



APPROVED DOCUMENT
Division of Waste Management
Solid Waste Section
Approved March 27, 2012
By D. Wilson
Facility ID 4204-INDUS-1994
Attch. 1, Part II, Doc 7
Doc ID 15944

November 29, 2011

Ms. Donna J. Wilson
Environmental Engineer
NC DENR - Division of Waste Management
1646 Mail Service Center
Raleigh, NC 27699-1646

**RE: Halifax County - Coal Ash Monofill (Permit No. 42-04 INDUS)
Permit Renewal**

Dear Ms. Wilson:

On behalf of Halifax County, Richardson Smith Gardner & Associates, Inc. (RSG) would like to provide the information requested in your email dated October 14th related to the renewal of the solid waste permit for the County's coal ash monofill (Permit No. 42-04 INDUS).

Per your request, the following documents are provided as attachments to this letter:

1. General Information (Facility and Contact Information). Included is a site drawing which shows existing and proposed landfill units and solid waste management activities.
2. Updated Operations Plan. The currently approved operations manual for the site (dated December 2010) is attached. A more detailed update related to the operation of the ash monofill will be provided with the permit to construct application for the next cell which is anticipated in the first quarter of 2012.
3. Financial Assurance. The previously approved financial assurance information (closure and post-closure cost estimates) has been revised to include the required \$3M assessment and corrective action cost (for the facility) per NCGS 130A-295.2(h).
4. Signature Page.

Please contact me at your earliest convenience with any questions or comments on this submittal or if you require any additional information at this time.

Sincerely,
Richardson Smith Gardner & Associates, Inc.

A handwritten signature in blue ink, appearing to read "Pieter K. Scheer".

Pieter K. Scheer, P.E.
Principal, Senior Engineer
pieter@rsgengineers.com

Attachments

cc: Gwen Matthews, Halifax County
Larry Garriss, Halifax County
Don Keisling, Westmoreland Energy
Rich Lowe, P.E., URS

Only portions of this plan that
relate to the Coal Ash Landfill
are approved at this time.
Information pertaining to the
C&D Landfill is not approved in
this plan.

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Attachment 1

General Information

**Halifax County, North Carolina
Coal Ash Monofill (Permit No. 42-04 INDUS)
Permit Renewal**

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**HALIFAX COUNTY COAL ASH MONOFILL
(NC Solid Waste Permit No. 42-04 INDUS)**

GENERAL INFORMATION

1. Landfill Name:

Halifax County Coal Ash Monofill

2. Owner Contact Information:

Halifax County Department of Public Utilities
26 N. King Street (Public Works Bldg.)
P.O. Box 70
Halifax, NC 27839
Phone: (252) 583-1451
Fax: (252) 593-5014
Contact: Gwen Matthews, Director
matthewsg@halifaxnc.com

Halifax County Landfill
921 Liles Road
Littleton, NC 27850
Phone: (252) 586-7516
Fax: (252) 586-2685
Contact: Larry Garriss, Solid Waste Director
solidwaste@embarqmail.com

3. Consulting Engineer Contact Information:

Richardson Smith Gardner & Associates, Inc.
14 N. Boylan Ave.
Raleigh, NC 27603
Phone: (919) 828-0577
Fax: (919) 828-3899
Contact: Pieter Scheer, P.E., Principal, Senior Engineer
pieter@rsgengineers.com

4. Permit/Annual Fee Invoices:

Direct to Gwen Matthews, Halifax County Public Utilities Director
(See Contact Information in #2 Above)

5. Landfill Facility Description:

Halifax County, North Carolina currently owns and operates a landfill facility on Liles Road near Littleton. The landfill is permitted under NC Permit 42-04 for the disposal of construction and demolition debris (C&D) waste and the disposal of coal combustion by-products in separate disposal areas. The County also conducts several other solid waste management activities at the facility.

The County has operated the landfill under the current permit since 1981. From 1981 through December 1997, the landfill was permitted to receive municipal solid waste (MSW). The MSW was disposed of in one unlined disposal unit. It is estimated that approximately 900,000 tons of MSW was disposed of in the landfill, which has a total waste footprint of approximately 24 acres. The MSW unit was closed in accordance with applicable State Solid Waste Management Rules.

Beginning in January 1998, and in accordance with State solid waste rules, MSW was no longer disposed of in the landfill. The landfill has continued to operate since 1997 as a C&D landfill (Area 1 disposal unit). The Area 1 C&D disposal unit is a vertical expansion over the MSW disposal unit and has a waste footprint of approximately 6.5 acres.

Beginning in May 1994, the County has operated a lined monofill for the disposal of coal combustion by-products (residuals including fly ash, bottom ash, boiler slag, and flue gas desulfurization (FGD) residue produced by coal fired electrical or steam generation units) and minor amounts of coal fines. Cell 1 (12 acres) was constructed in 1993-94. Cell 2 (9 acres) was subsequently constructed in 1998-99. The liner system for the ash monofill consists of a geomembrane installed over prepared on-site subgrade soils.

Refer to the attached **Figure 1** which shows existing and proposed landfill units and solid waste management activities.

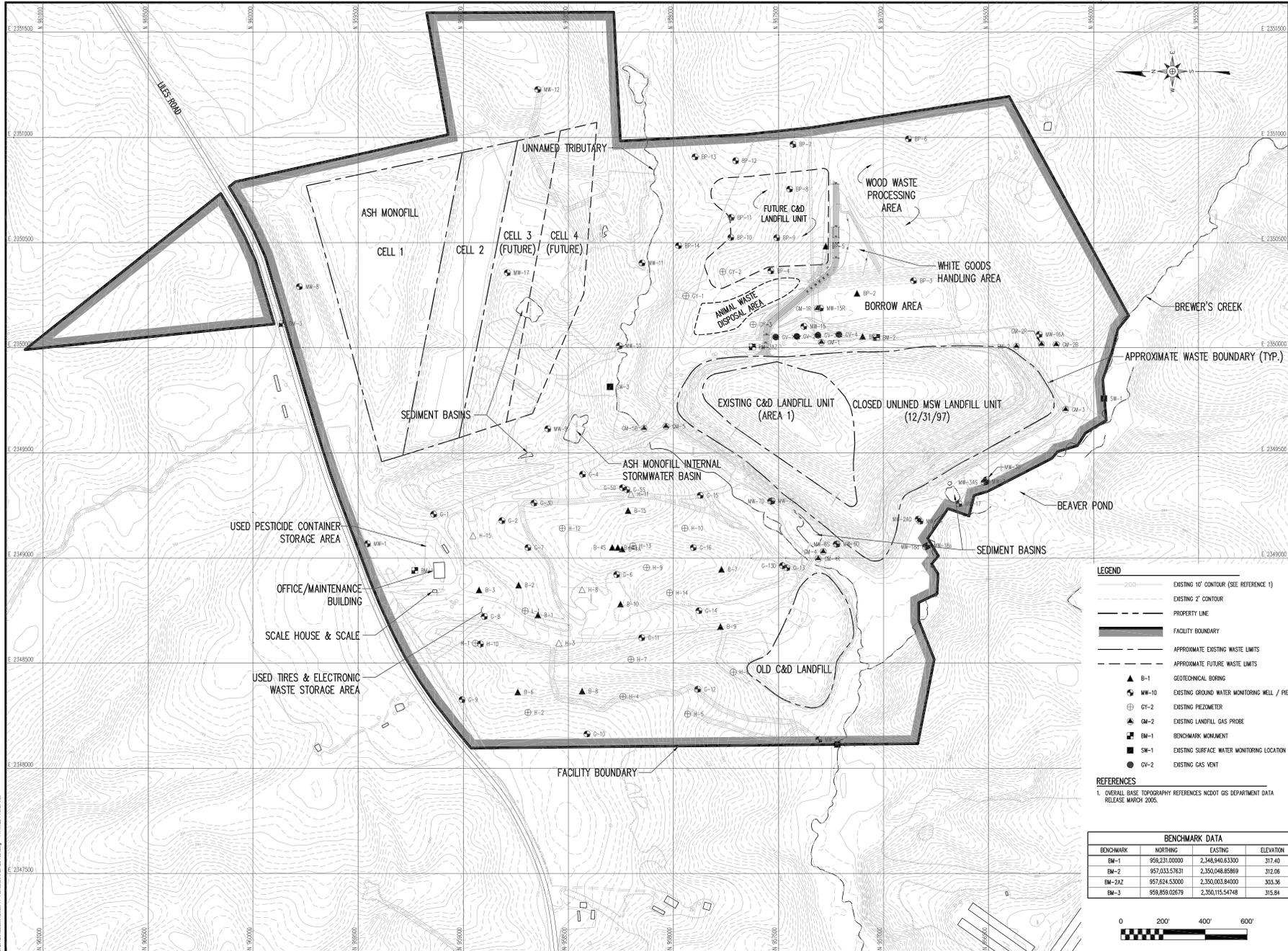
6. Property/Landfill Size:

Total Property:	240.53 acres
MSW Landfill (Unlined - Closed):	24 acres
Area 1 C&D Landfill Unit:	6.5 acres (Vertical Expansion of MSWLF)
Coal Ash Monofill (Cells 1 & 2):	21 acres

7. Property Information:

See **attached** plat and deed information describing the 240.53 acres that comprise the facility. Note that the most recently issued permit for the C&D landfill reflects the 210.53 acres shown on the first plat. The landfill facility also includes the 30 acre Hawkins tract purchased in 1995 (reference second plat and deed as downloaded from the County Register of Deeds website (www.halifaxnc.com/registerofdeeds.cfm)).

C:\GIS\Projects\Hald\11-10-2011\11-10-2011.dwg



- LEGEND**
- 200' EXISTING 10' CONTOUR (SEE REFERENCE 1)
 - EXISTING 2' CONTOUR
 - PROPERTY LINE
 - FACILITY BOUNDARY
 - APPROXIMATE EXISTING WASTE LIMITS
 - APPROXIMATE FUTURE WASTE LIMITS
 - B-1 GEOTECHNICAL BORING
 - MW-10 EXISTING GROUND WATER MONITORING WELL / PIEZOMETER
 - GT-2 EXISTING PIEZOMETER
 - GM-2 EXISTING LANDFILL GAS PROBE
 - BM-1 BENCHMARK MONUMENT
 - SM-1 EXISTING SURFACE WATER MONITORING LOCATION
 - GW-2 EXISTING GAS VENT
- REFERENCES**
- OVERALL BASE TOPOGRAPHY REFERENCES NCDOT GIS DEPARTMENT DATA RELEASE MARCH 2006.

BENCHMARK DATA			
BENCHMARK	NORTHING	EASTING	ELEVATION
BM-1	959,231.00000	2,348,940.63300	317.40
BM-2	957,033.57831	2,350,048.85869	312.06
BM-2A2	957,624.53000	2,350,003.84000	303.36
BM-3	958,859.02879	2,350,115.54748	315.84



RICHARDSON SMITH GARDNER & ASSOCIATES

 1111 S. 10th St.

 Raleigh, N.C. 27603

 www.rsgpa.com

 Tel: 919.832.8999

 Fax: 919.832.8999

NO.	DATE	BY	CHKD.

PROJECT TITLE:

 HALIFAX COUNTY

 LANDFILL FACILITY

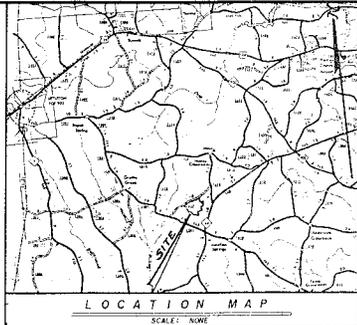
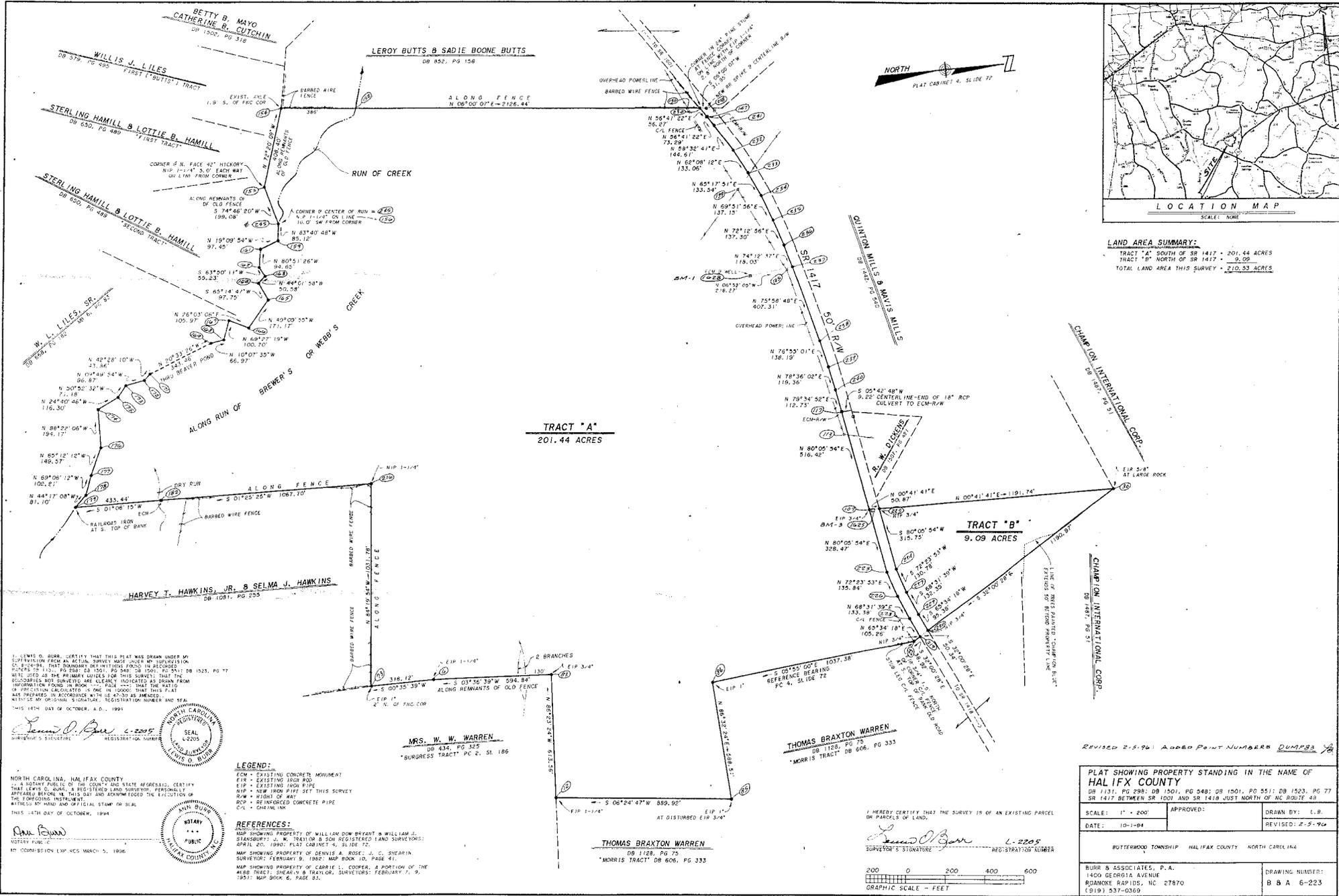
EXISTING AND PROPOSED

 LANDFILL UNITS AND

 SOLID WASTE MANAGEMENT

 ACTIVITIES

DESIGNED BY:	PK.S.	DRAWN BY:	G.T.J.
CHECKED BY:		PROJECT NO.:	HALIFAX 11-4
SCALE:	AS SHOWN	DATE:	NOV. 2011
FILE NAME:	HAL010180		
SHEET NO.:		DRAWING NO.:	FIG. 1



LAND AREA SUMMARY:
 TRACT "A" SOUTH OF SR 1417 - 201.44 ACRES
 TRACT "B" NORTH OF SR 1417 - 9.09
 TOTAL LAND AREA THIS SURVEY - 210.53 ACRES

I, LEWIS D. BURN, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACCURATE SURVEY MADE UNDER MY SUPERVISION ON 07-24-94. THAT BOUNDARY MONUMENTS FOUND IN RECORDED PLATS TO 1911, PG 558; DB 1001, PG 548; DB 1001, PG 541; DB 1523, PG 77 WERE USED AS THE PRIMARY POINTS FOR THIS SURVEY; THAT THE RECORDED MONUMENTS ARE ACCURATELY INDICATED AS DRAWN FROM THE SURVEY POINTS IN THIS PLAT; THAT THE METHOD OF PRECISION CALCULATED IS ONE IN 10000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH GS 40-30 AS AMENDED BY CHAPTER 1141, REVISED BY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL. THIS 14TH DAY OF OCTOBER, A.D. 1994.

Lewis D. Burn L-2205
 SURVEYOR'S SIGNATURE REGISTRATION NUMBER
 NORTH CAROLINA REGISTERED SURVEYOR SEAL 4-2205

NORTH CAROLINA, HALIFAX COUNTY
 I, A NOTARY PUBLIC OF THE COUNTY AND STATE AFORESAID, CERTIFY THAT LEWIS D. BURN, A REGISTERED LAND SURVEYOR, PERSONALLY APPEARED BEFORE ME THIS DAY AND ACKNOWLEDGED THE EXECUTION OF THE FOREGOING INSTRUMENT.
 WITNESSE MY HAND AND OFFICIAL SEAL OF SEAL
 THIS 14TH DAY OF OCTOBER, 1994

Russ Egan
 NOTARY PUBLIC
 MY COMMISSION EXPIRES MARCH 3, 1996

LEGEND:
 ECM - EXISTING CONCRETE MOVEMENT
 EIR - EXISTING IRON ROD
 EIP - EXISTING IRON PIPE
 NIP - NEW IRON PIPE SET THIS SURVEY
 RW - RIGHT OF WAY
 RCP - REINFORCED CONCRETE PIPE
 CXL - CHAIN LINK

REFERENCES:
 MAP SHOWING PROPERTY OF WILLIAM DON BRANT & WILLIAM J. STANBURY; J. W. TRAYLOR & SON REGISTERED LAND SURVEYORS; DATE: 2/10/90; PLAT CABINET 4, SLIDE 72.
 MAP SHOWING PROPERTY OF DENNIS A. ROSE; J. C. SHERMAN SURVEYOR; FEBRUARY 9, 1962; MAP BOOK 10, PAGE 41.
 MAP SHOWING PROPERTY OF CARL L. COOPER, A PORTION OF THE WEBB TRACT; CHEARNY & TRAYLOR, SURVEYORS; FEBRUARY 7, 1951; MAP BOOK 6, PAGE 83.

MRS. W. W. WARREN
 DB 434, PG 125
 "SURRESS TRACT" PC 2, SL 186

THOMAS BRAXTON WARREN
 DB 1128, PG 75
 "MORRIS TRACT" DB 606, PG 333

THOMAS BRAXTON WARREN
 DB 1128, PG 75
 "MORRIS TRACT" DB 606, PG 333

I HEREBY CERTIFY THAT THE SURVEY IS OF AN EXISTING PARCEL OR PARCELS OF LAND.
Lewis D. Burn L-2205
 SURVEYOR'S SIGNATURE REGISTRATION NUMBER



REVISED 2-5-96: Added Point Numbers DUMPSB

PLAT SHOWING PROPERTY STANDING IN THE NAME OF
HALIFAX COUNTY
 DB 1131, PG 290; DB 1501, PG 548; DB 1501, PG 551; DB 1523, PG 77
 SR 1417 BETWEEN SR 1001 AND SR 1418 JUST NORTH OF NC ROUTE 48

SCALE: 1" = 200'	APPROVED:	DRAWN BY: L.B.
DATE: 10-1-94		REVISED: 2-5-96

BUTTERWOOD TOWNSHIP HALIFAX COUNTY NORTH CAROLINA
 BURR & ASSOCIATES, P.A.
 1400 GEORGIA AVENUE
 ROANOKE RAPIDS, NC 27870
 (919) 537-0369
 DRAWING NUMBER:
 B & A 6-23

Cab 5 Slide 323

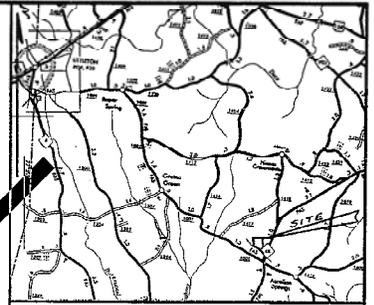
I, LEWIS O. BURR, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION ON 8-24-95 AS SHOWN. THAT BOUNDARY DEFINITIONS FOUND IN SURVEY PAPERS DB 1081, PG 233 WERE USED AS THE PRIMARY GUIDES FOR THIS SURVEY; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND IN BOOK PAGE THAT THE RATIO OF PRECISION CALCULATED IS ONE IN 10000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS 19TH DAY OF APRIL, A.D., 1996

Lewis O. Burr L2205
SURVEYOR'S SIGNATURE REGISTRATION NUMBER



NORTH CAROLINA, HALIFAX COUNTY
I, ANN BURR, A NOTARY PUBLIC OF THE COUNTY AND STATE AFORESAID, HEREBY APPEAR AND BEING A REGISTERED LAND SURVEYOR, PERSONALLY THE FOREGOING INSTRUMENTS AND AT THE END OF THE EXECUTION OF THE SAME, WITNESS MY HAND AND OFFICIAL SEAL OR SEAL THIS 19TH DAY OF APRIL, 1996

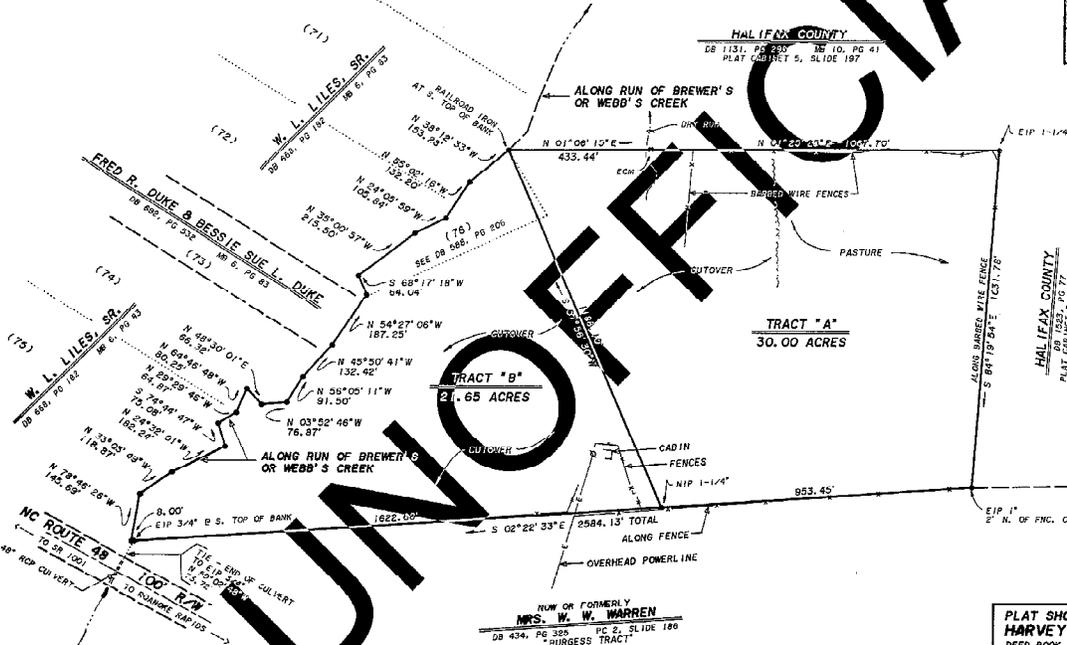
Ann Burr
NOTARY PUBLIC
MY COMMISSION EXPIRES MARCH 5, 1996



LOCATION MAP
SCALE: NONE



PLAT CABINET 5, SLIDE 197

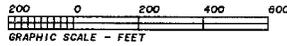


NORTH CAROLINA, HALIFAX COUNTY
I, JUDY EVANS-BARBEE, A NOTARY PUBLIC OF HALIFAX COUNTY, DO HEREBY CERTIFY THAT THIS INSTRUMENT WAS RECORDED IN PLAT CABINET 5, SLIDE 323 ON THE 19TH DAY OF APRIL, 1996.
Judy Evans-Barbee
JUDY EVANS-BARBEE, HALIFAX COUNTY REGISTER OF DEEDS

LEGEND:
ECM = EXISTING CONCRETE MONUMENT
EIR = EXISTING IRON ROD
EIP = EXISTING IRON PIPE
RCP = REINFORCED CONCRETE PIPE
NIP = NEW IRON PIPE SET THIS SURVEY

I HEREBY CERTIFY THAT THE SURVEY IS OF AN EXISTING PARCEL OR PARCELS OF LAND.

Lewis O. Burr L2205
SURVEYOR'S SIGNATURE REGISTRATION NUMBER



PLAT SHOWING PROPERTY STANDING IN THE NAME OF HARVEY T. HAWKINS, JR & SELMA J. HAWKINS DEED BOOK 1081, PAGE 233 ** FORMERLY M. C. CRAWLEY OFF OF NC ROUTE 49 JUST EAST OF SR 1001 & BREWER'S CREEK		
SCALE: 1" = 200'	APPROVED:	DRAWN BY: L.B.
DATE: 4-10-95		REVISED:
BUTTERWOOD TOWNSHIP HALIFAX COUNTY NORTH CAROLINA		
BURR & ASSOCIATES, P.A. 1400 GEORGIA AVENUE ROANOKE RAPIDS, NC 27870 (919) 537-0368		DRAWING NUMBER: B & A 7-158

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BOOK 1649 PAGE 602

HALIFAX COUNTY
2168

69-22-95



\$120.00

Real Estate
Excise Tax

FILED FOR REGISTRATION AND RECORDED

3:30 O'CLOCK PM
Sept 23 1975 IN BOOK
July 16 1979 PAGE 602
Register of Deeds, Halifax County

Excise Tax \$120.00

RF 12⁰⁰

Recording Time, Book and Page

Tax Lot No. Parcel Identifier No.
Verified by County on the day of, 19.....
by

Mail after recording to Godwin & Stephenson, P. O. Box 429, Roanoke Rapids, NC 27870

This instrument was prepared by W. Turner Stephenson, III

Brief description for the Index BUTTWD. TWNSP. CO. LANDFILL

NORTH CAROLINA GENERAL WARRANTY DEED

THIS DEED made this 13th day of July, 1975, by and between

GRANTOR

H. T. Hawkins, Jr., and wife,
Selma J. Hawkins

GRANTEE

Halifax County

P. O. Box 38
Halifax, NC 27839

Enter in appropriate block for each party: name, address, and, if appropriate, character of entity, e.g. corporation or partnership.

The designation Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine or neuter as required by context.

WITNESSETH, that the Grantor, for a valuable consideration paid by the Grantee, the receipt of which is hereby acknowledged, has and by these presents does grant, bargain, sell and convey unto the Grantee in fee simple, all that certain lot or parcel of land situated in the City of Butterwood Township,

Halifax County, North Carolina and more particularly described as follows:

[See Schedule A attached]

SCHEDULE A

That certain tract or parcel of land lying and being situate on the west side of NC Route 48, Butterwood Township, Halifax County, North Carolina, more particularly described as follows: BEGINNING at a railroad iron at the southern top of the bank of Brewer's or Webb's Creek, said point lying the following courses and distances from the end of a culvert under NC Route 48 through which Brewer's or Webb's Creek runs; thence generally along said creek (the dividing line between Grantor's property and the property of W. L. Liles, Sr., Fred R. Duke and Bessie Sue L. Duke) N.59°02'48"W.73.72' to an existing iron pipe located 8' from an existing iron pipe on southern top of the bank of said creek; thence N.78°46'26"W.145.69'; thence N.33°03'49"W.118.87'; thence N.24°32'01"W.182.24'; thence S.74°44'47"W.75.08'; thence N.29°29'46"W.64.87'; thence N.64°46'48"W.80.25'; thence N.48°30'01"E.66.32'; thence N.03°52'46"W.76.87'; thence N.56°05'11"W.91.50'; thence N.45°50'41"W.132.42'; thence N.54°27'06"W.187.25'; thence S.68°17'18"W.64.04'; thence N.35°00'57"W.215.50'; thence N.24°05'59"W.105.84'; thence N.55°02'16"W.132.20'; thence N.38°12'33"W.153.28' to the railroad iron at the southern top of the bank of said creek, being the point of beginning; thence leaving said creek N.01°06'15"E.433.44' to an existing concrete monument; thence N.01°25'25"E.1067.70' to an existing iron pipe; thence S.48°19'54"E.1031.78' to an existing iron pipe; thence along the property line of property now or formerly belonging to Mrs. W. W. Warren S.02°22'33"E.953.45' to a new iron pipe; thence S.67°56'30"W.1188.10' to the point of beginning and shown as Tract "A", containing 30 acres on that map or plat entitled Plat Showing Property Standing in the Name of Harvey T. Hawkins, Jr. and Selma J. Hawkins recorded in Plat Cabinet 5, Slide 323, Halifax County Public Registry. Reference to said map being hereby made for greater certainty of description.

UNRECORDED

WD 79-13

Grantee agree to erect a chain link fence along the property line with the grantees and install two hundred fifty feet (250') of screening material in said fence.

The property hereinabove described was acquired by Grantor by instrument recorded in Deed Book 1081,

Page 255

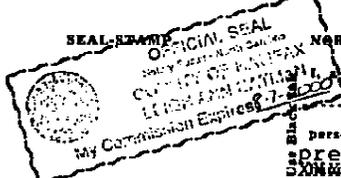
A map showing the above described property is recorded in Plat Book page.

TO HAVE AND TO HOLD the aforesaid lot or parcel of land and all privileges and appurtenances thereto belonging to the Grantee in fee simple.

And the Grantor covenants with the Grantee, that Grantor is seized of the premises in fee simple, has the right to convey the same in fee simple, that title is marketable and free and clear of all encumbrances, and that Grantor will warrant and defend the title against the lawful claims of all persons whomsoever except for the exceptions hereinafter stated. Title to the property hereinabove described is subject to the following exceptions:

IN WITNESS WHEREOF, the Grantor has hereunto set his hand and seal, or if corporate, has caused this instrument to be signed in its corporate name by its duly authorized officers and its seal to be hereunto affixed by authority of its Board of Directors, the day and year first above written.

By: (Corporate Name) H. T. Hawkins, Jr. (SEAL)
President Selma J. Hawkins (SEAL)
ATTEST: Ernestine S. Stephenson (SEAL)
Secretary (Corporate Seal)
Subscribing Witness



Ernestine S. Stephenson, Notary Public of the County and State aforesaid, certify that H. T. Hawkins, Jr. and Selma J. Hawkins signed the foregoing instrument. Witness my hand and official seal, this 24th day of August 1995.

SEAL-STAMP NORTH CAROLINA, County.
I, a Notary Public of the County and State aforesaid, certify that personally came before me this day and acknowledged that he is Secretary of a North Carolina corporation, and that by authority duly given and as the act of the corporation, the foregoing instrument was signed in its name by its President, sealed with its corporate seal and attested by as its Secretary. Witness my hand and official stamp or seal, this day of 19.

The foregoing Certificate(s) of Leigh Anne Catron, Notary Public of Halifax County.

is/are certified to be correct. This instrument and this certificate are duly registered at the date and time and in the Book and Page shown on the first page hereof.

Judy Evans-Barber, REGISTER OF DEEDS FOR Halifax COUNTY
By Carolyn S. Talley, Assistant - Register of Deeds

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Attachment 2
Operations Plan

**Halifax County, North Carolina
Coal Ash Monofill (Permit No. 42-04 INDUS)
Permit Renewal**

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Operations Manual

Halifax County Landfill Facility Halifax County, North Carolina

Prepared for:

Halifax County Department of Public Utilities
Halifax, North Carolina

June 2008

Revised: December 2010



14 N. BOYLAN AVENUE
RALEIGH, NORTH CAROLINA 27603
NC LIC. NO. C-0828 (ENGINEERING)

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HALIFAX COUNTY LANDFILL FACILITY

OPERATIONS MANUAL

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Figure 1	Existing and Proposed Landfill Units and Solid Waste Management Activities
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APPENDICES

Appendix A	Waste Screening Form
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Only portions of this plan that relate to the Coal Ash Landfill are approved at this time. Information pertaining to the C&D Landfill is not approved in this plan.

SECTION 1.0 GENERAL FACILITY OPERATIONS

1.1 OVERVIEW

This Operations Manual was prepared for operations of the Halifax County Landfill facility (Permit No. 42-04) located near Littleton. This document discusses the operation of the following landfill units and other solid waste management activities:

- Area 1 C&D Landfill Unit (vertical expansion over closed unlined MSW unit);
- Area 2 C&D Landfill Unit (Proposed);
- Ash Monofill;
- Animal Waste Disposal Area;
- Wood Waste Processing Area;
- White Goods Handling Area;
- Used Tire Storage Area; and
- Used Pesticide Container Storage Area.

Refer to **Figure 1** for the location of existing and proposed landfill units and other solid waste management activities.

The information contained herein was prepared to provide landfill personnel with a clear understanding of how the Design Engineer assumed that the completed facility would be operated. While deviations from the operations outlined here may be acceptable, they should be reviewed and approved by the Design Engineer. Please refer to the appropriate permit application for a detailed discussion and calculations for the individual components of each landfill unit, including phasing plans.

1.2 CONTACT INFORMATION

All correspondence and questions concerning the operation of the Halifax County Landfill should be directed to the appropriate County and State personnel listed below. For fire or police emergencies dial 911.

1.2.1 Halifax County

Halifax County Department of Public Utilities
26 N. King Street (Public Works Bldg.)
P.O. Box 70
Halifax, NC 27839
Phone: (252) 583-1451
Fax: (252) 593-5014
Contact: Gwen Matthews, Interim Director

Halifax County Landfill
921 Liles Road
Littleton, NC 27850
Phone: (252) 586-7516
Fax: (252) 586-2685
Contact: Larry Garriss, Solid Waste Director

1.2.2 North Carolina Department of Environment and Natural Resources

North Carolina DENR - Raleigh Central Office (RCO)
401 Oberlin Road
Raleigh, NC 27605
Phone: (919) 508-8400
Fax: (919) 715-3605

North Carolina DENR - Wilmington Regional Office (WRO)
127 Cardinal Drive Extension
Wilmington, NC 28405
Phone: (910) 796-7215
Fax: (910) 350-2004

North Carolina DENR - Raleigh Regional Office (RRO)
3800 Barrett Drive
Raleigh, NC 27609
Phone: (919) 571-4700
Fax: (919) 571-4718

Division of Waste Management (DWM) - Solid Waste Section:

Field Operations Branch Head: Mark Poindexter (RCO)
Eastern Regional Supervisor: John Crowder (WRO)
Waste Management Specialist: Mary Whaley (RCO)

Division of Land Resources - Land Quality Section:

Regional Engineer: John Holley, P.E. (RRO)

1.3 ACCESS CONTROL

Limiting access to the landfill facility is important for the following reasons:

- Unauthorized and illegal dumping of waste materials is prevented.
- Trespassing, and injury resulting therefrom, is discouraged.
- The risk of vandalism is greatly reduced.

Access to active areas of the landfill will be controlled by a combination of fences and natural

barriers, and strictly enforced operating hours. A landfill attendant will be on duty at all times when the facility is open for public use to enforce access restrictions (see also **Section 1.9**).

1.3.1 Physical Restraints

The site will be accessed by the existing entrance on Liles Road. Scales and a scale house and office are provided at the entrance. All waste will have been weighed prior to being placed in the landfill. The entrance has a gate which will be securely locked during non-operating hours.

1.3.2 Security

Frequent inspections of gates and fences will be performed by landfill personnel. The County will arrange for a random security patrol of the main gate to further discourage trespassing. Evidence of trespassing, vandalism, or illegal operation will be reported to the County Solid Waste Director.

1.4 SIGNAGE

A prominent sign(s) containing the information required by the DWM will be placed at the landfill entrance. This sign(s) will provide information on operating hours, operating procedures, and acceptable wastes. Additional signage will be provided as necessary within the landfill complex to distinctly distinguish the roadway to the active landfill unit(s). Service and maintenance roads for use by operations personnel will be clearly marked and barriers (e.g., traffic cones, barrels, etc.) will be provided as required.

Specific to the C&D landfill unit, a sign will be posted which states that liquid, hazardous, and municipal solid wastes are excluded from disposal in the C&D landfill unit.

1.5 COMMUNICATIONS

Two way radio communication will be maintained between the active landfill unit(s) and the landfill scale house and office. The scale house and office have telephones in case of emergency and for the conduct of day-to-day business. Emergency telephone numbers are displayed in the scale house and office.

1.6 FIRE AND SAFETY

1.6.1 Fire Control

Although no open burning of waste is allowed at the facility, the possibility of fire within the landfill or a piece of equipment must be anticipated in the daily operation of the landfill. A combination of factory installed fire suppression systems and/or portable fire extinguishers will be operational on all heavy pieces of equipment at all times. For larger or more serious outbreaks, the local fire department will respond.

Fires within the landfill will be limited by the use of daily and intermediate cover as a fire break and control of "hot" loads entering the landfill. Landfill personnel at the scale house will turn away all trucks containing waste that is suspected to be hot. If a hot load is placed on the working face, then the load will be spread as thin as possible and daily cover soil will be immediately placed on the waste to extinguish the fire.

In general, fires that break out close to the surface of the disposal area should be excavated and smothered with cover material. Deep fires should be smothered out by placing moist soil on the surface and by constructing soil barriers around the fire. Where the smothering technique fails, the burning material must be excavated and smothered or quenched with water once the burning material is brought to the surface. Water is usually not effective unless it can be directly applied to the burning material.

The County will verbally notify the DWM (see **Section 1.2.2**) within 24 hours of discovery of a fire within any landfill disposal area. In addition, written documentation describing the fire, the actions carried out to extinguish the fire, and a strategy for preventing future occurrences will be provided to the DWM within 15 days following any such occurrence.

1.6.2 Safety

All aspects of the operation of the landfill facility were developed with the health and safety of the landfill's operating staff, customers, and neighbors in mind. Prior to commencement of operations in the new landfill phase/area, a member of the landfill operating staff will be designated site safety officer. This individual, together with the facility's management will modify the site safety and emergency response program to remain consistent with National Solid Waste Management Association and Occupational Safety and Health Administration (OSHA) guidance.

Safety equipment provided includes equipment rollover protective cabs, seat belts, audible reverse warning devices, hard hats, safety shoes, and first aid kits. Landfill personnel will be encouraged to complete the American Red Cross Basic First Aid Course. Other safety requirements as designated by the County will also be implemented.

1.7 SEVERE WEATHER CONDITIONS

Unusual weather conditions can directly affect the operation of the landfill facility. Some of these weather conditions and recommended operational responses are as follows.

1.7.1 Ice Storms

An ice storm can make access to the landfill dangerous, prevent movement or placement of daily cover, and, thus, may require closure of the landfill until the ice is removed or has melted.

1.7.2 Heavy Rains

Exposed soil surfaces can create a muddy situation in some portions of the landfill during rainy periods. The control of drainage and use of crushed stone on unpaved roads should provide all-weather access for the site and promote drainage away from critical areas. In areas where the aggregate surface is washed away or otherwise damaged, new aggregate should be used for repair.

Intense rains can affect newly constructed drainage structures such as swales, diversions, cover soils, and vegetation. After such a rain event, inspection by landfill personnel will be initiated and corrective measures taken to repair any damage found before the next rainfall.

1.7.3 Electrical Storms

The open area of a landfill is susceptible to the hazards of an electrical storm. If necessary, landfilling activities will be temporarily suspended during such an event. To guarantee the safety of all field personnel, refuge will be taken in the on-site buildings or in rubber-tired vehicles.

1.7.4 Windy Conditions

Landfill operations during a particularly windy period may require that the working face be temporarily shifted to a more sheltered area. Periodic cover will be placed as required.

1.7.5 Violent Storms

In the event of hurricane, tornado, or severe winter storm warning issued by the National Weather Service, landfill operations may be temporarily suspended until the warning is lifted. Daily cover will be placed on exposed waste and buildings and equipment will be properly secured.

1.8 EQUIPMENT REQUIREMENTS

The County will maintain on-site equipment required to perform the necessary landfill activities. Periodic maintenance of all landfilling equipment, and minor and major repair work will be performed at designated maintenance zones outside of the landfill.

1.9 PERSONNEL REQUIREMENTS

At least one member of the landfill supervisory staff will be certified as a Manager of Landfill Operations (MOLO) by the Solid Waste Association of North America (SWANA). Each landfill employee will go through an annual training course (led by supervisory staff) and is certified by SWANA as Landfill Operations personnel. As part of this training, personnel learn to recognize loads which may contain prohibited wastes.

At least one trained individual will be on duty at the site while the facility is open for public use and at all times during active waste management operations to ensure compliance with operational requirements.

1.10 UTILITIES

Electrical power, water, telephone, and restrooms will be provided at the landfill scale house and/or office.

1.11 RECORD KEEPING PROGRAM

The County will maintain the following records in an operating record at the landfill:

- A. Current permit(s);
- B. Inspection reports;
- C. Audit and compliance records;
- D. Annual landfill reports;
- E. Waste inspection records (see **Section 2.4**);
- F. Daily tonnage records - including source of generation;
- G. Waste determination records;
- H. Quantity, location of disposal, generator, and special handling procedures for all special wastes disposed of at the site;
- I. List of generators and haulers that have attempted to dispose of restricted wastes;
- J. Employee training procedures and records of training completed;
- K. All ground water monitoring and surface water quality information (See the current **Water Quality Monitoring Plan**) including:
 - 1. Monitoring well construction records;
 - 2. Sampling dates and results;
 - 3. Statistical analyses; and
 - 4. Results of inspections, repairs, etc.
- L. Gas monitoring results and remediation measures as required (see **Section 3.4.2**);
- M. All closure and post-closure information, where applicable, including:
 - 1. Notification of intent to close;
 - 2. Testing;
 - 3. Certification; and
 - 4. Recording.
- N. Cost estimates or financial assurance documentation.
- O. A notation of the date and time of cover placement.

The operating record will be kept up to date by the Solid Waste Director or his designee. It will be presented upon request to the DWM for inspection. A copy of this Operations Manual will be kept at the landfill and will be available for use at all times.

SECTION 2.0 WASTE HANDLING OPERATIONS

2.1 OVERVIEW

This section describes the required waste handling operations for the Halifax County Landfill facility. In addition to the C&D and ash waste disposed of at this facility, the County also handles white goods, used tires, and used pesticide containers. These materials are stored at the landfill facility until there are sufficient quantities for pick up by various recycling contractors. The County also operates an animal waste disposal area and a wood waste processing area.

2.2 ACCEPTABLE WASTES

2.2.1 C&D Landfill Units

Only the following wastes generated within the approved service area may be disposed of in the C&D landfill unit (Note list is in accordance with existing permit):

- Land Clearing and Inert Debris Landfill: as defined in 15A NCAC 13B.0101(54) means a facility for the disposal of land-clearing waste, concrete, brick, concrete block, uncontaminated soil, gravel and rock, untreated and unpainted wood, and yard trash.
- Land Clearing Waste: as defined in 15A NCAC 13B.0101(53) means solid waste which is generated solely from land-clearing activities, limited to stumps, trees, limbs, brush, grass, and other naturally occurring vegetative material.
- Asphalt: in accordance with NCGS 130A-294(m).
- Construction and 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.
- Industrial solid waste that is generated by mobile or modular home manufacturers and asphalt shingle manufacturers in Halifax County. The waste must be separated at the manufacturing site to exclude municipal solid waste, hazardous waste, and other waste prohibited from disposal in a Construction and Demolition Landfill.
- Other Wastes as Approved by the Solid Waste Section of the Division of Waste Management.

In addition, the special wastes (asbestos only) described in **Section 2.5.4** may also be disposed of in the C&D landfill units.

2.2.2 Ash Monofill

Only coal combustion by-products (residuals including fly ash, bottom ash, boiler slag, and flue gas desulfurization residue produced by coal fired electrical or steam generation units) generated within the approved service area may be disposed of in the ash monofill.

2.2.3 Wood Waste Processing Area

Clean wood waste including pallets, lumber scraps, and yard waste is accepted for processing within the facility's wood waste processing area (see **Section 2.6**).

2.3 PROHIBITED WASTES

2.3.1 C&D Landfill Units

Only wastes, as defined in **Section 2.2.1** above may be accepted for disposal in the C&D landfill unit. No other wastes may be accepted.

2.3.2 Ash Monofill

Only wastes, as defined in **Section 2.2.2** above may be accepted for disposal in the ash monofill. No other wastes may be accepted.

2.3.3 Wood Waste Processing Area

Only clean wood waste as defined in **Section 2.2.3** above may be accepted. No other wastes may be accepted. Unacceptable wastes found in this area, if not otherwise prohibited, are disposed of within the active C&D landfill unit.

2.4 WASTE SCREENING PROGRAMS

In order to assure that prohibited wastes are not entering the landfill facility, screening programs have been implemented at the landfill. Waste received at both the scale house entrance and waste taken to the working face is inspected by trained personnel. These individuals have been trained to spot indications of suspicious wastes, including: hazardous placarding or markings, liquids, powders or dusts, sludges, bright or unusual colors, drums or commercial size containers, and "chemical" odors. Screening programs for visual and olfactory characteristics of prohibited wastes are an ongoing part of the landfill operation.

2.4.1 Waste Receiving and Inspection

All vehicles must stop at the scale house located at the entrance of the facility and visitors are required to sign-in. All waste transportation vehicles are weighed and the content of the load assessed. The scale attendant(s) requests from the driver of the vehicle a description of the waste it is carrying to ensure that unacceptable waste is not allowed into the landfill. The attendant(s) then visually checks the vehicle as it crosses the scale. Signs informing users of the acceptable and unacceptable types of waste are posted at the scale house. Once passing the scales, the vehicles are routed to the appropriate landfill unit or other area (white goods handling area, etc.) as appropriate.

Vehicles are randomly selected for screening on a regular basis a minimum of three times per quarter (i.e. three months). However, if something looks suspicious is spotted in any

waste load, that load is inspected further.

Vehicles selected for inspection are directed to an area of intermediate cover adjacent to the working face where the vehicle will be unloaded. Waste is carefully spread using suitable equipment. An attendant trained to identify wastes that are unacceptable at the landfill inspects the waste discharged at the screening site. If unacceptable waste is found, including wastes generated from outside of the service area, the load will be isolated and secured by berming off the area. For unacceptable wastes that are non-hazardous, the Solid Waste Director will then notify officials of the DWM (see **Section 1.2.2**) within 24 hours of attempted disposal of any waste the landfill is not permitted to receive in order to determine the proper course of action. For unacceptable wastes that are hazardous, the Hazardous Waste Contingency Plan outlined in **Section 2.4.2** will be followed. The hauler is responsible for removing unacceptable waste from the landfill property.

If no unacceptable waste is found, the load will be pushed to the working face and incorporated into the daily waste cell. All random waste inspections will be documented by landfill staff using the waste screening form provided in **Appendix A**.

In addition to random waste screening described above, waste unloaded on the active face will be inspected by the equipment operators, trained to spot unacceptable wastes, before and during spreading and compaction. Any suspicious looking waste is reported immediately to the designated primary inspector for further evaluation.

2.4.2 Hazardous Waste Contingency Plan

In the event that identifiable hazardous waste or waste of questionable character is detected at the landfill, appropriate equipment, protective gear, personnel, and materials as necessary will be employed to isolate the wastes. The DWM will be notified immediately (see **Section 1.2.2**) that an attempt was made to dispose of hazardous waste at the landfill. If the vehicle attempting disposal of such waste is known, all attempts will be made to prevent that vehicle from leaving the site or, if the vehicle has left the site, immediate notice will be served on the owner of the vehicle that hazardous waste, for which they have responsibility, has been disposed of at the landfill.

The County will assist the DWM as necessary and appropriate in the removal and disposition of the hazardous waste and in the prosecution of responsible parties. If needed, the hazardous waste will be covered with either on-site soils or other tarping material until such time when an appropriate method can be implemented to properly handle the waste. The cost of the removal and disposing of the hazardous waste will be charged to the owner of the vehicle involved. Any vehicle owner or operator who knowingly dumps hazardous waste in the landfill may be barred from using the landfill.

Should an incident where hazardous waste is found at the landfill occur, the event will be documented by landfill staff using the waste screening form provided in **Appendix A**.

Records of information gathered as part of the waste screening programs will be maintained at the landfill site during its active life and as long as required by the County and the DWM.

2.5 WASTE DISPOSAL

2.5.1 Access

Traffic will be clearly directed to the appropriate active access road. The location of access roads during waste placement will be determined by operations personnel in order to reflect waste placement strategy. Additionally, access will be maintained for site monitoring locations.

2.5.2 General Procedures

For each active landfill unit, waste transportation vehicles will arrive at the working face at random intervals. There may be a number of vehicles unloading waste at the same time, while other vehicles are waiting. In order to maintain control over the unloading of waste, a certain number of vehicles will be allowed on the working face at a time. The actual number will be determined by the truck spotter. This procedure will be used in order to minimize the potential of unloading unacceptable waste and to control disposal activity. Operations at the working face will be conducted in a manner which will encourage the efficient movement of transportation vehicles to and from the working face, and to expedite the unloading of waste.

The approach to the working face will be maintained such that two or more vehicles may safely unload side by side. A vehicle turn-around area large enough to enable vehicles to arrive and turn around safely with reasonable speed will be provided adjacent to the unloading area. The vehicles will back to a vacant area near the working face to unload. Upon completion of the unloading operation, the transportation vehicles will immediately leave the working face area. Personnel will direct traffic necessary to expedite safe movement of vehicles.

Waste unloading at the landfill will be controlled to prevent disposal in locations other than those specified by site management. Such control will also be used to confine the working face to a minimum width, yet allow safe and efficient operations. The width and length of the working face will be maintained as small as practical in order to maintain the appearance of the site, control windblown waste, and minimize the amount of cover required each day. Normally, only one working face will be active on any given day, with all deposited waste in other areas covered by either periodic, intermediate, or final cover, as appropriate.

The procedures for placement and compaction of C&D waste include: unloading of vehicles, spreading of waste into 2 foot lifts, and compaction on relatively flat slopes (i.e. 5H:1V max.) using a landfill compactor and a minimum number of three full passes. For the ash monofill, the ash is spread and tracked in with a bulldozer.

The use of portable signs with directional arrows and portable traffic barricades will facilitate the unloading of wastes to the designated disposal locations. These signs and barricades will be placed along the access route to the working face of the landfill or other designated areas which may be established.

Appropriate methods such as wind screens and/or diking adjacent to the working face will be used as required to control windblown waste. All windblown waste will be collected and disposed of by landfill staff at the end of each working day.

The removal of solid waste from any landfill unit is prohibited unless an appropriate recycling plan has been approved by the DWM. Regardless, the general public is prohibited from any waste removal activities from any landfill unit.

2.5.3 Ash Monofill

The following are items unique to the ash monofill in that this unit includes a geomembrane liner.

2.5.3.1 Placement of Initial Lift

During ash placement, the geomembrane liner is most vulnerable during the placement of the first lift of ash. The first lift should be a minimum of two (2) to four (4) feet thick and be carefully spread using a bulldozer. A spotter should be used during placement of the first lift of ash to ensure that no stretching or wrinkling of the geomembrane is occurring.

In the event that the landfill staff identifies any damage to any part of the geomembrane liner, they should immediately initiate its repair. Additionally, they should document the damage and the repair as a part of the operating record.

2.5.3.2 Equipment Operations Within the Landfill

Both the facility's operational vehicles and waste transportation vehicles must be restricted as follows within the ash monofill:

- Equipment operation directly on the protective cover will be limited to rubber-tired vehicles having a maximum ground contact, i.e., tire pressure, of less than 32 psi.
- A minimum vertical separation of 3 feet will be maintained between the geomembrane liner and all ash transportation vehicles.
- A minimum vertical separation of 2 feet will be maintained between the geomembrane liner and bulldozers used in placement of the ash.

The operation of vehicles within those portions of the ash monofill not actively receiving waste should be restricted to activities associated with erosion and sedimentation control.

2.5.4 Special Waste Management

2.5.4.1 Asbestos Management (C&D Landfill Units)

The County may dispose of asbestos within the C&D landfill units. Asbestos will only be accepted if it has been processed and packaged in accordance with State and Federal (40 CFR 61) regulations. Asbestos will arrive at the site in vehicles that contain only the asbestos waste and only after advance notification by the generator.

Once the hauler brings the asbestos to the landfill, the hauler will be directed to the designated asbestos disposal area by operations personnel. The designated disposal area will be prepared by operations personnel by leveling a small area using a dozer or loader. Prior to disposal, the landfill operators will stockpile cover soil near the designated asbestos disposal area. The volume of soil stockpiled will be sufficient to cover the waste and to provide any berms, etc. to maintain temporary separation from other landfill traffic.

Once placed in the prepared area, the asbestos waste will be covered with a minimum of 18 inches of cover soil placed in a single lift. The surface of the cover soil will be compacted and graded using a tracked dozer or loader. The landfill compactor will be prohibited from operating over asbestos disposal areas until at least 18 inches of cover are in-place.

The landfill staff will record the approximate location and elevation of the asbestos waste once cover is in-place. The Solid Waste Director will then review pertinent disposal and location information to assure compliance with regulatory requirements and enter the information into the Operating Record.

Once disposal and recording for asbestos waste is completed, the disposal area may be covered with waste. No excavation into designated asbestos disposal areas will be permitted.

2.5.4.2 Animal Carcasses (Animal Waste Disposal Area)

The disposal of animal carcasses within the animal waste disposal area will be handled as follows. The generator of the carcass(es) must call in advance to the landfill, and a determination will be made as to whether or not the carcass(es) will be accepted. If approved, the generator will deliver the carcass(es) at a predetermined time. An area for disposal will already have been prepared and the waste will be covered immediately with 3 feet of soil.

2.5.5 Periodic Cover

2.5.5.1 C&D Landfill Units

At the completion of waste placement each week, or sooner if the area of exposed waste exceeds one-half acre in size, a 6-inch layer of earthen material or other material as approved by the DWM will be placed over the exposed waste. This periodic cover is intended to control vectors, fire, odors, and blowing debris.

2.5.5.2 Ash Monofill

Due to the nature of the waste placed in this landfill unit, no periodic soil cover is required.

2.5.6 Intermediate Cover

2.5.6.1 C&D Landfill Units

A 12 inch layer of soil cover should be placed on all waste surfaces that have not received waste in 30 days but are below final elevation. This intermediate cover should be seeded immediately and graded such that all precipitation run-off is channeled to the surface water systems.

2.5.6.2 Ash Monofill

Unless suitable vegetation can be established on the surface of the ash a 12-inch layer of soil cover should be placed over the ash on all outer side slopes. This intermediate cover should be seeded immediately and graded such that all precipitation run-off is channeled to the surface water systems.

2.5.7 Height Monitoring

Periodically, the landfill staff will monitor landfill top and side slope elevations with a level. When such elevations approach design grades, the final top-of-waste grades will be staked to limit over-placement of waste.

2.6 WOOD WASTE PROCESSING AREA

A wood waste processing area is located to the east of the existing Area 1 C&D landfill unit (see **Figure 1**). The operation of the wood waste processing area is as follows:

Acceptable wood and yard wastes are stockpiled to an approximate height of 15 feet over an area of approximately 1 acre (approximate weight of 1,500 to 2,000 lbs.). At that time a contractor is brought in to grind the waste. Once the waste is ground and becomes mulch, it is either hauled off-site, used around the site, primarily for surface stabilization, or placed in windrows to be given to the public or otherwise used in the future.

2.7 WHITE GOODS HANDLING AREA

A white goods handling area is located to the east of the existing Area 1 C&D landfill unit (see **Figure 1**). The operation of the white goods handling area is as follows:

Within the white goods handling area, white goods and scrap metal are stockpiled up to about 10 feet high over an approximate 100 foot by 100 foot area. Once the stockpile reaches capacity (typically every 2 to 3 months), a recycler removes Freon and hauls the white goods and scrap metal off-site to be recycled.

2.8 USED TIRE STORAGE AREA

Used tires are collected at an area near the landfill scale house (see **Figure 1**) and placed in up to three tire trailers. Once one or more trailers are full, the trailer(s) are picked up by a recycling contractor.

2.9 USED PESTICIDE CONTAINER STORAGE AREA

A sheltered storage area is located near the landfill office/maintenance building (see **Figure 1**) for used pesticide containers from local agricultural sources. Once approximately 5,000 containers have been collected, a recycling contractor grinds the containers, bags the ground plastic, and transports the plastic for recycling.

SECTION 3.0 ENVIRONMENTAL MANAGEMENT

3.1 OVERVIEW

This section reviews the overall environmental management tasks required for the successful operation of the landfill facility.

3.2 SURFACE WATER CONTROL

As used herein, the definition of “surface water” is water which results from precipitation or site run-on that has not contacted the waste.

Proper control of surface water at the landfill will accomplish the following goals:

- Prevent the run-on of surface water into the landfill unit(s) or the active face(s);
- Prevent the run-off of surface water that has come into contact with the waste (i.e. leachate);
- Limit the erosion caused by surface waters; and
- Limit sediments carried off-site by surface waters.

Separate erosion and sedimentation control plans have been provided for the various landfill units. These plans describe both short and long term engineered features and practices for preventing erosion and controlling sedimentation at this site. The following is a brief discussion of some of these features and practices, focusing more on the landfill units.

3.2.1 Surface Water Run-On Control

The perimeter berms and/or perimeter channels around the landfill unit(s) are designed to prevent the run-on of surface water from adjacent land into the landfill. Additional structures such as diversion berms, channels, down pipes, etc. carry surface water away from the landfill units.

3.2.2 Erosion Control

The serviceability of the landfill relies heavily on soil berms, barrier layers, and agricultural layers that are readily eroded by flowing water. Erosion control provisions incorporated in the landfill include the following:

- The slope of the working face must be no steeper than 5H:1V where practical to limit erosion of the periodic cover.
- Intermediate cover that has been exposed for more than 30 days must be

seeded immediately and repaired when erosion features are identified.

- Drainage breaks (diversion berms, etc.) are provided on the final cover to limit the flow length of run-off.
- Water collected by each drainage break is routed to stormwater drainage channels or down pipes so that the run-off volume does not accumulate going down the slope.
- The vegetative soil layer placed over the final cover must be seeded immediately.

Additional erosion control measures have been taken within the drainage channels and at points of stormwater discharge. All final cover should be inspected regularly for erosion damage and promptly repaired.

3.2.3 Sedimentation Control

Stormwater run-off from the landfill unit(s) is conveyed to one of the on site sediment basins and/or traps. These basins and/or traps should be inspected regularly for sediment build-up or erosion damage. The basins and/or traps should be cleaned out when sediment fills the lower half of the basin.

3.3 WATER QUALITY MONITORING

The monitoring program and procedures outlined in the current Water Quality Monitoring Plan will be followed for the monitoring of site groundwater monitoring wells and surface water monitoring locations. The results of the water quality monitoring program will be placed in the facility operating record as described in **Section 1.11**.

3.4 LANDFILL GAS (LFG) MANAGEMENT - CLOSED MSW LANDFILL UNIT

Landfill gas (LFG) is produced from degradation of the municipal solid waste (MSW) placed within the closed MSW landfill unit. Due to the nature of the wastes placed within the C&D landfill unit and the ash monofill, no separate LFG management is not expected to be a concern.

3.4.1 Methane Monitoring Program

The County will implement a routine methane monitoring program to ensure that methane concentrations do not exceed 25 percent of the lower explosive limit (LEL) in facility structures, or 100 percent of the LEL at property boundaries. Gas monitoring wells will be sampled on a quarterly basis. Monitoring of facility structures is not required due to the distance and natural barriers between the structures and the closed MSW landfill.

Currently nine gas probes are monitored quarterly. These probes include: GM-1, GM-2,

GM-2B, GM-2R, GM-3, GM-4, GM-4R, GM-5, and GM-5B.

3.4.2 Record Keeping

Results of the methane monitoring program will be placed in the facility operating record as described in **Section 1.11**.

3.4.3 LFG Contingency Plan

In the event methane concentrations exceed allowable limits, the emergency response plan will be as follows:

Open Air Areas

1. For 100% LEL at distances less than 250 feet from structures:
 - a. Recalibrate equipment and recheck reading.
 - b. Immediately take all necessary steps to ensure protection of human health (i.e. remove sources of ignition and limit access to the area).
 - c. Call Fire Department.
 - d. Notify the DWM (see **Section 1.2.2**).
 - e. Notify the Consulting Engineer.
 - f. Note the current weather and ground moisture conditions.
 - g. Within seven days of detection, place in the operating record the methane gas levels detected and a description of the steps taken to protect human health.
 - h. Within 60 days of detection, implement a remediation plan for the methane gas releases, place a copy of the plan in the operating record, and notify the DWM that the plan has been implemented. The plan will describe the nature and extent of the problem and the proposed remedy.

2. For 100% LEL at distances greater than 250 feet from structures:
 - a. Recalibrate equipment and recheck reading.
 - b. Immediately take all necessary steps to ensure protection of human health (i.e. remove sources of ignition and limit access to the area).
 - c. Notify the DWM.
 - d. Notify the Consulting Engineer.
 - e. Note the current weather and ground moisture conditions.

Structures

1. For structures with greater than 25% LEL:
 - a. Recalibrate equipment and recheck reading.
 - b. Immediately take all necessary steps to ensure protection of human health

- as above - including immediate evacuation leaving all doors open.
 - c. Call Fire Department.
 - d. Notify the DWM.
 - e. Notify the Consulting Engineer.
 - f. Note the current weather and ground moisture conditions.
 - g. Within seven days of detection, place in the operating record the methane gas levels detected and a description of the steps taken to protect human health.
 - h. Within 60 days of detection, implement a remediation plan for the methane gas releases, place a copy of the plan in the operating record, and notify the DWM that the plan has been implemented. The plan will describe the nature and extent of the problem and the proposed remedy.
2. For structures with 0-25% LEL:
- a. Recalibrate equipment and recheck reading.
 - b. Discuss with the Consulting Engineer.

3.5 VECTOR CONTROL

Due to the nature of the waste disposed of at this facility, vector control is not anticipated to be of concern. Note that the use of periodic cover in the C&D landfill unit will discourage animals from nesting in the waste.

3.6 ODOR CONTROL

Due to the nature of the waste disposed of at this facility, odor control is not anticipated to be of concern. However, if odor control becomes a problem, additional measures (such as additional cover over wastes such as drywall) will be taken to ensure odor control.

3.7 DUST CONTROL

Dust related to waste hauler traffic on the access roads will be minimized by using a water truck to limit dust on the gravel portion of the road. Dust generated by excavation of cover soil will be limited by watering the cut soil areas if accessible to the water truck. The source of water is from one of the site sediment basins.

3.8 LEACHATE SEEPS

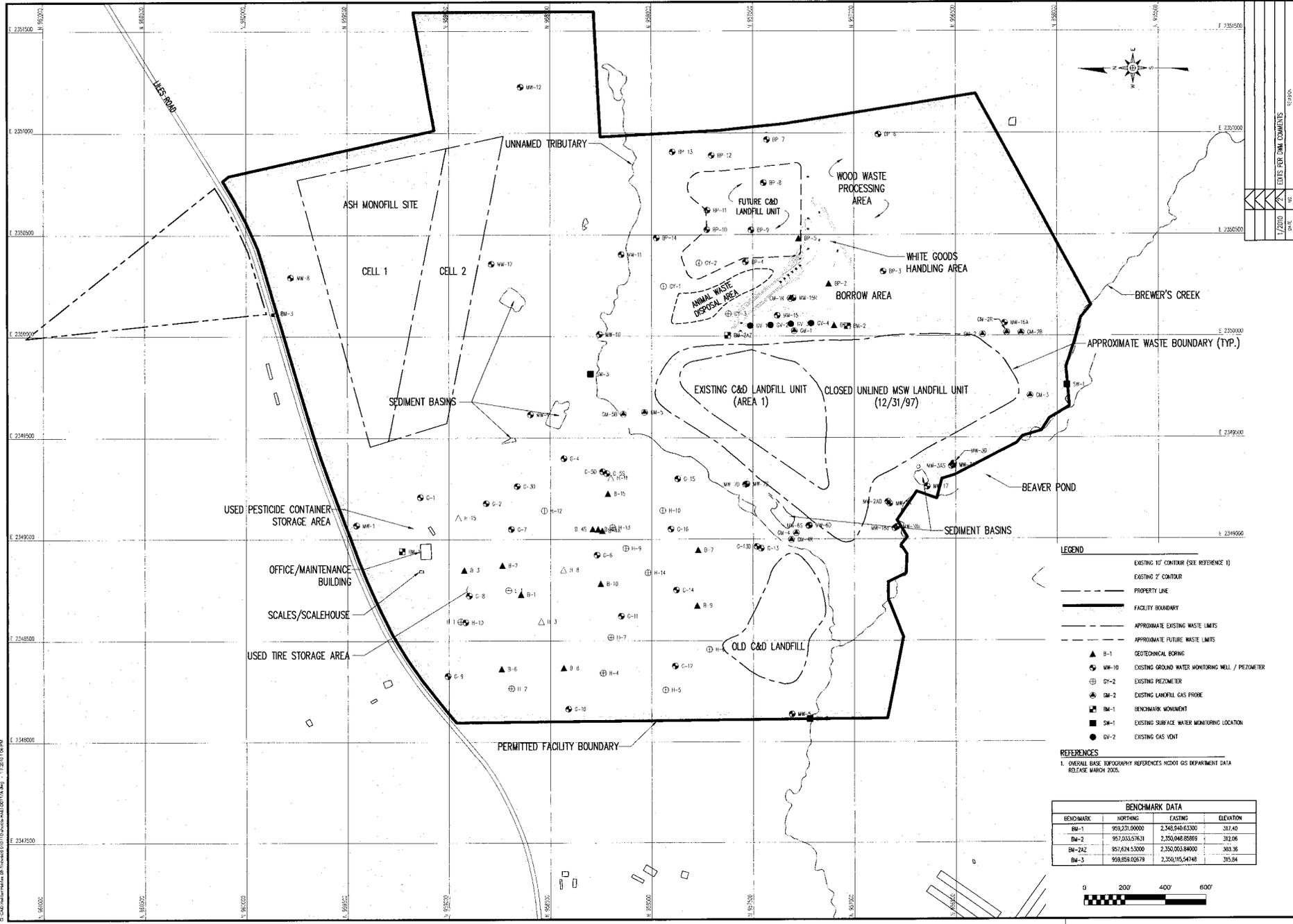
Leachate seeps can occur due to a variety of circumstances. The goal in dealing with leachate seeps is to prevent seepage from leaving the limits of waste disposal areas and to minimize the potential for reoccurrence. If evidence of leachate seeps is observed, the County will take the following actions. Depending on the circumstances, various combinations of actions may be appropriate.

1. If leachate is observed outside of the limits of waste disposal areas, notify the

DWM (see **Section 1.2.2**).

2. Contain the flow of leachate using soil berms and/or excavation.
3. Excavate the area of seepage to attempt to allow flow into the underlying waste (i.e. break-up soil layers that may be causing the seep.).
4. For contained leachate that will not flow into underlying waste, a pump may be required to route the leachate to a tanker truck for proper disposal off-site.
5. The use of soil (particularly clay) to plug the seepage may be successful in the case where flows are minor.
6. Remove and dispose of impacted cover soils accordingly.
7. Repair landfill cover as necessary.

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- LEGEND**
- EXISTING 10' CONTOUR (SEE REFERENCE 1)
 - EXISTING 2' CONTOUR
 - PROPERTY LINE
 - FACILITY BOUNDARY
 - APPROXIMATE EXISTING WASTE LIMITS
 - APPROXIMATE FUTURE WASTE LIMITS
 - ▲ B-1 GEOTECHNICAL BORING
 - ⊙ VW-10 EXISTING GROUND WATER MONITORING WELL / PIEZOMETER
 - ⊕ DY-2 EXISTING PIEZOMETER
 - ⊕ GM-2 EXISTING LANDFILL GAS PROBE
 - BM-1 BENCHMARK MONUMENT
 - SW-1 EXISTING SURFACE WATER MONITORING LOCATION
 - GV-2 EXISTING GAS VENT

REFERENCES

1. OVERALL BASE TOPOGRAPHY REFERENCES NSDOT GIS DEPARTMENT DATA RELEASE MARCH 2005.

BENCHMARK DATA			
BENCHMARK	NORTHING	EASTING	ELEVATION
BM-1	959,231.00000	2,348,940.63300	317.40
BM-2	957,033.67631	2,350,048.85869	312.06
BM-2A2	957,624.53000	2,350,003.84000	303.35
BM-3	958,859.02679	2,354,115.54748	315.84



DATE	BY	EDITS PER DWA COMMENTS



RICHARDSON SMITH GARDNER & ASSOCIATES
 14 N. Bayview Ave. #200
 Raleigh, NC 27603
 PH: 919.838.8377
 FAX: 919.838.8377
 www.rsga.com



HALIFAX COUNTY LANDFILL FACILITY

EXISTING AND PROPOSED LANDFILL UNITS AND SOLID WASTE MANAGEMENT ACTIVITIES

DESIGNED BY: P.K.S.	DRAWN BY: C.T.J.
CHECKED BY: P.S.	PROJECT NO.: HALIFAX-08-1
SCALE: AS SHOWN	DATE: MAY 2008
FILE NAME: HALIFAX011A	DRAWING JOB: FIG. 1

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Appendix A

Waste Screening Form

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Halifax County Landfill Facility
Permit No. 42-04
(252) 586-7516

WASTE SCREENING FORM

Day / Date: _____ Time Weighed in: _____
Truck Owner: _____ Driver Name: _____
Truck Type: _____ Vehicle ID / Tag No: _____
Weight: _____ Tare: _____
Waste Generator / Source: _____

Reason Load Inspected: Random Inspection _____ Staff Initials _____
 Detained at Scales _____ Staff Initials _____
 Detained by Operating Staff _____ Staff Initials _____

Inspection Location: _____

Approved Waste Determination Form Present? Yes _____ No _____ N/A _____

Description of Load: _____

Load Accepted (signature) _____ Date _____
Load Not Accepted (signature) _____ Date _____

Reason Load Not Accepted (complete only if load not accepted)

Description of Suspicious Contents: Color _____ Haz. Waste Markings _____
 Texture _____
 Drums Present _____ Smell _____
 Est. Cu. Yds. Present in Load _____
 Est. Tons Present in Load _____

Halifax County Emergency Management Contacted? Yes _____ No _____

Company or Authority Contacted? _____

Hazardous Materials Present: _____

Hauler Notified (if waste not accepted) Phone: _____ Time Contacted: _____
Other Observations: _____

Final Disposition
Signed _____ Date _____
 Waste Screening Inspector or Solid Waste Director

Attach related correspondence to this form.
File completed form in Operating Record.

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Attachment 3

Financial Assurance

**Halifax County, North Carolina
Coal Ash Monofill (Permit No. 42-04 INDUS)
Permit Renewal**

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RICHARDSON SMITH GARDNER & ASSOCIATES
Engineering and Geological Services
14 N. Boylan Avenue Tel: 919-828-0577
Raleigh, NC 27603 Fax: 919-828-3899

SHEET: 1/6
JOB #: HALIFAX-11-4
DATE: 11/17/11
BY: PKS

Halifax County Landfill - Financial Assurance
Table 1: Summary

Item No.	Description	Total
1.0	C&D Landfill - Area 1 - Estimated Closure Cost (See Table 2)	\$303,280
2.0	C&D Landfill - Area 1 - Estimated Post-Closure Cost (30-Year) (See Table 3)	\$607,200
3.0	Coal Ash Monofill - Cells 1 & 2 - Estimated Closure Cost (See Table 4)	\$2,115,086
4.0	Coal Ash Monofill - Cells 1 & 2 - Estimated Post-Closure Cost (30-Year) (See Table 5)	\$1,257,300
5.0	Assessment & Corrective Action Cost (See Table 6)	\$3,000,000
TOTAL =		\$7,282,866

Notes:

1. All cost projections are presented in 2011 dollars. Appropriate annual escalators should be applied.



RICHARDSON SMITH GARDNER & ASSOCIATES
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 14 N. Boylan Avenue Tel: 919-828-0577
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SHEET: 2/6
 JOB #: HALIFAX-11-4
 DATE: 11/17/11
 BY: PKS

Halifax County Landfill - Financial Assurance
Table 2: C&D Landfill - Area 1 - Estimated Closure Cost

Item No.	Description	Estimated Quantity	Units	Unit Cost	Item Cost
1.0	Site Preparation	6.5	AC	\$2,000	\$13,000
2.0	Landfill Gas Wells/Vents	6.5	AC	\$3,000	\$19,500
3.0	30-mil Textured LLDPE Geomembrane or GCL	47,900	SF	\$0.50	\$23,950
4.0	Drainage Geocomposite	47,900	SF	\$0.50	\$23,950
5.0	Vegetative Soil Layer (24")	21,000	CY	\$4.00	\$84,000
6.0	Erosion Control (Diversion Berms, Down Pipes, Etc.)	6.5	AC	\$5,000	\$32,500
7.0	Revegetation	6.5	AC	\$1,500	\$9,750
8.0	Surveying	6.5	AC	\$2,000	\$13,000
Subtotal (Items 1 - 8) =					\$219,650
9.0	Bonds, Mobilization, & Insurance	4% of Subtotal (Items 1 - 8) =			\$8,786
Subtotal (Items 1 - 9) =					\$228,436
<i>Contingency (10%) =</i>					\$22,844
Construction Subtotal =					\$251,280
10.0	Engineering	6.5	AC	\$2,000.00	\$13,000
11.0	CQA	6.5	AC	\$6,000.00	\$39,000
TOTAL =					\$303,280

Notes:

1. All cost projections are presented in 2011 dollars. Appropriate annual escalators should be applied.
2. Unit costs include materials and anticipated labor/installation costs.



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 14 N. Boylan Avenue Tel: 919-828-0577
 Raleigh, NC 27603 Fax: 919-828-3899

SHEET: 3/6
 JOB #: HALIFAX-11-4
 DATE: 11/17/11
 BY: PKS

Halifax County Landfill - Financial Assurance
Table 3: C&D Landfill - Area 1 - Estimated Post-Closure Cost (30-Year)

Item No.	Description	Estimated Quantity	Units	Unit Cost	Item Cost
1.0	Site Inspection & Record Keeping	80	HR	\$75	\$6,000
2.0	Revegetation	2	AC	\$1,500	\$3,000
3.0	Mowing (once per year)	24	AC	\$100	\$2,400
4.0	Erosion Control	1	LS	\$5,000	\$5,000
5.0	Gates/Fences/Access	1	LS	\$2,000	\$2,000
Subtotal (Items 1 - 7) =					\$18,400
<i>Contingency (10%) =</i>					\$1,840
Annual Total =					\$20,240
30-YEAR TOTAL =					\$607,200

Notes:

1. All cost projections are presented in 2011 dollars. Appropriate annual escalators should be applied.
2. Unit costs include materials and anticipated labor/installation costs.



RICHARDSON SMITH GARDNER & ASSOCIATES
 Engineering and Geological Services
 14 N. Boylan Avenue Tel: 919-828-0577
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SHEET: 4/6
 JOB #: HALIFAX-11-4
 DATE: 11/17/11
 BY: PKS

Halifax County Landfill - Financial Assurance
Table 4: Coal Ash Monofill - Cells 1 & 2 - Estimated Closure Cost

Item No.	Description	Estimated Quantity	Units	Unit Cost	Item Cost
1.0	Site Preparation	21.2	AC	\$2,000	\$42,400
2.0	30-mil Textured LLDPE Geomembrane	923,500	SF	\$0.50	\$461,750
3.0	Drainage Geocomposite	923,500	SF	\$0.50	\$461,750
4.0	Vegetative Soil Layer (24")	68,500	CY	\$5.00	\$342,500
5.0	Erosion Control (Diversion Berms, Down Pipes, Etc.)	21.2	AC	\$15,000	\$318,000
6.0	Revegetation	21.2	AC	\$1,500	\$31,800
7.0	Surveying	21.2	AC	\$2,000	\$42,400
Subtotal (Items 1 - 7) =					\$1,700,600
8.0	Bonds, Mobilization, & Insurance	4% of Subtotal (Items 1 - 7) =			\$68,024
Subtotal (Items 1 - 8) =					\$1,768,624
Contingency (10%) =					\$176,862
Construction Subtotal =					\$1,945,486
9.0	Engineering	21.2	AC	\$2,000.00	\$42,400
10.0	CQA	21.2	AC	\$6,000.00	\$127,200
TOTAL =					\$2,115,086

Notes:

1. All cost projections are presented in 2011 dollars. Appropriate annual escalators should be applied.
2. Unit costs include materials and anticipated labor/installation costs.



RICHARDSON SMITH GARDNER & ASSOCIATES
 Engineering and Geological Services
 14 N. Boylan Avenue Tel: 919-828-0577
 Raleigh, NC 27603 Fax: 919-828-3899

SHEET: 5/6
 JOB #: HALIFAX-11-4
 DATE: 11/17/11
 BY: PKS

Halifax County Landfill - Financial Assurance
Table 5: Coal Ash Monofill - Cells 1 & 2 - Estimated Post-Closure Cost (30-Year)

Item No.	Description	Estimated Quantity	Units	Unit Cost	Item Cost
1.0	Site Inspection & Record Keeping	80	HR	\$75	\$6,000
2.0	Revegetation (10% Total Area)	2	AC	\$1,500	\$3,000
3.0	Mowing (once per year)	21	AC	\$100	\$2,100
4.0	Erosion Control	1	LS	\$5,000	\$5,000
5.0	Gates/Fences/Access	1	LS	\$2,000	\$2,000
6.0	Leachate Management (See Note 4)	1	LS	\$20,000	\$20,000
Subtotal (Items 1 - 6) =					\$38,100
<i>Contingency (10%) =</i>					<i>\$3,810</i>
Annual Total =					\$41,910
30-YEAR TOTAL =					\$1,257,300

Notes:

1. All cost projections are presented in 2011 dollars. Appropriate annual escalators should be applied.
2. Unit costs include materials and anticipated labor/installation costs.
3. Assumes total of 21.2 acres (Cells 1 & 2).
4. Cost is assumed. Annual leachate production is expected to be minimal after closure.



RICHARDSON SMITH GARDNER & ASSOCIATES
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 14 N. Boylan Avenue Tel: 919-828-0577
 Raleigh, NC 27603 Fax: 919-828-3899

SHEET: 6/6
 JOB #: HALIFAX-11-4
 DATE: 11/17/11
 BY: PKS

Halifax County Landfill - Financial Assurance
Table 6: Estimated Assessment & Corrective Action Cost

Item No.	Description	Annual Cost	30-Year Total
1.0	Water Quality Monitoring & Reporting (C&D/MSW) (See Note 3)	\$28,000	\$840,000
2.0	Water Quality Monitoring & Reporting (Ash Monofill) (See Note 4)	\$16,000	\$480,000
3.0	LFG Monitoring & Reporting (C&D/MSW) (See Note 5)	\$6,000	\$180,000
4.0	Corrective Action (C&D/MSW) (See Note 6)	-----	\$500,940
Subtotal =			\$2,000,940
Contingency =			\$999,060
TOTAL (See Note 7) =			\$3,000,000

Notes:

1. All cost projections are presented in 2011 dollars. Appropriate annual escalators should be applied.
2. Unit costs include materials and anticipated labor/installation costs.
3. The water quality monitoring and reporting cost assumes 12 long-term wells & 2 surface water locations sampled semi-annually @ \$14,000 per event (annual cost = \$28,000).
4. The water quality monitoring and reporting cost assumes 6 long-term wells & 2 surface water locations sampled semi-annually @ \$8,000 per event (annual cost = \$16,000).
5. The LFG monitoring and reporting cost assumes quarterly monitoring @ \$1,500 per event (annual cost = \$6,000).
6. 30-Year corrective action cost was estimated as \$495,000 in May 2009 Corrective Action Plan. This value was increased for inflation (Inflation Factor of 1.012 per NC DWM for FY 2009-10).
7. Per NCGS 130A 295.2 (h), a minimum of \$3,000,000 is required for potential assessment and corrective action at the facility.

Attachment 4

Signature Page

**Halifax County, North Carolina
Coal Ash Monofill (Permit No. 42-04 INDUS)
Permit Renewal**

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Applicant Signature Page

Name of facility Halifax County Coal Ash Monofill (Permit No. 42-04 INDUS)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision and that the information provided in this application is true, accurate, and complete to the best of my knowledge.

I understand that North Carolina General Statute 130A-22 provides for administrative penalties of up to fifteen thousand dollars (\$15,000.00) per day per each violation of the Solid Waste Management Rules. I further understand that the Solid Waste Management Rules may be revised or amended in the future and that the facility siting and operations of this solid waste management facility will be required to comply with all such revisions or amendments.



Signature

Gwen Matthews
Print Name

11/29/11
Date

Director
Title

Halifax County Public Utilities
Business or organization name

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