
ASTM D-5084

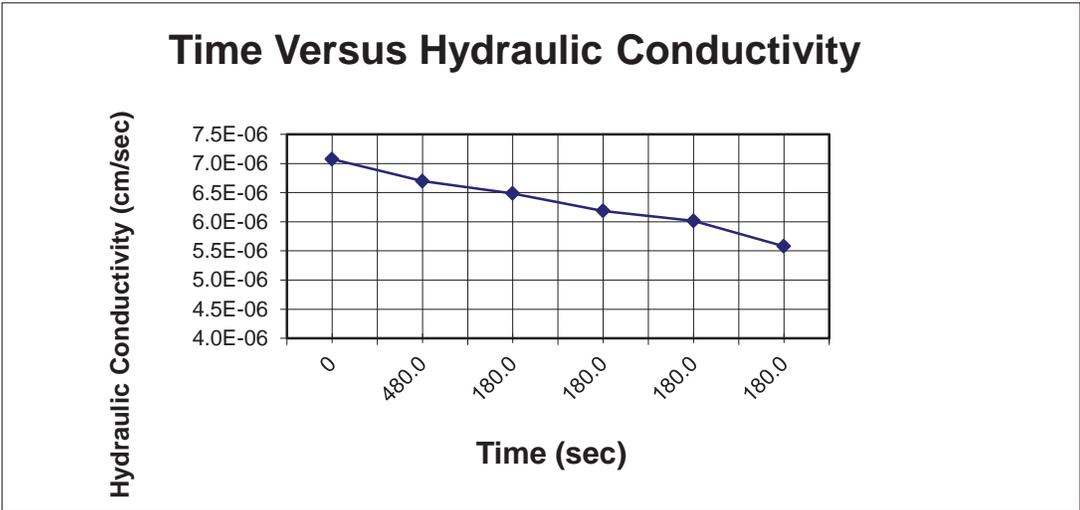
Project: Avery Co. Landfill Closure #2
 Client: Bryants Land & Development
 Project No: 70R-0060

Date: N.A.
 Sample No: Lift #1
 Location: N.A.

DATE	Time	Elapsed Time (sec)	Head water (cm)	Inflow Burette (cc)	Outflow Burette (cc)	Average Flow (cm)	Flow Ratio	Temp (C°)	Permeability cm/sec
10/08/13	14:37:00	0	73.03	0.38	9.95	0	0	22.7	
10/08/13	14:45:00	480.0	58.68	3.25	6.90	14.87	1.063	22.7	7.1E-06
10/08/13	14:48:00	180.0	53.78	4.23	5.90	4.97	1.020	22.7	6.7E-06
10/08/13	14:51:00	180.0	49.13	5.16	4.97	4.67	1.000	22.7	6.5E-06
10/08/13	14:54:00	180.0	44.78	6.03	4.07	4.45	1.034	22.7	6.2E-06
10/08/13	14:57:00	180.0	40.63	6.86	3.24	4.17	1.000	22.7	6.0E-06
10/08/13	15:03:00	360.0	33.13	8.36	1.70	7.64	1.027	22.7	5.6E-06

Average Permeability cm/sec.	6.1E-06
Inflow Area	Outflow Area
0.20	0.20

Pressures		
Cell	Head	Tail
PSI	PSI	PSI
85.4	75.4	72.8



Performed By: Dave Jenks

Date: 10/8/2013



HYDRAULIC CONDUCTIVITY
Using A Flexible Wall Permeameter
ASTM D-5084

CELL NO. 3

Project: Avery Co. Landfill Closure #2
 Client: Bryants Land & Development
 Project No: 70R00-60

Date: N.A.
 Sample No: Lift #2
 Depth: N.A.

Moisture Content	Initial	Final
Tare Number	Z	H-08
wt. tare & wet sample (gm)	141.42	741.47
wt. tare & dry sample (gm)	118.04	600.75
wt. of Water (gm)	23.38	140.72
wt. of tare (gm)	30.70	110.21
wt. of dry sample (gm)	87.34	490.54
Water content (%)	26.8	28.7

Sample Parameters	Initial	Final
wt. wet sample + tube (gm)	615.53	631.28
wt. of tube (gm)	0.00	0.00
wt. of wet sample (gm)	615.53	631.28
wt of dry sample (gm)	485.55	490.56

Dimensions - Inches	Initial	Final
Diameter 1	2.835	2.823
Diameter 2	2.847	2.827
Diameter 3	2.828	2.790
Average Diameter	2.837	2.813
Length 1	3.266	3.247
Length 2	3.268	3.234
Length 3	3.298	3.188
Average Length	3.277	3.223
Volume (pcf)	0.0120	0.0116

Wet Density (pcf)	113.2	120.0
Dry Density (pcf)	89.3	93.3
Void Ratio	0.852	
Porosity	0.460	
Hydraulic Gradient	14.4	

Specific Gravity
 Assumed 2.65

Sample Condition
 Undisturbed X
 Remolded _____

(B Coefficient)
 Saturation (%) 95

Confining Pressure
10.0

Initial	Final
Area	Area
(cm)	(cm)
40.77	40.11
Length	Length
(cm)	(cm)
8.32	8.19
Diameter	Diameter
(cm)	(cm)
7.21	7.15

Visual Description: Brown, Sandy Silt

Performed By: Dave Jenks

Date: 10/8/2013



HYDRAULIC CONDUCTIVITY
Using A Flexible Wall Permeameter
ASTM D-5084

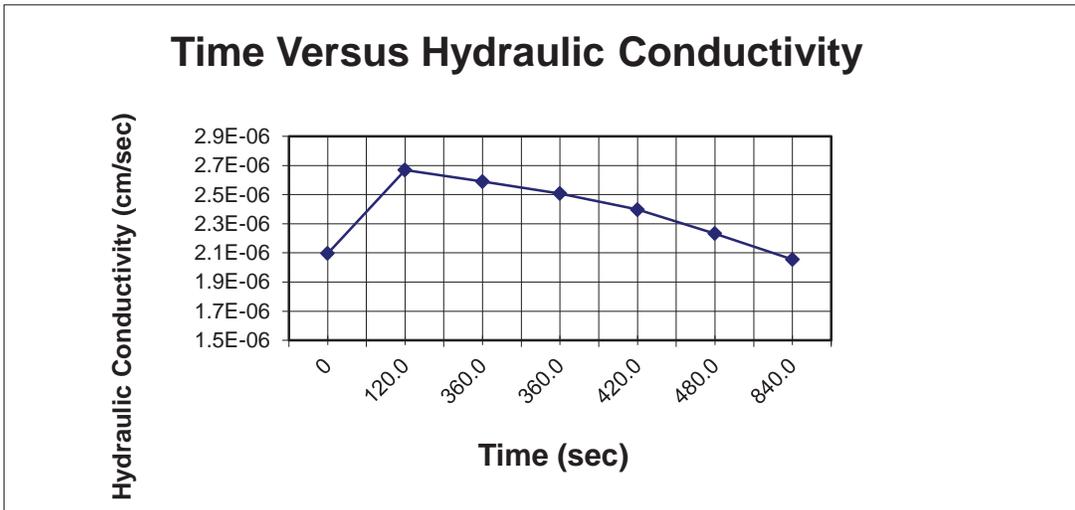
Project: Avery Co. Landfill Closure #2
 Client: Bryants Land & Development
 Project No: 70R00-60

Date: N.A.
 Sample No: Lift #2
 Location: N.A.

DATE	Time	Elapsed Time (sec)	Head water (cm)	Inflow Burette (cc)	Outflow Burette (cc)	Average Flow (cm)	Flow Ratio	Temp (C°)	Permeability cm/sec
10/08/13	10:08:00	0	71.93	0.60	9.98	0	0	22.6	
10/08/13	10:10:00	120.0	70.68	0.85	9.55	1.71	1.720	22.6	2.1E-06
10/08/13	10:16:00	360.0	65.98	1.79	8.57	4.82	1.043	22.6	2.7E-06
10/08/13	10:22:00	360.0	61.53	2.68	7.63	4.60	1.056	22.6	2.6E-06
10/08/13	10:29:00	420.0	56.63	3.66	6.63	4.97	1.020	22.6	2.5E-06
10/08/13	10:37:00	480.0	51.43	4.70	5.56	5.30	1.029	22.6	2.4E-06
10/08/13	10:51:00	840.0	43.28	6.33	3.91	8.24	1.012	22.6	2.2E-06
10/08/13	11:02:00	660.0	37.63	7.46	2.77	5.70	1.009	22.6	2.1E-06

Average Permeability cm/sec.	2.3E-06
Inflow Area	Outflow Area
0.20	0.20

Pressures		
Cell	Head	Tail
PSI	PSI	PSI
65.0	55.0	53.3



Performed By: Dave Jenks

Date: 10/8/2013



HYDRAULIC CONDUCTIVITY
Using A Flexible Wall Permeameter
ASTM D-5084

CELL NO. 6 WF

Project: Avery Co. Landfill Closure #2
 Client: Bryants Land & Development
 Project No: 70R-0060

Date: N.A.
 Sample No: Lift #3
 Depth: N.A.

Moisture Content	Initial	Final
Tare Number	G-13	9
wt. tare & wet sample (gm)	202.03	937.42
wt. tare & dry sample (gm)	162.23	738.34
wt. of Water (gm)	39.80	199.08
wt. of tare (gm)	30.61	87.19
wt. of dry sample (gm)	131.62	651.15
Water content (%)	30.2	30.6

Sample Parameters	Initial	Final
wt. wet sample + tube (gm)	832.16	850.28
wt. of tube (gm)	0.00	0.00
wt. of wet sample (gm)	832.16	850.28
wt of dry sample (gm)	638.95	651.19

Dimensions - Inches	Initial	Final
Diameter 1	2.841	2.846
Diameter 2	2.808	2.846
Diameter 3	2.829	2.803
Average Diameter	2.826	2.832
Length 1	4.298	4.265
Length 2	4.304	4.267
Length 3	4.288	4.260
Average Length	4.297	4.264
Volume (pcf)	0.0156	0.0155

Wet Density (pcf)	117.6	120.6
Dry Density (pcf)	90.3	92.4
Void Ratio	0.831	
Porosity	0.454	
Hydraulic Gradient	14.2	

Specific Gravity
 Assumed 2.65

Sample Condition
 Undisturbed X
 Remolded _____

(B Coefficient)
 Saturation (%) 98

Confining Pressure
10.0

Initial	Final
Area	Area
(cm)	(cm)
40.47	40.63
Length	Length
(cm)	(cm)
10.91	10.83
Diameter	Diameter
(cm)	(cm)
7.18	7.19

Visual Description: Brown, Sandy Silt.

Performed By: Dave Jenks

Date: 10/8/2013



HYDRAULIC CONDUCTIVITY
Using A Flexible Wall Permeameter
ASTM D-5084

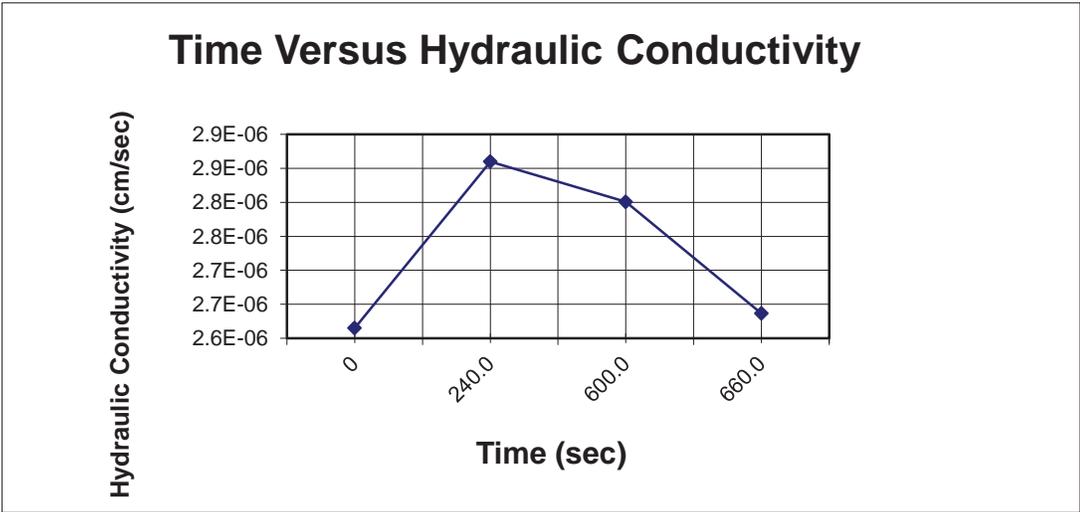
Project: Avery Co. Landfill Closure #2
 Client: Bryants Land & Development
 Project No: 70R-0060

Date: N.A.
 Sample No: Lift #3
 Location: N.A.

DATE	Time	Elapsed Time (sec)	Head water (cm)	Inflow Burette (cc)	Outflow Burette (cc)	Average Flow (cm)	Flow Ratio	Temp (C°)	Permeability cm/sec
08/10/13	10:55:00	0	73.03	0.38	9.92	0	0	22.6	
08/10/13	10:59:00	240.0	70.23	0.94	9.36	2.81	1.000	22.6	2.6E-06
08/10/13	11:09:00	600.0	62.73	2.44	7.79	7.71	1.047	22.7	2.9E-06
08/10/13	11:20:00	660.0	54.93	4.00	6.20	7.91	1.019	22.7	2.8E-06
08/10/13	11:33:00	780.0	46.58	5.67	4.52	8.42	1.006	22.7	2.6E-06

Average Permeability cm/sec.		2.7E-06
Inflow Area	Outflow Area	
0.20	0.20	

Pressures		
Cell	Head	Tail
PSI	PSI	PSI
59.0	49.0	46.8



Performed By: Dave Jenks

Date: 10/8/2013



LABORATORY TEST SUMMARY SHEET

Sheet: 1 of 1

Project No: 70R-0060

Client: Bryants Land & Development

Project: Avery County Landfill - Closure #2

City/State: Avery County, North Carolina

Boring/ Sample No.	Depth (in)	LL	PL	PI	Water Content (%)	% Gravel	% Sand	% Fines	USCS Class.	AASHTO Class.			
Lift-1	12 to 18	44	43	1	27.3	0.0	48.8	51.2	ML	A-5			
Lift-2	6 to 12	45	40	5	26.3	0.0	50.2	49.8	SM	A-5			
Lift-3	0 to 6	45	36	9	23.0	0.0	42.6	57.4	ML	A-5			
Vegetative	---	25	21	4	21.2	0.0	54.5	45.5	SC-SM	A-4			

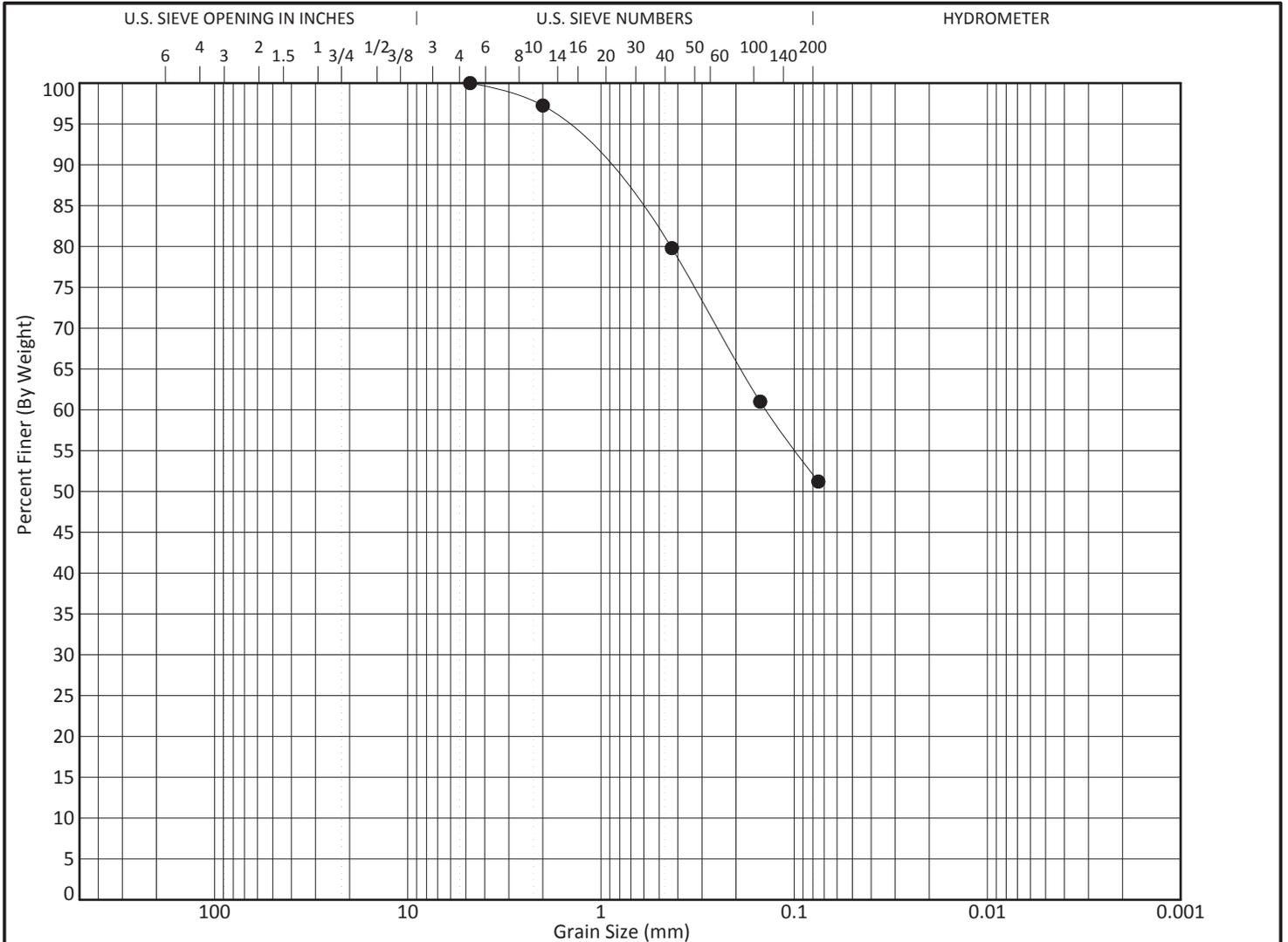


Project No: 70R-0060

Client: Bryants Land & Development

Project: Avery County Landfill - Closure #2

City/State: Avery County, North Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample No.	Classification	LL	PL	PI	Cc	Cu
● Lift-1	SANDY SILT (ML)	44	43	1		

Sample No.	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● Lift-1	4.76	0.14			0.0	48.8	51.2	

U.S. GRAIN SIZE 70R-0060.GPJ F&R.GDT 10/14/13

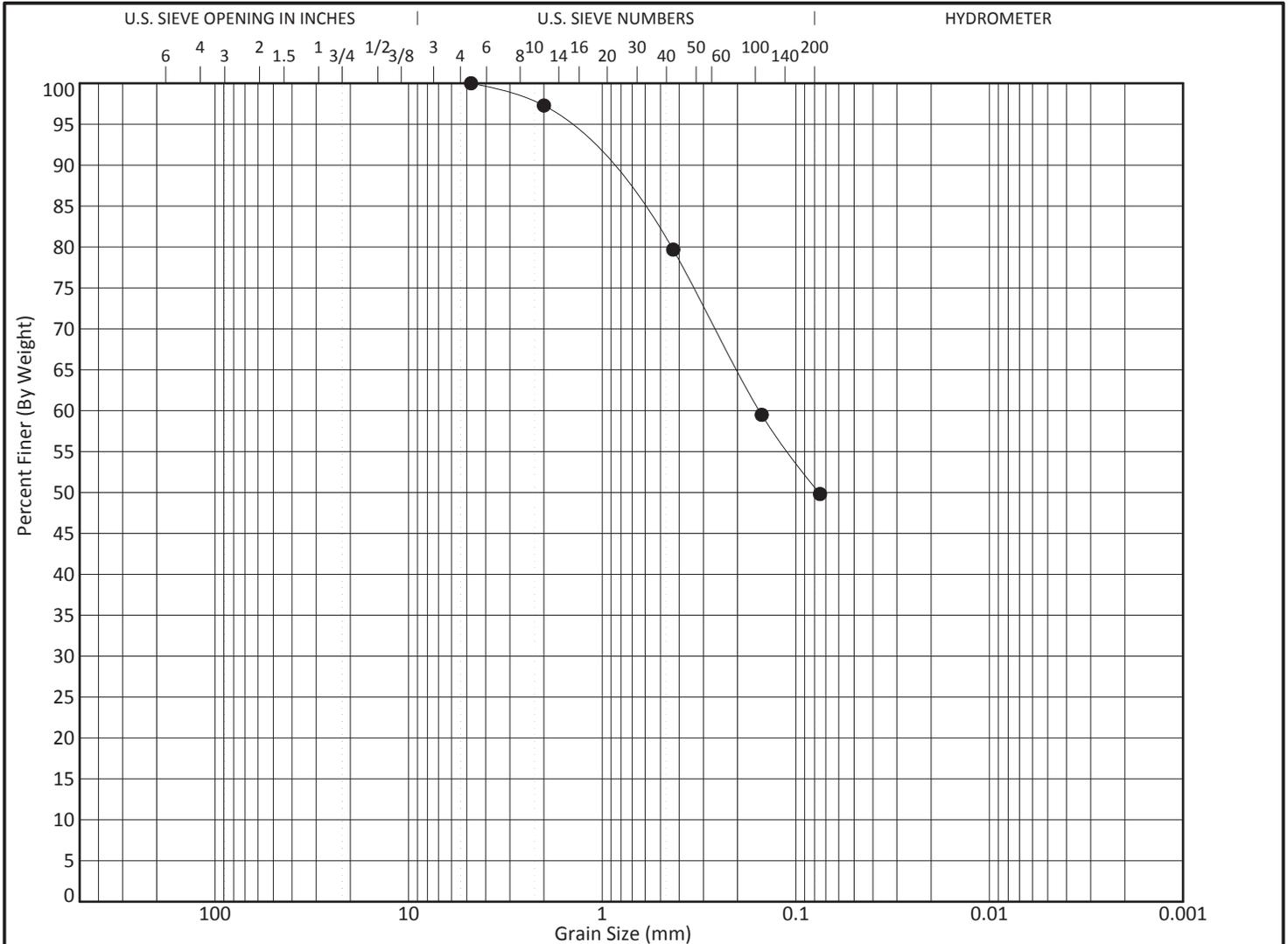


Project No: 70R-0060

Client: Bryants Land & Development

Project: Avery County Landfill - Closure #2

City/State: Avery County, North Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample No.	Classification	LL	PL	PI	Cc	Cu
● Lift-2	SILTY SAND (SM)	45	40	5		

Sample No.	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● Lift-2	4.76	0.154			0.0	50.2		49.8

U.S. GRAIN SIZE 70R-0060.GPJ F&R.GDT 10/14/13

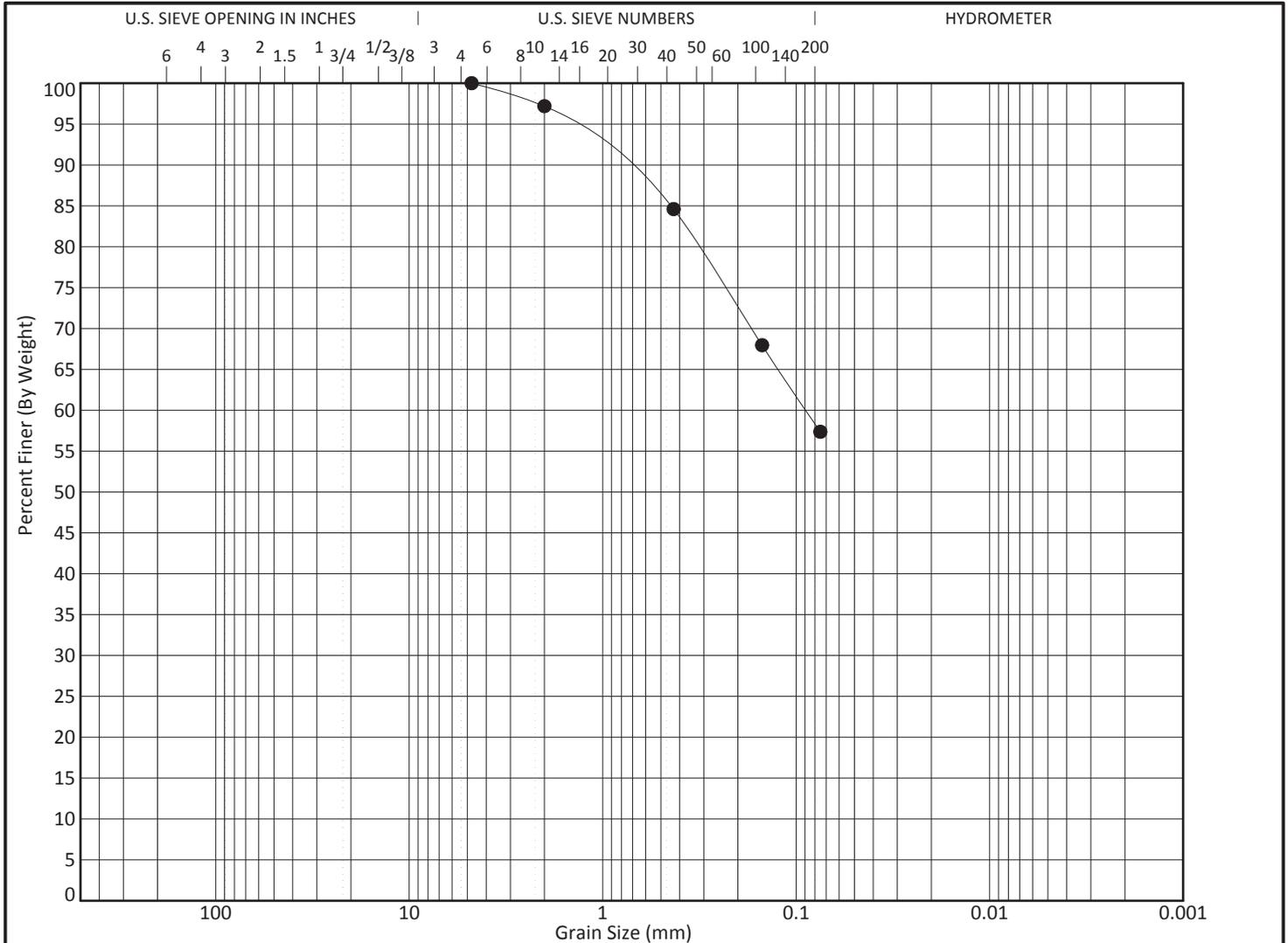


Project No: 70R-0060

Client: Bryants Land & Development

Project: Avery County Landfill - Closure #2

City/State: Avery County, North Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample No.	Classification	LL	PL	PI	Cc	Cu
● Lift-3	SANDY SILT (ML)	45	36	9		

Sample No.	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● Lift-3	4.76	0.089			0.0	42.6	57.4	

U.S. GRAIN SIZE 70R-0060.GPJ F&R.GDT 10/14/13

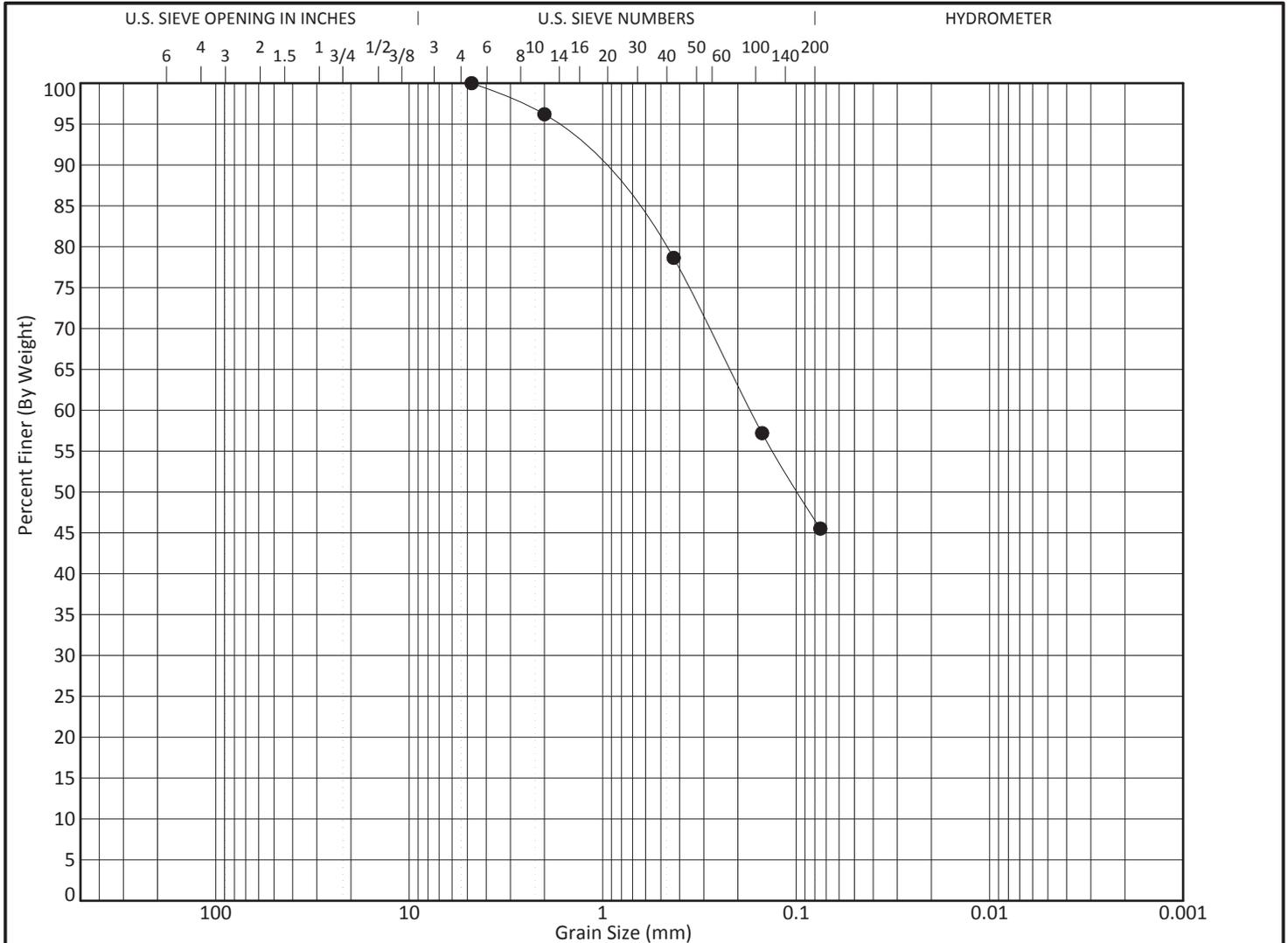


Project No: 70R-0060

Client: Bryants Land & Development

Project: Avery County Landfill - Closure #2

City/State: Avery County, North Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample No.	Classification	LL	PL	PI	Cc	Cu
● Vegetative	SILTY, CLAYEY SAND (SC-SM)	25	21	4		

Sample No.	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● Vegetative	4.76	0.172			0.0	54.5	45.5	

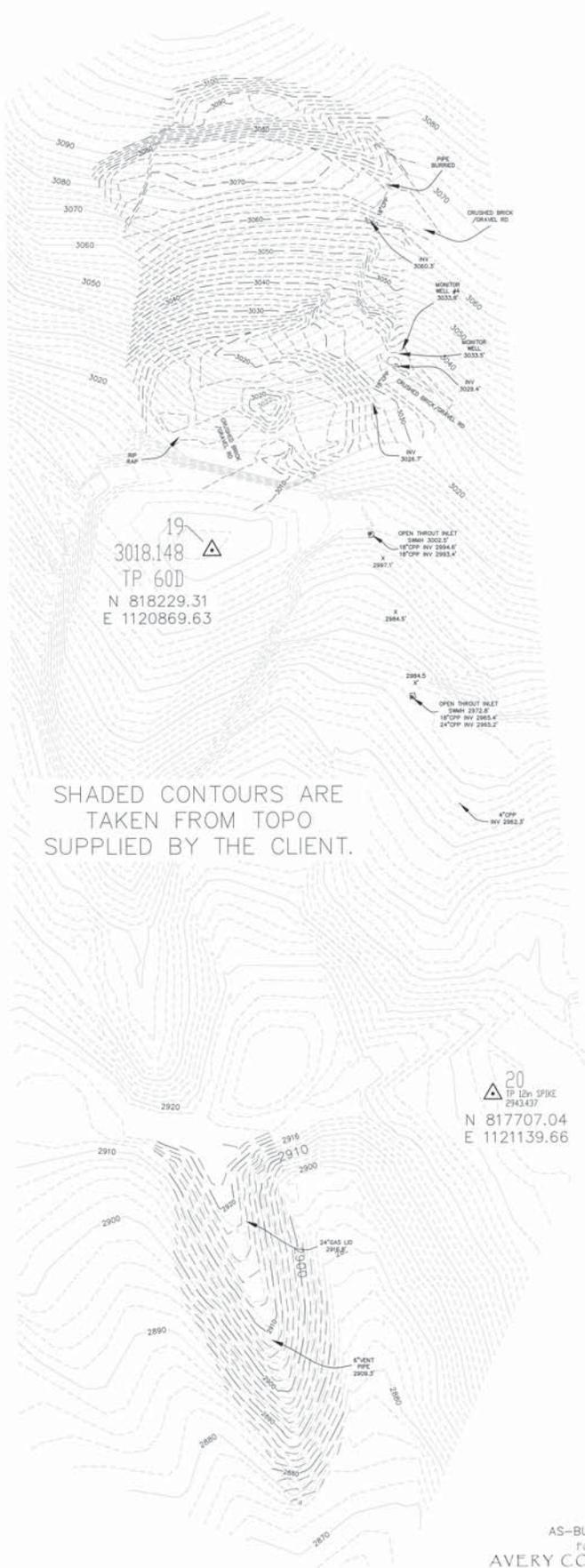
U.S. GRAIN SIZE 70R-0060.GPJ F&R.GDT 10/14/13

Appendix D

Record Drawings

**Construction Quality Assurance Report
Closure Event No. 2
Avery County C&D Landfill**

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19
 3018.148
 TP 60D
 N 818229.31
 E 1120869.63

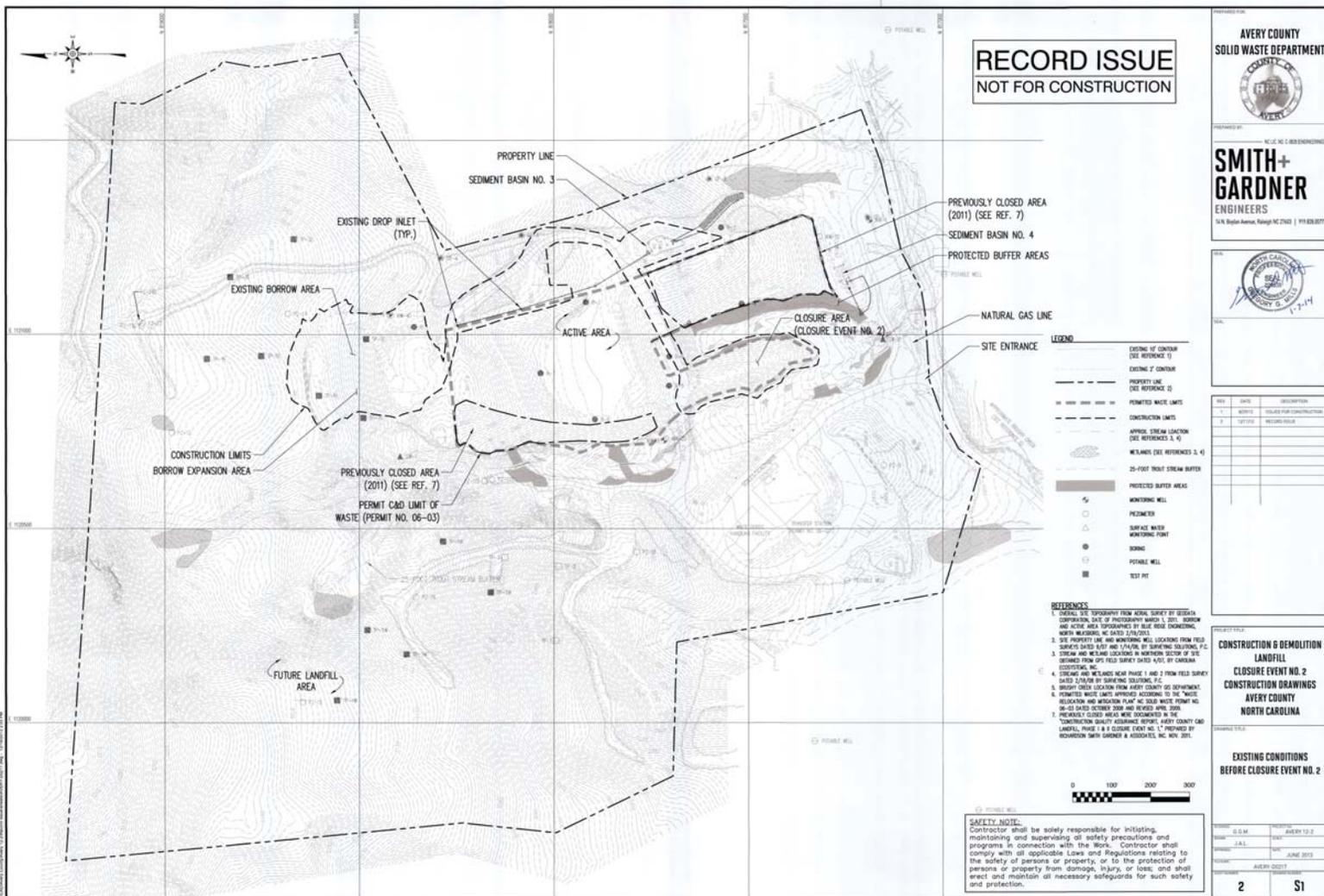
SHADED CONTOURS ARE
 TAKEN FROM TOPO
 SUPPLIED BY THE CLIENT.

20
 TP 12IN SPIKE
 2943.437
 N 817707.04
 E 1121139.66



AS-BUILT SURVEY OF
 PORTIONS OF
AVERY COUNTY LANDFILL
 AVERY COUNTY, NORTH CAROLINA
 SCALE: 1" = 50' 11/18/2013
W. EDWIN HOLMES, P.L.S.
 COMPANY LICENSURE # C-2806
 ED HOLMES AND ASSOCIATES LAND SURVEYORS, PA
 200 RIDGEFIELD CT., STE. 215, 28806 P.O. BOX 17335, ASHEVILLE, NC 28816
 PHONE: (828) 225-6562 FAX: (828) 225-6579





RECORD ISSUE
NOT FOR CONSTRUCTION

LEGEND

(Symbol)	EXISTING OF CONTOUR (SEE REFERENCE 1)
(Symbol)	EXISTING OF CONTOUR
(Symbol)	PROPERTY LINE (SEE REFERENCE 2)
(Symbol)	PERMITTED WASTE LIMITS
(Symbol)	CONSTRUCTION LIMITS
(Symbol)	APPROX. STREAM LOCATION (SEE REFERENCES 3 & 4)
(Symbol)	WELLSHEDS (SEE REFERENCES 3 & 4)
(Symbol)	25-FOOT TROUT STREAM BUFFER
(Symbol)	PROTECTED BUFFER AREAS
(Symbol)	WORKING WELL
(Symbol)	PERIMETER
(Symbol)	SURFACE WATER WORKING POND
(Symbol)	BORING
(Symbol)	POSSIBLE WELL
(Symbol)	TEST PIT

- REVISIONS**
1. LOCATED SITE SPOOLS FROM AERIAL SURVEY BY DESIGN CORPORATION, DATE OF PHOTOGRAPHY MARCH 1, 2011. BORROW AND ACTIVE AREA SPOOLS BY BLUE RISE ENGINEERING, NORTH WELLSHEDS, NC DATED 2/20/12.
 2. SITE PROPERTY LINE AND WORKING WELL LOCATIONS FROM FIELD SURVEY DATED 2/27/12 BY TRAVELER BY SURVEYING SOLUTIONS, P.C. STREAM AND WELLSHEDS LOCATIONS IN NORTHERN SECTION OF SITE DERIVED FROM GPS FIELD SURVEY DATED 4/20/12 BY CAROLINA GEOGRAPHICAL, INC.
 3. LOCATED ALL WELLSHEDS NEAR POINT 1 AND 2 FROM FIELD SURVEY DATED 2/27/12 BY SURVEYING SOLUTIONS, P.C.
 4. BORROW DITCH LOCATION FROM AERIAL PHOTOGRAPHY.
 5. PERMITTED WASTE LIMITS APPROVED ACCORDING TO THE "WASTE REGULATION AND INSPECTION PLAN" NO. 06-03 WASTE FROM NO. 06-03 DATED OCTOBER 2008 AND REVISED APRIL 2009.
 6. PREVIOUSLY CLOSED AREAS WERE DETERMINED BY THE "CONSTRUCTION QUALITY ASSURANCE REPORT, AVERY COUNTY C&D LANDFILL, PHASE 1 & 2" DATED FEBRUARY 11, 2010 PREPARED BY ROBINSON SMITH GARDNER & ASSOCIATES, INC. NOV. 2011.

SAFETY NOTE:
Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss, and shall erect and maintain all necessary safeguards for such safety and protection.



PREPARED BY: AVERY COUNTY SOLID WASTE DEPARTMENT
SMITH+GARDNER ENGINEERS
14 N. Dupont Avenue, Raleigh NC 27603 | 919.868.8877

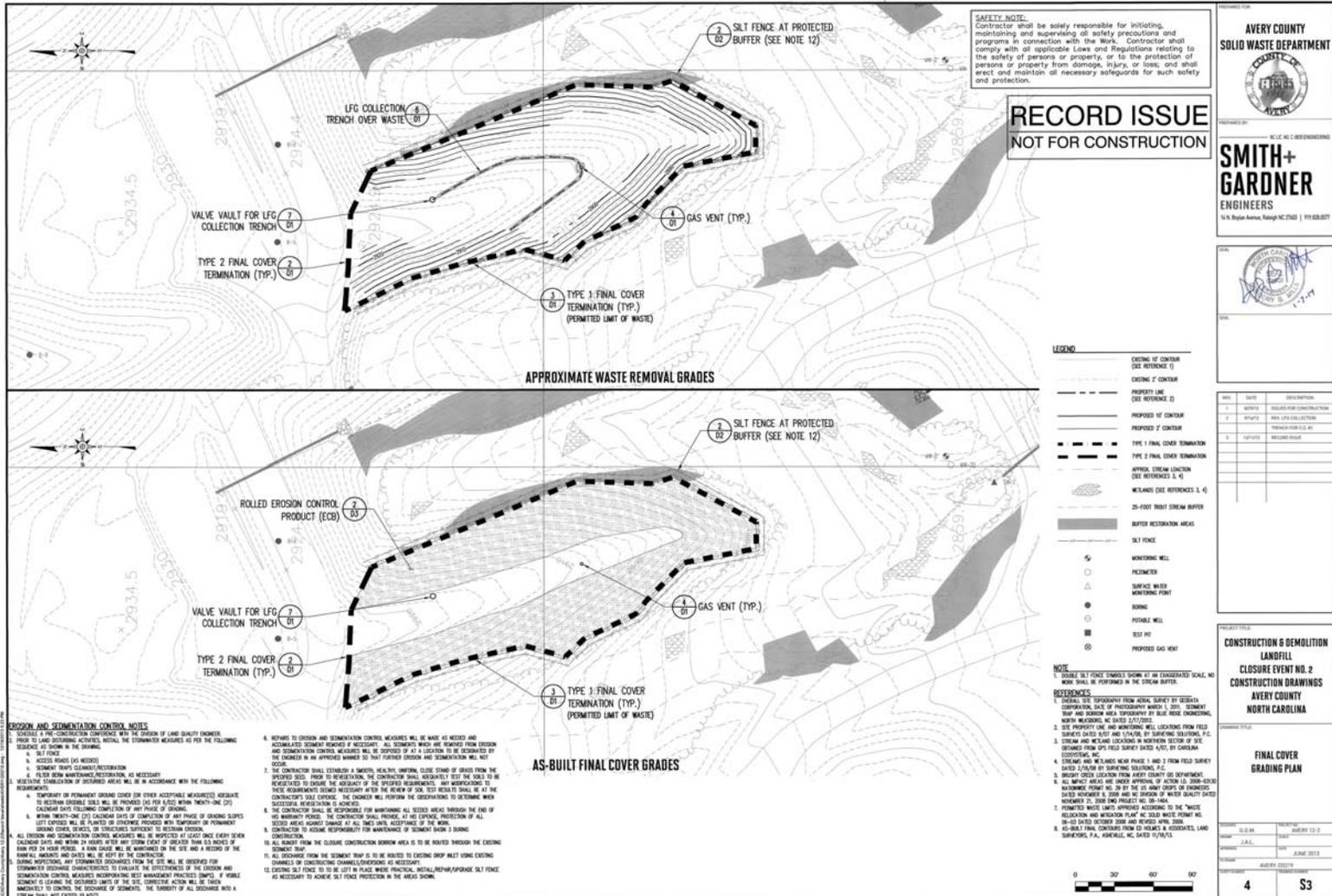


REV.	DATE	DESCRIPTION
1	06/11/13	ISSUED FOR CONSTRUCTION
2	07/27/13	RECORD ISSUE

CONSTRUCTION 6 DEMOLITION LANDFILL CLOSURE EVENT NO. 2 CONSTRUCTION DRAWINGS AVERY COUNTY NORTH CAROLINA

EXISTING CONDITIONS BEFORE CLOSURE EVENT NO. 2

DATE: 05.04.13	DATE: AVERY 12.2
DRAWN: J.A.L.	SCALE:
ISSUED: 06/11/13	DATE: JUNE 2013
PROJECT: AVERY 02017	DATE:
2	S1



SAFETY NOTE:
 Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss, and shall erect and maintain all necessary safeguards for such safety and protection.

RECORD ISSUE
 NOT FOR CONSTRUCTION

AVERY COUNTY
 SOLID WASTE DEPARTMENT

SMITH+
 GARDNER
 ENGINEERS
 1414 Dupont Avenue, Raleigh, NC 27603 | PH: 616.887.0177



LEGEND

(Symbol)	EXISTING 1' CONTOUR (SEE REFERENCE 1)
(Symbol)	EXISTING 2' CONTOUR (SEE REFERENCE 2)
(Symbol)	PROPERTY LINE (SEE REFERENCE 3)
(Symbol)	PROPOSED 1' CONTOUR
(Symbol)	PROPOSED 2' CONTOUR
(Symbol)	TYPE 1 FINAL COVER TERMINATION (SEE REFERENCE 1, 4)
(Symbol)	TYPE 2 FINAL COVER TERMINATION (SEE REFERENCE 1, 4)
(Symbol)	APPROX. STREAM LOCATION (SEE REFERENCE 1, 4)
(Symbol)	WELLS (SEE REFERENCES 1, 4)
(Symbol)	25-FOOT TRIBUTARY BUFFER
(Symbol)	BUFFER RESTORATION AREAS
(Symbol)	SILT FENCE
(Symbol)	MONITORING WELL
(Symbol)	PRECINCTOR
(Symbol)	SURFACE WATER MONITORING POINT
(Symbol)	ISSING
(Symbol)	POTABLE WELL
(Symbol)	TEST PIT
(Symbol)	PROPOSED GAS VENT

NOTE
 1. EXISTING SILT FENCE LOCATIONS SHOWN AT AN UNCONFINED SCALE, NO WORK SHALL BE PERFORMED IN THE STREAM BUFFERS.

REFERENCES
 1. LOCAL: DE SUPERVISOR FROM AERIAL SURVEY BY RESIDENT CORPORATION, DATE OF PHOTOGRAPHY APRIL 1, 2015. SEGMENT 001P AND 002P AREA SUPERVISOR BY AERIAL PHOTO SUPERVISOR, NORTH WILKESBORO, NC DATED 2/17/2015.
 2. DE SUPERVISOR FROM AERIAL SURVEY BY RESIDENT CORPORATION, DATE OF PHOTOGRAPHY APRIL 1, 2015. SEGMENT 001P AND 002P AREA SUPERVISOR BY AERIAL PHOTO SUPERVISOR, NORTH WILKESBORO, NC DATED 2/17/2015.
 3. STREAM AND WELLS LOCATION IN NORTHERN SECTION OF SITE OBTAINED FROM GPS FIELD SURVEY DATED APRIL 07, 2014 BY CHARLINA GILBERTSON.
 4. STREAMS AND WELLS NEAR PHASE 1 AND 2 FROM FIELD SURVEY DATED 1/20/16 BY SUPERVISOR, P.C.
 5. SIGHT TRIANGLE LOCATION FROM AVERY COUNTY DEPARTMENT OF PUBLIC WORKS AND ENGINEERING, PROJECT NO. 20 BY THE US ARMY CORPS OF ENGINEERS DATED NOVEMBER 5, 2008 AND DESIGN BY WATER QUALITY DATED NOVEMBER 23, 2008 AND PROJECT NO. 08-1064.
 6. PROPOSED WASTE LANDFILL APPROXIMATE TO THE WASTE RELEASED AND WASTON PLAN BY SOLID WASTE PERMIT NO. 08-05 DATED OCTOBER 2008 AND REVISED APRIL 2010.
 7. AS-BUILT FINAL CONTROLS FROM 03-00018-A, A WELLS, LAND SURVEYS, P.A., CHARLOTTE, NC DATED 11/24/10.

EROSION AND SEDIMENTATION CONTROL NOTES

1. CONSULT A PRE-CONSTRUCTION CONFERENCE WITH THE DESIGNER OF LAND QUALITY ENGINEER FROM TO LAND QUALITY ENGINEER. INITIAL THE SEDIMENTATION MEASURES AS PER THE FOLLOWING REQUIREMENTS AS SHOWN IN THE DRAWING.
2. "SEE FENCE"
3. ACCESS GRADES (AS NEEDED)
4. SEDIMENT TRAP(S) CLEANED REGULARLY
5. FILTER MEDIA MAINTENANCE/REPLENISHMENT, AS NECESSARY
6. MAINTAIN PROTECTION OF DISTURBED AREAS WILL BE IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:
 - a. TEMPORARY PROTECTION SHOULD COME FROM OTHER ACCEPTABLE MEASURES(S) ADEQUATE TO RESTRAIN ERODIBLE SOILS WILL BE PROVIDED (AS PER A-10) WITHIN THIRTY-ONE (31) CALENDAR DAYS FOLLOWING COMPLETION OF ANY PHASE OF WORK.
 - b. WITHIN THIRTY-ONE (31) CALENDAR DAYS OF COMPLETION OF ANY PHASE OF GRADING SLOPES LEFT EXPOSED WILL BE PLANTED OR COVERED PROVED WITH TEMPORARY PROTECTION.
 - c. GRASS COVER, MULCH, OR CONCRETE(S) SUFFICIENT TO RESTRAIN EROSION.
 - d. TEMPORARY PROTECTION SHOULD BE MAINTAINED AT LEAST ONE (1) FEET FROM EXISTING CHANNELS AND WITHIN 24 HOURS AFTER ANY STORM EVENT OF GREATER THAN 0.50 INCHES OF RAIN FOR 24 HOUR PERIOD. A BANK GAUGE WILL BE MAINTAINED ON THE SITE AND A RECORD OF THE BANK GAUGE MEASUREMENTS AND DATES WILL BE KEPT BY THE CONTRACTOR.
 - e. SEDIMENTATION CONTROL MEASURES SHOULD BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD AND THROUGHOUT THE CONSTRUCTION PERIOD TO EVALUATE THE EFFECTIVENESS OF THE EROSION AND SEDIMENTATION CONTROL MEASURES INCORPORATING BEST MANAGEMENT PRACTICES (BMP'S). IF NECESSARY TO CORRECT THE OBTAINED LIMITS OF THE SITE, CORRECTIVE ACTION WILL BE TAKEN IMMEDIATELY TO CORRECT THE SEDIMENTATION. THE NUMBER OF ALL SEDIMENTATION AREAS SHALL NOT EXCEED 10 PERCENT.
7. REPAIRS TO EROSION AND SEDIMENTATION CONTROL MEASURES WILL BE MADE AS NEEDED AND ACCUMULATED SEDIMENT REMOVED IF NECESSARY. ALL SEDIMENT WHICH ARE REMOVED FROM EROSION AND SEDIMENTATION CONTROL MEASURES WILL BE DEPOSITED AT A LOCATION TO BE DETERMINED BY THE ENGINEER IN AN APPROVED MANNER SO THAT FURTHER EROSION AND SEDIMENTATION WILL NOT OCCUR.
8. THE CONTRACTOR SHALL ESTABLISH A QUALITY CONTROL PLAN, WHICH SHALL BE SUBMITTED TO THE DESIGNER FOR REVIEW AND APPROVAL. THE CONTRACTOR SHALL ACCORD TO THE QUALITY CONTROL PLAN TO BE REVIEWED TO DETERMINE THE ADEQUACY OF THE PROPOSED MEASURES. ANY MODIFICATIONS TO THE CONTRACTOR'S QUALITY CONTROL PLAN, THE ENGINEER WILL PERFORM THE NECESSARY TO DETERMINE WHEN SUCCESSFUL REVIEW IS REQUIRED.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL SEDIMENT TRAPS THROUGH THE USE OF HIS MAINTENANCE PERSONNEL. THE CONTRACTOR SHALL PROVIDE, AT HIS OWN RISK, PROTECTION OF ALL SEDIMENT TRAPS AGAINST DAMAGE AT ALL TIMES DURING THE COURSE OF THE WORK.
10. CONTRACTOR TO ASSUME RESPONSIBILITY FOR MAINTENANCE OF SEDIMENT TRAP(S) DURING CONSTRUCTION.
11. ALL SEDIMENT FROM THE CLOSURE CONSTRUCTION BORROW AREA IS TO BE MOVED THROUGH THE EXISTING SEDIMENT TRAP(S).
12. ALL SEDIMENT FROM THE SEDIMENT TRAP(S) IS TO BE MOVED TO EXISTING DRAINAGE DITCHES EXISTING CHANNELS OF CONSTRUCTION CHANNELS/CHANNELS AS NECESSARY.
13. EXISTING SILT FENCE IS TO BE LEFT IN PLACE WHERE PRACTICAL. INSTALL/MANAGE/MAINTAIN SILT FENCE AS NECESSARY TO ACHIEVE SILT FENCE PROTECTION IN THE WELLS DRAIN.

AS-BUILT FINAL COVER GRADES

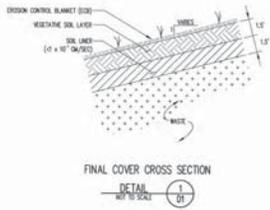


CONSTRUCTION & DEMOLITION
 LANDFILL
 CLOSURE EVENT NO. 2
 CONSTRUCTION DRAWINGS
 AVERY COUNTY
 NORTH CAROLINA

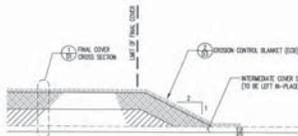
FINAL COVER GRADING PLAN

DATE	DESCRIPTION
11/11/2015	ISSUED FOR CONSTRUCTION
11/11/2015	FINAL LFG COLLECTION TRENCH OVER WASTE
11/11/2015	FINAL COVER GRADING PLAN

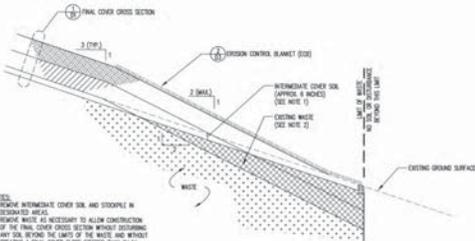
DATE: 11/11/2015
 DRAWN BY: J.A.L.
 CHECKED BY: J.A.L.
 DATE: 11/11/2015
 PROJECT NO.: 15-00018-A
 SHEET NO.: 4 OF 33



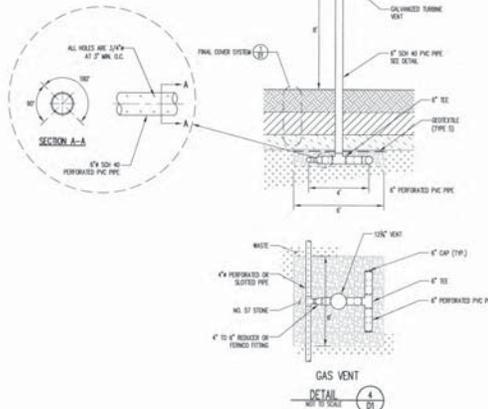
FINAL COVER CROSS SECTION
DETAIL 1
NOT TO SCALE



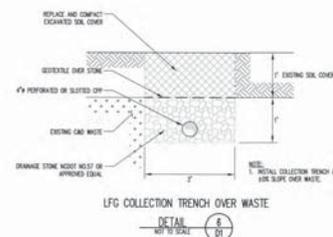
TYPE 2 FINAL COVER TERMINATION
DETAIL 2
NOT TO SCALE



TYPE 1 FINAL COVER TERMINATION
DETAIL 3
NOT TO SCALE



DETAIL 4
NOT TO SCALE

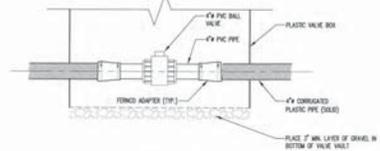


DETAIL 5
NOT TO SCALE

SEEDING SCHEDULE NO. 2M		
MATERIAL	SEED TYPE	APPLICATION RATE
LIME	-	4,000 LBS/ACRE
PERYLENE	10-10-10 ANALYSIS	1,000 LBS/ACRE
SEED	CREEPING RED FESCUE, BLUEGRASS AND TALL FESCUE	40 LBS/ACRE
FERTILIZER	CREW WITH NUTRIENT LITHIUMCA	10 LBS/ACRE
	SEASONAL NITROGEN DROP	10 LBS/ACRE
TEMPORARY	SEASONAL NITROGEN DROP	SEE NOTE 2
MULCH	-	4,000-6,000 LBS/ACRE
SMOOR	ASPHALT EMULSION	300 GALLONS/ACRE

NOTES:
1. APPLICATION RATES AND/OR CHEMICAL ANALYSIS SHALL BE CONFIRMED OR ESTABLISHED BY A SOIL TEST.
2. THE SEASONAL NITROGEN DROP IS ACCORDING WITH SEEDING DATES AS LISTED BELOW.
WAY 1 - AUGUST 15 10 LBS/ACRE GENIUM MULCH OR 10 LBS/ACRE SUBGRASS
AUGUST 16 - APRIL 15 40 LBS/ACRE FINE GRASS
3. IN TREAT AREAS, USE 10 LBS/ACRE OF SEED AND FERTILIZER FOR WEEDING REPAIRS AND FROM ONSET SEED COMFORT OR EQUIVALENT.

SEEDING SCHEDULE
DETAIL 6
NOT TO SCALE



DETAIL 7
NOT TO SCALE

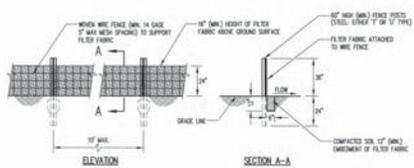
RECORD ISSUE
NOT FOR CONSTRUCTION

SAFETY NOTE:
Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss, and shall erect and maintain all necessary safeguards for such safety and protection.

REV.	DATE	DESCRIPTION
1	04/20/21	ISSUED FOR CONSTRUCTION
2	07/20/21	REVISED FOR LFG COLLECTION
3	07/20/21	REVISION FOR LFG
4	07/20/21	REVISION FOR LFG

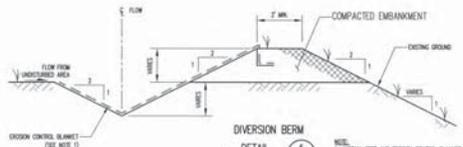
DATE	BY	REVISION
04/20/21	J.A.L.	ISSUED FOR CONSTRUCTION
07/20/21	J.A.L.	REVISED FOR LFG COLLECTION
07/20/21	J.A.L.	REVISION FOR LFG
07/20/21	J.A.L.	REVISION FOR LFG

RECORD ISSUE
NOT FOR CONSTRUCTION



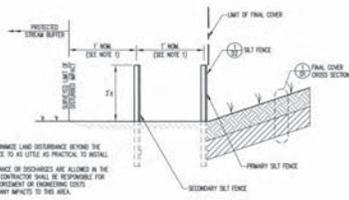
SILT FENCE
DETAIL 1
NOT TO SCALE

NOTE: 1. SPANNER OUTLETS 4 FEET WIDE MADE OF HARDWARE CLOTH AND NO. 12 FENCE WIRE ADDED AT LOW POINTS IN THE SILT FENCE AND AROUND CLOSURE AREA NO. 1.



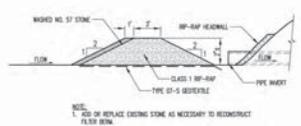
DIVERSION BERM
DETAIL 2
NOT TO SCALE

NOTE: 1. METAL GRID AND EROSION CONTROL BLANKET ON THE DIVERSION BERM AND CHANNEL IMMEDIATELY ON THE DIRT THAT EACH BERM IS CONSTRUCTED.



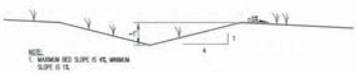
SILT FENCE AT PROTECTED BUFFER
DETAIL 3
NOT TO SCALE

NOTE: 1. CONTRACTOR TO MINIMIZE LAND DISTURBANCE BEYOND THE PRIMARY SILT FENCE TO AS LITTLE AS PRACTICAL TO INSTALL THE SILT FENCE.
2. NO SOIL DISTURBANCE OR INCURRING ARE ALLOWED IN THE STREAM BUFFER. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PHYSICAL EMPLOYMENT OR ENGINEERING COSTS ASSOCIATED WITH ANY IMPACTS TO THIS AREA.



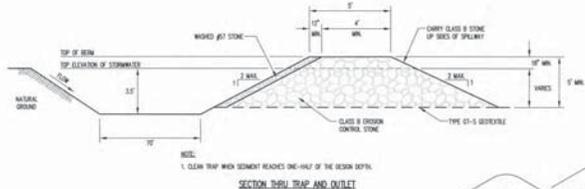
FILTER BERM
DETAIL 3
NOT TO SCALE

NOTE: 1. REP OR REPLACE EXISTING STONE AS NECESSARY TO RECONSTRUCT FILTER BERM.



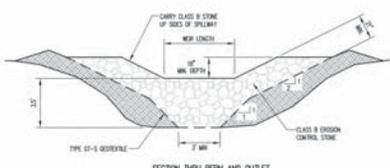
BORROW AREA SWALE
DETAIL 4
NOT TO SCALE

NOTE: 1. MAXIMUM BED SLOPE IS 4% MINIMUM SLOPE IS 1%.

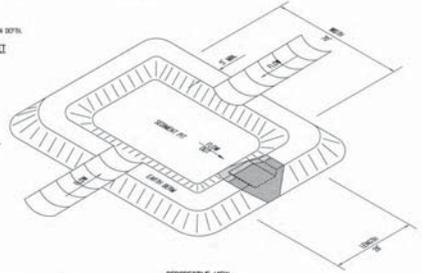


SECTION TRAP AND OUTLET

NOTE: 1. CLEAN TRAP WHEN SEDIMENT REACHES ONE-HALF OF THE DESIGN DEPTH.



SECTION TRAP BERM AND OUTLET



PERSPECTIVE VIEW

TEMPORARY SEDIMENT TRAP
DETAIL 6
NOT TO SCALE

SAFETY NOTE:
Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss, and shall erect and maintain all necessary safeguards for such safety and protection.

AVERY COUNTY
SOLID WASTE DEPARTMENT

SMITH+
GARDNER
ENGINEERS



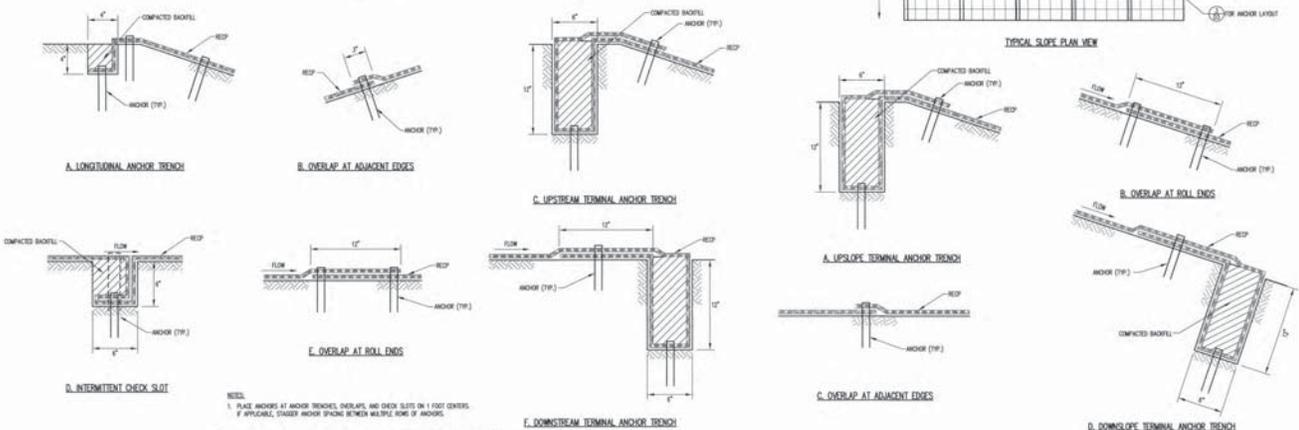
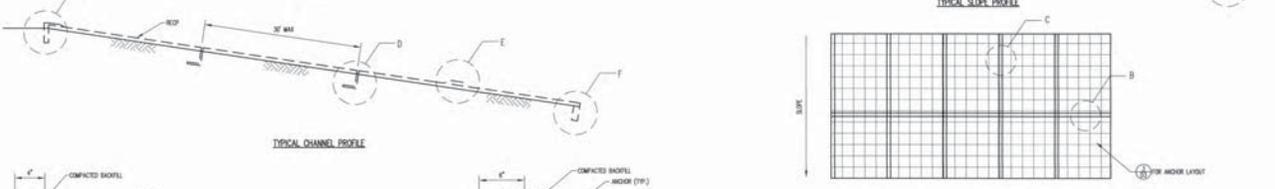
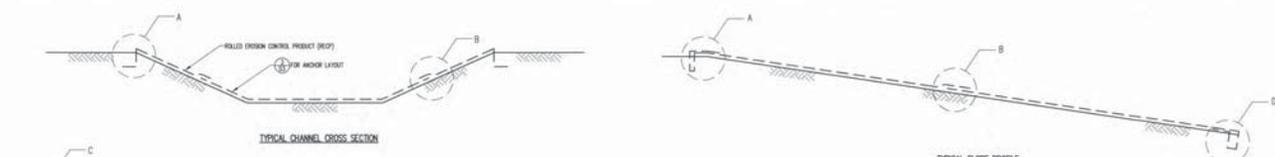
NO.	DATE	DESCRIPTION
1	06/15/13	ISSUED FOR CONSTRUCTION
2	07/25/13	REVISION

CONSTRUCTION 6 DEMOLITION
LANDFILL
CLOSURE EVENT NO. 2
CONSTRUCTION DRAWINGS
AVERY COUNTY
NORTH CAROLINA

NO.	DATE	DESCRIPTION
1	06/15/13	ISSUED FOR CONSTRUCTION
2	07/25/13	REVISION

NO.	DATE	DESCRIPTION
1.		ISSUED FOR CONSTRUCTION
2.		REVISED

RECORD ISSUE
NOT FOR CONSTRUCTION



NOTE:
 1. PLACE ANCHORS AT ANCHOR TRENCHES, OVERLAPS, AND CHECK SLOTS ON 1 FOOT CENTERS.
 2. IF APPLICABLE, STAGGER ANCHOR SPACING BETWEEN MULTIPLE ROWS OF ANCHORS.

INSTALLATION OF ROLLED EROSION CONTROL PRODUCTS (CHANNELS)

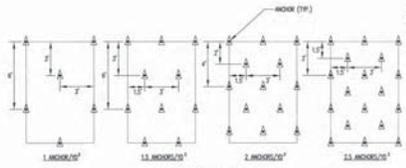
DETAIL 1
 NOT TO SCALE

LOCATION	REQUIRED ANCHOR SPACING (ANCHORS/100')
ALL CHANNELS	2.5
1:3H/1V SLOPES	2.0
2:1H/1V SLOPES	2.0
3:1H/1V SLOPES	1.5
4:1H/1V SLOPES	1.5
5:1H/1V SLOPES	1.0
6H/1V SLOPES	1.0

NOTE:
 1. PLACE ANCHORS AT ANCHOR TRENCHES, OVERLAPS AND CHECK SLOTS ON 1 FOOT CENTERS.
 2. IF APPLICABLE, STAGGER ANCHOR SPACING BETWEEN MULTIPLE ROWS OF ANCHORS.

INSTALLATION OF ROLLED EROSION CONTROL PRODUCTS (SLOPES)

DETAIL 2
 NOT TO SCALE



DETAIL 3
 NOT TO SCALE

3/20/2013 10:46:46 AM C:\Users\jgordon\Desktop\AVERY\DWG\AVERY_00001_03.dwg 1:21:00 PM 6/11/2013

Appendix E

Correspondence

**Construction Quality Assurance Report
Closure Event No. 2
Avery County C&D Landfill**

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January 8, 2014

Mr. Allen Gaither, P.E.
Environmental Engineer II
NCDENR – Solid Waste Section
2090 U.S. Highway 70
Swannanoa, North Carolina 28778

Re: Phases I & II Closure Event No. 2
Avery County C&D Landfill
NC Solid Waste Permit No. 06-03

Dear Allen:

On behalf of Avery County, Smith Gardner, Inc. (S+G) is hereby submitting the **enclosed** Construction Quality Assurance (CQA) Report [one (1) hard copy and one (1) electronic] for the above referenced facility for your review and records. Additionally, please find an updated financial assurance estimate (**attached**) to include the removal of this closed area (0.75 acres) from the closure construction estimate. Based on our telephone conversation today, I understand that upon approval of this estimate, the County will update their financial test.

We appreciate your attention and we are prepared to respond to any questions or concerns regarding this information. Please feel free to contact me at (919) 828-0577 or by email below.

Sincerely,
SMITH GARDNER, INC.



Gregory G. Mills, P.E.
Sr. Project Engineer
gregm@smithgardnerinc.com

Attachment

Cc: Mr. Henry "Buddy" Norris, Avery County Solid Waste Department
Ms. Deb Aja, NCDENR
File

H:\Projects\Avery County (NC)\04 AC Closed Projects\Financial Assurance\2014-01-08__Revised Financial Assurance Letter.docx

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Avery County C&D Landfill (NC SW Permit No. 06-03) Engineer's Post Closure Estimate

Item	Quantity or Cost	Unit	Comments
A. Groundwater Monitoring			
Monitoring wells	4	wells	Reference 1
Surface water point	2	points	Reference 1
Sampling frequency	2	events	Reference 1
Field sampling, collection, and shipping.	\$ 800.00	per event	S+G estimate
Laboratory Analysis	\$ 325.00	per well	S+G estimate
Data review, statistics, and reporting	\$ 2,000.00	per event	S+G estimate
Maintenance and repair	\$ 1,000.00	per well	S+G historical estimate
Subtotal Cost	\$ 13,500.00	per year	
B. Landfill Gas Management			
Control System Vents	7	vents	Per Ref. 1 (pro-rated @ one (1) per acre)
Sub-Surface Perimeter Monitoring Probes	4	probes	Per Ref. 1
Control system monitoring, maintenance and repair	\$ 50.00	per vent per year	S+G estimate
Semi-Annual Perimeter Monitoring	\$ 50.00	per probe per year	S+G estimate
Subtotal Cost	\$ 559.50	per year	Averaged over post-closure period
C. Final Cover Management			
Area of maintenance	7.19	acres	Extends to area immediately around landfill.
Mowing	\$ 100.00	per acre	Site historical estimate
Erosion and sediment control maintenance	\$ 200.00	per acre	Site historical estimate
Topdressing (seed & fertilizer)	\$ 150.00	per acre	Site historical estimate
Vector and rodent control	\$ 10.00	per acre	Site historical estimate
Maintenance Mobilization	\$ 1,000.00	per year	Site historical estimate
Subtotal Cost	\$ 4,307.40	per year	
D. Administration, Inspections, and Reporting			
Administration and record keeping	\$ 1,000.00	per year	Site historical estimate
Inspection	\$ 1,000.00	per year	Site historical estimate
Miscellaneous engineering	\$ 1,500.00	per year	Site historical estimate
Subtotal Cost	\$ 3,500.00	per year	
E. Subtotal Post-Closure Costs			
Number of Years for Post-Closure	30	years (see Note 1)	
Estimated Average Annual Costs	\$ 21,867	per year (2013\$)	
Cost per Acre	\$ 3,041.29	per year	
Subtotal Post Closure Costs	\$ 656,007.00	(2013\$) (See Note 2)	
F. Potential Assessment and Corrective (Remedial) Action			
Minimum amount required by NCDENR Division of Waste	\$ 2,000,000	lump sum	Regulatory requirement (Session Law 2011-262)
Subtotal Remedial Cost	\$ 2,000,000	lump sum	
Total Post Closure and Remedial Costs	\$ 2,760,595	(2013\$) (See Note 2)	
Total Closure, Post Closure, and Remedial Costs	\$ 2,975,904	(2013\$) (See Note 2)	

Notes:

- All costs are presented in current dollars and should be increased at the inflation rate prescribed by the NCDENR Division of Waste Management website at <http://portal.ncdenr.org/web/wm/sw/financialassurance> if additional review is not performed annually.
- This ESTIMATE has been prepared for financial assurance purposes only and shall not be considered a replacement for an actual bid from a licensed contractor. The estimate is intended to be accurate to within +/- 10% of the Total Estimated Cost.

References:

- Avery County Construction and Demolition Landfill Phase III Permit to Construct Application by Richardson Smith Gardner & Associates, Inc. dated February 2009 with revisions through August 2009.

Avery County C&D Landfill (NC SW Permit No. 06-03)
Engineer's Closure Construction Cost Estimate

Year	Inflation Factor
2012	1.021
2013	1.018

Item No.	Item Description	Unit	Contractor			Comments
			Quantity	Unit Price	Total Price	
Closure Area (Horizontal Plan) ----->		AC	3.75			
1.0	Pre-Construction				\$ 17,539.50	
1.1	Construction Documents & Bidding	AC	3.75	\$12k + \$500/AC	\$ 17,539.50	S+G Estimate
2.0	Construction				\$ 176,591.62	References 1, 2, and 3.
2.1	Surveys and Layout	AC	3.75	\$ 1,559.07	\$ 5,846.50	Inflation Adjusted 2011 Estimate
2.2	Mobilization	AC	3.75	\$ 1,039.38	\$ 3,897.67	Inflation Adjusted 2011 Estimate
2.3	Site Preparation (repairs to intermediate cover layer)	AC	3.75	\$ 519.69	\$ 1,948.83	Inflation Adjusted 2011 Estimate
2.4	18" On-site Low Permeability Soil	CY	9,075.00	\$ 7.90	\$ 71,685.90	Inflation Adjusted 2011 Estimate
2.5	18" Vegetative Support Layer	CY	9,075.00	\$ 5.98	\$ 54,236.04	Inflation Adjusted 2011 Estimate
2.6	Landfill Gas Venting System	AC	3.75	\$ 1,247.25	\$ 4,677.20	Inflation Adjusted 2011 Estimate
2.7	Cap Drainage Structures (berms, piping, etc.)	AC	3.75	\$ 5,196.89	\$ 19,488.34	Inflation Adjusted 2011 Estimate
2.8	Erosion & Sediment Control (grading, silt fence, maintenance, etc.)	AC	3.75	\$ 831.50	\$ 3,118.13	Inflation Adjusted 2011 Estimate
2.9	Revegetation	AC	3.75	\$ 3,118.13	\$ 11,693.00	Inflation Adjusted 2011 Estimate
3.0	Quality Assurance, Certification, & Deed Notation				\$ 16,305.24	
3.1	Field Monitoring	AC	3.75	\$ 1,559.07	\$ 5,846.50	Inflation Adjusted 2011 Estimate
3.2	Laboratory Testing	AC	3.75	\$ 1,039.38	\$ 3,897.67	Inflation Adjusted 2011 Estimate
3.3	Surveying and Deed Notation	AC	3.75	\$ 103.94	\$ 389.77	Inflation Adjusted 2011 Estimate
3.4	Engineering Certification	AC	3.75	\$5k + \$250/AC	\$ 6,171.31	S+G Estimate
4.0	Miscellaneous Costs to Close				\$ 4,872.08	
4.1	Erosion and Stormwater Control (outside landfill footprint)	AC	3.75	\$ 1,039.38	\$ 3,897.67	Inflation Adjusted 2011 Estimate
4.2	Engineering and Reporting	AC	3.75	\$ 259.84	\$ 974.42	Inflation Adjusted 2011 Estimate
5.0	Total Closure Costs					
Construction Estimate ----->					\$ 215,308.45	(2013\$)
Cost per Acre ----->					\$ 57,415.59	
Total Estimate ----->					\$ 215,308.45	(2013\$) [See Note 1]

Notes:

- All costs are presented in current dollars and should be increased at an inflation rate prescribed by the NCDENR Division of Waste Management per <http://portal.ncdenr.org/web/wm/sw/financialassurance> if additional review is not performed annually.
- This ESTIMATE has been prepared for financial assurance purposes only and shall not be considered a replacement for an actual bid from a licensed contractor. The ESTIMATE is intended to be accurate to within +/- 10% of the Total Estimated Cost.
- The unit price for each line item as been adjusted from the submitted 2012 Financial Assurance documents to show the inflation factor.
- Some rounding errors may occur due to multiplying the inflation factors and the acreage.

References:

- Avery County Construction and Demolition Landfill Phase III Permit to Construct Application by Richardson Smith Gardner & Associates, Inc. dated February 2009 with revisions through August 2009.
- Correspondence dated March 17, 2010 regarding approval of the site suitability including lateral expansion of Phase 2 following purchase of the Lechter parcel to Mr. Buddy Norris, Avery County from Mr. Zinith Barbee, NCDENR.