Fac/Perm/Co ID #	Date	Doc ID#
41-03 COLF	3/24/10	DIN 10204

City of Greensboro

GREENSBORO

White Street Landfill

Construction & Demolition Landfill Permit Application

June 2008

Fac/Perm/Co ID #	Date	Doc ID#
41-03 CDLF	3/26/10	DIN 10204

DW

City of Greensboro
North Carolina

June 26, 2008

Received
JUN 2008
Waste Management

North Carolina Department of Environment
and Natural Resources
Division of Waste Management
Post Office Box 29603
Raleigh, North Carolina 27611-9603

Attention: Paul Crissman:
Section Chief

Reference: Permit Renewal for Construction/Demolition Landfill
City of Greensboro - White Street Landfill
Permit No. 41-03

Dear Mr. Crissman:

The City of Greensboro is pleased to submit five copies of our renewal application for the continued operation of the construction and demolition landfill on top of the formerly operated sanitary landfill. The application was completed in accordance with the permit requirements as outlined in Title 15A, Subchapter 13B of the North Carolina Administrative Code, Section .0547.

If, after your review of the enclosure permit application, additional information is required to facilitate permit approval, please do not hesitate to contact me at (336) 373-2787.

Very truly yours,
City of Greensboro

Jeryl W. Covington

Jeryl W. Covington, P.E.
Director, Environmental Services Department

Enclosed: Permit Renewal Application

P.O. Box 3136 • Greensboro, NC 27402-3136 • www.greensboro-nc.gov • (336) 373-CITY (2489) • TTY # 333-6930

White Street Landfill
Greensboro, North Carolina

Construction and Demolition
Permit Renewal Application
Permit No. 41-03

Prepared By:

GREENSBORO®

City of Greensboro
Environmental Services Department

June 2008

NORTH CAROLINA PROFESSIONAL SEAL 024857 ENGINEER GREGORY A. THOMASSON

06/26/08

Certification is not intended to cover sections of the application previously submitted, referenced, or certified by others.

WHITE STREET LANDFILL
CONSTRUCTION AND DEMOLITION PERMIT RENEWAL APPLICATION

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Construction and Demolition Application Overview:

In November of 1995, HDR on behalf of the City of Greensboro submitted a Transition Plan for the Phase II sanitary landfill of the White Street Landfill. The Transition Plan was approved in July of 1996 and Olver certified closure of the sanitary landfill in March 1999. After NCDENR approval of the Transition Plan, the City of Greensboro submitted a permit application to dispose of Construction and Demolition (C&D) debris over top of the closed municipal solid waste (MSW) in Phase II. NCDENR issued the original C&D over MSW permit for Phase II in July of 1998.

In accordance with the North Carolina Solid Waste Management Rules 15A NCAC 13B Section .0547(4), the City of Greensboro is submitting a permit application to continue C&D disposal on top of the closed Phase II sanitary landfill. The City of Greensboro currently operates the C&D landfill in accordance with Facility Permit No. 41-03 which will expire on July 1, 2008.

The City of Greensboro proposes to maintain the final maximum permitted elevation of 872 feet above mean sea level as approved in previous permit applications. Based on the existing contours and additional filling to reach the 4:1 regulatory side slopes, Phase II has a remaining volume of approximately 1,308,000 cubic yards. Volume calculations were performed in the 2008 version of AutoCAD and verified through City of Greensboro personnel utilizing Terramodel Site Work version 10.41.

In recent years, the White Street Landfill has received an average of 130,000 tons of C&D per year. Based on an estimated waste density placement of 1,000 pounds per cubic yard, the annual volume consumed is approximately 260,000 cubic yards. Based on the available air space and projected waste receipt, Phase II final contours should be reached in approximately five years. Fill calculations are provided in this section of the application. The total area of C&D disposal requiring a cap will be approximately 38 acres.

To continue operations, Section .0547 requires owners and operators of existing C&D landfills on top of closed MSW landfills to submit a permit application by July 1, 2008 including the following:

a. Local government approval in accordance with Rule .0536(c)(11),
b. An operations plan in accordance with Rule .0542 of this Section,
c. A corrective action plan for the closed MSW landfill in accordance with Rules .1635, .1636, and .1637,
d. A closure and post-closure plan in accordance with Rule .1627, and
e. Financial assurance in accordance with Rule .1628.

This permit application contains the above information.

The permit modification fee for a C&D facility greater than 100,000 tons per year is $2,500. The billing address for the permit modification fee is:

City of Greensboro
P.O. Box 3136
Greensboro, NC 27402

Attn: Ms. Jeryl W. Covington, P.E.
Director, Environmental Services Department

Construction and Demolition Disposed of at the City of Greensboro's White Street Landfill

02/03	162,190
03/04	143,319
04/05	219,089
05/06	201,396
06/07	130,951

Tab - Local Government

City of Greensboro

June 19, 2008

Mr. Paul Crissman
Section Chief
North Carolina Department of Environmental and Natural Resources
Division of Waste Management
1646 Mail Service Center
Raleigh, NC 27699-1646

Dear Mr. Crissman:

As required by NC General Statute 130A-294 (B1) (4), this letter confirms that the property under review for a construction and demolition landfill permit renewal meets all the requirements of the local zoning ordinance.

The property located at 2503 White Street was zoned Conditional District–Heavy Industrial in 1987. We have received information that confirms that the operations of the facility are fully consistent with this zoning designation, including conformance with the conditions attached to the zoning as follows:

1. Uses: Sanitary landfill and accessory uses;
2. Main access provided from White Street;
3. Emergency and service access may be provided from Rankin Mill Road;
4. A 100' buffer will be provided along exterior boundaries adjoining residentially zoned property not owned by the City of Greensboro. If adjacent property is owned by City of Greensboro, the buffer may be reduced by a distance equal to the width of the city-owned property;
5. In any event, the combination of buffer and adjacent city-owned property shall not be less then 100'.

If you have questions regarding this action, please contact me at (336) 373-2922.

Sincerely,

Richard W. Hails

Richard W. Hails, AICP
Planning Director

Cc: Jeryl Covington, Director of Environmental Services
Rawls Howard, Planning Manager for Zoning Administration

Agenda

JERI COVINGTON

Greensboro City Council

REGULAR MEETING
TUESDAY
20 MAY 2008
5:30 P.M.

1. Moment of Silence

2. Pledge of Allegiance to the Flag

3. Recognition of Courier

4. Council Procedure for Conduct of the Meeting

5. Resolution honoring the memory of the late Virginia Kyle Hodges. (Attachment #5 to Council members)

6. Resolution honoring the memory of the late Margaret Boykin Gill. (Attachment #6 to Council members)

7. Speakers from the Floor (**Each speaker will be allowed a maximum of three (3) minutes on non-agenda items and cannot cede their time to another speaker. Speakers from the floor will be limited to a maximum of thirty (30) minutes.**)

8. Presentation of Water Conservation Poster Contest Awards. (Attachment #8 to Council members)

9. Presentation of 2007 Tree City USA Award. (Attachment #9 to Council members)

10. City Manager presents the proposed 2008-2009 Budget.

11. Resolution directing the filing with the City Clerk of the budget estimate for the Fiscal Year 2008-09. (roll call vote) (Attachment #11 to Council members)

MEMBERS OF COUNCIL

YVONNE J. JOHNSON, Mayor
SANDRA ANDERSON GROAT, Mayor Pro Tem
ROBBIE PERKINS, At Large
MARY C. RAKESTRAW, At Large
T. DIANNE BELLAMY-SMALL, District One
GOLDIE FRINKS WELLS, District Two
ZACK MATHENY, District Three
MIKE BARBER, District Four
TRUDY WADE, District Five

PUBLIC HEARING ITEMS:

12. Ordinance amending Chapter 30, Sections 30-5-2.2 and 30-5-2.18, of the Greensboro Code of Ordinances with respect to Zoning, Planning and Development to modify the bar separation requirements. (roll call vote) (Attachment #12 to Council members)

13. Ordinance amending Chapter 30, Sections 30-5-2.1, 30-4-4.3(E) (3) and 30-9-11.4, of the Greensboro Code of Ordinances with respect to Zoning, Planning and Development, to make it possible to grade the highway buffer within the Scenic Corridor Overlay District. (roll call vote) (Attachment #13 to Council members)

14. Ordinance amending Chapter 30 of the Greensboro Code of Ordinances with respect to Zoning, Planning and Development Section 30-9-1.2 to modify the signs posted for zoning hearings. (roll call vote) (Attachment #14 to Council members)

15. Resolution closing unnamed street, located approximately 972 feet south of Mackay Road, on the west side of the Norfolk-Southern Railroad Track, running approximately 400 feet westward to its end. (roll call vote) (Attachment #15 (PL(P)08-12) to Council members)

16. Resolution closing Windsor Road, from Pisgah Church Road northward for a distance of approximately 627 feet. (roll call vote) (Attachment #16 (PL(P)08-13) to Council members)

17. Opportunity for Public Comment regarding the National Register Nomination for Wilbur and Martha Carter House, 1012 Country Club Drive and consideration of a resolution in support of a recommendation that the Wilbur and Martha Carter House located at 1012 Country Club Drive be submitted for listing in the National Register. (roll call vote) (Attachment #17 to Council members)

CONSENT AGENDA ITEMS
(One Vote)

18. Resolution authorizing the City Attorney to institute proceedings to condemn a portion of the property of Battleground Crossing, LLC (Tax Map 273-7-27) in connection with the Battleground Rail Trail project. (Attachment #18 to Council members)

19. Resolution authorizing the City Attorney to institute proceedings to condemn a portion of the property of Battleground Crossing, LLC (Tax Map 273-7-26) in connection with the Battleground Rail Trail project. (Attachment #19 to Council members)

20. Resolution rescinding resolution 68-07 and authorizing the City Attorney to institute proceedings to condemn a portion of the property of Havcom Enterprises, LLC in connection with the Battleground Rail Trail project. (Attachment #20 to Council members)

CONSENT AGENDA ITEMS (cont.)

21. Resolution approving appraisal in the amount of $44,674 and authorizing purchase of property of Battleground Partners, LLC for the Battleground Rail Trail project. (Attachment #21 to Council members)

22. Resolution approving appraisal in the amount of $22,000 and authorizing purchase of property of Iris W. Marus for the Battleground Rail Trail project. (Attachment #22 to Council members)

23. Resolution approving appraisal in the amount of $12,500 and authorizing purchase of property of Sam's Real Estate Business Trust and Wal-Mart Real Estate Business Trust for the West Wendover Avenue Sidewalk project. (Attachment #23 to Council members)

24. Resolution approving appraisal in the amount of $54,000 and authorizing purchase of property of Francisco Place Association, Inc. for the Battleground Rail Trail project. (Attachment #24 to Council members)

25. Resolution authorizing purchase in the amount of $192,500 of property of 2828 Battleground Group, LLC for the Battleground Rail Trail project. (Attachment #25 to Council members)

26. Resolution authorizing change order in the amount of $109,000 to Contract No. 2007-033 with Yates Construction Company, Inc. for the on-call concrete repair and maintenance project. (Attachment #26 to Council members)

27. Resolution authorizing change order in the amount of -$54,557.03 decreasing Contract No. 2007-031 with Wharton-Smith, Inc. for the T.Z. Osborne WRF IFAS Full Scale Demonstration project. (Attachment #27 to Council members)

28. Resolution approving change order in the amount of -$343,632.82 decreasing Contract No. 2005-032 with T.A. Loving for the North Buffalo Transfer Pump Station project. (Attachment #28 to Council members)

29. Resolution approving bid in the amount of $397,837 and authorizing Contract No. 2008-024 with Brooks General Contractors for the Greensboro Historical Museum wood trim replacement project. (Attachment #29 to Council members)

30. Resolution approving sale in the amount of $13,500 of 296 linear feet of 12" water main on West Market Street to the City of Winston-Salem. (Attachment #30 to Council members)

31. Resolution listing loans and grants for City Council approval. (Attachment #31 to Council members)

32. Ordinance amending in the amount of $30,000 State, Federal and Other Grants Fund Budget for Parks and Recreation Fit Community Grant. (Attachment #32 to Council members)

33. Ordinance amending in the amount of $251,571 State, Federal and Other Grants Fund Budget for the appropriation of Department of Homeland Security Grant Funds for Administration of the Regional Response Team. (Attachment #33 to Council members)

CONSENT AGENDA ITEMS: (cont.)

34. Resolution establishing acceptance of contract award for Regional Response Team duties from N.C. Department of Crime Control and Public Safety. (Attachment #34 to Council members)

35. Resolution calling a public hearing for June 3, 2008 on the annexation of territory to the corporate limits located at 5205 Summit Avenue and 3901 Hicone Road – 18.57 acres. (Attachment #35 to Council members)

36. Ordinance amending in the amount of $800,000 the Greensboro Transit Authority Budget for FY 2007-2008. (Attachment #36 to Council members)

37. Resolution approving Capital Fund expenditures from a portion of the seventy percent (70%) net proceeds of the Occupancy Tax received by the Greensboro/Guilford County Tourism Development Authority from the original Guilford County three percent (3%) Room Occupancy Tax for the expansion of the Coliseum and debt reduction. (Attachment #37 to Council members)

38. Ordinance amending in the amount of $50,000 Special Tax Districts Fund Budget for the appropriation of funds for Downtown Cultural Arts District Study. (Attachment #38 to Council members)

39. Motion to approve report of budget adjustments for April 1-30, 2008. (Attachment #39 to Council members)

40. Motion to approve minutes of regular meeting of May 6, 2008 and recessed meeting of May 7, 2008.

41. Motion to make a part of the official record the listing of contracts that are currently eligible for destruction as per the City Clerk's Office. (Attachment #41 to Council members)

BUSINESS ITEMS:

42. Technical correction to Ordinance #08-21 rezoning property located at the southwest corner of New Garden Road and Garden Lake Drive from RS-15 to CD-GO-M. (roll call vote) (Attachment #42 to Council members)

43. Resolution approving bid in the amount of $5,606,155 and authorizing Contract No. 2007-047 with Starr Electric Company, Inc. for the Lake Townsend Water Treatment Plant major electrical improvements project. (roll call vote) (Attachment #43 to Council members)

44. Resolution certifying that the operation of a Municipal Solid Waste Landfill Unit in the Phase III area of the White Street Landfill is consistent with existing land use/zoning requirements. (roll call vote) (Attachment #44 to Council members)

45. Resolution authorizing the submission of a re-permitting application for the continued operation of a Construction and Demolition Landfill Unit in the Phase II area of the White Street Landfill and certification that such operation is consistent with existing land use/zoning requirements. (roll call vote) (Attachment #45 to Council members)

BUSINESS ITEMS: (cont.)

46. Resolution authorizing Municipal/Traffic Agreement with NCDOT for design and construction of the Greensboro Traffic Signal System Rehabilitation/Replacement project. (roll call vote) (Attachment #46 to Council members)

47. Consideration of a request to support the Greensboro Bicentennial. (roll call vote) (Attachment #47 to Council members)

48. Addendum

49. Speakers from the Floor (**Each speaker will be allowed a maximum of three minutes on non-agenda items if time permits**)

50. Matters to be discussed by the Mayor and Members of the Council (if time permits)
    - Boards and Commissions Appointments

51. Matters to be presented by the City Manager (if time permits)
    - Report of results of the hiring freeze
    - Crime statistics report

Attachments for Council's Information:
Report of Disbursements

INFORMATION FOR THE PUBLIC

- At hearings involving rezoning applications, proponents and opponents shall be provided a total of twenty (20) minutes notwithstanding the number of persons desiring to be heard. Proponents shall be heard first followed by comments from opponents. Each side may speak a total of five (5) minutes rebuttal.
- Speakers who wish to speak to other agenda items will be allowed a maximum of five (5) minutes.
- A closed session may be held at this meeting.
- The Council will consider all public hearing and business items listed on the agenda. If the meeting continues to 11:00 p.m., Council will adjourn the meeting after all agenda items have been considered; speakers from the floor and Council comments at the end of the meeting will not be heard.
- Prior to the date of the meeting, contact Channel 13 at 333-6922 if you have electronic presentations.
- Any individual with a disability who needs an interpreter or other auxiliary aids or services for this meeting may contact Juanita Cooper at 373-2397 or 333-6930 (TDD).
- Citizens attending public meetings of the Greensboro City Council will be provided free parking after 5:00 p.m. in the public lot located at Washington/Eugene Streets, Governmental Center, Greensboro, NC.
- The next regular City Council meeting will be held on June 3, 2008 at 5:30 p.m. in the Council Chamber of the Melvin Municipal Office Building.

City of Greensboro

City Council

Agenda Item

TITLE: White Street Landfill Zoning Consistency for the Construction and Demolition Unit			
Department:	Environmental Services	Current Date:	May 2, 2008
Contact 1:	Jeryl W. Covington	Public Hearing:	NA
Phone:	373-2787	Advertising Date:	NA
Contact 2:	Greg Thomasson	Advertised By:	NA
Phone:	373-4107	Authorized Signature:	Jeryl W. Covington
Attachments:	Resolution		

PURPOSE:
The purpose of this resolution is to authorize the re-permitting of the Phase II construction and demolition landfill per newly adopted rules and to confirm that such operation is consistent with existing land use/zoning requirements.

BACKGROUND:
The North Carolina Department of Environment and Natural Resources-Division of Waste Management has adopted new construction and demolition (C&D) landfill rules which will continue the authorization of C&D waste placement on top of closed municipal solid waste landfill units. The City of Greensboro is currently permitted to dispose C&D waste in this manner as authorized by permit number 41-03.

Per new construction and demolition rules, 15A NCAC 13B .0547(4)(a), owners and operators of existing C&D landfill units on top of closed municipal solid waste landfill must submit a permit application by July 1, 2008 for the continued operations of those units. The permit application must contain local government approval in accordance with Rule .0536(c)(11) which states that "if the permit applicant is a unit of local government in which jurisdiction the proposed construction and demolition landfill site is located, the approval of the governing board shall be required. Approval may be in the form of either a resolution or a vote on a motion. A copy of the resolution or the minutes of the meeting where the vote was taken must be submitted to the Division as part of the site study." "A letter from the unit of local government(s) having zoning jurisdiction over the site which states that the proposal meets all the requirements of the local zoning ordinance, or that the site is not zoned, must be submitted to the Division as part of the site study."

The White Street landfill is zoned Conditional District- Heavy Industrial. Operation of the landfill is consistent with this zoning.

BUDGET IMPACT:
Adoption of the land use/zoning consistency determination resolution will result in no budget impact.

Agenda Item: 45

RECOMMENDATION / ACTION REQUESTED:
The Environmental Service Department is recommending City Council's adoption of the land use/zoning consistency determination resolution for inclusion with the permit documentation.

RESOLUTION AUTHORIZING THE SUBMISSION OF A RE-PERMITTING APPLICATION FOR THE CONTINUED OPERATION OF A CONSTRUCTION AND DEMOLITION LANDFILL UNIT IN THE PHASE II AREA OF THE WHITE STREET LANDFILL AND CERTIFICATION THAT SUCH OPERATION IS CONSISTENT WITH EXISTING LAND USE/ZONING REQUIREMENTS

WHEREAS, the North Carolina Department of Environment and Natural Resources – Division of Waste Management has adopted new construction and demolition landfill rules which will continue the authorization of construction and demolition waste placement on top of closed municipal solid waste landfill units;

WHEREAS, the City of Greensboro is currently permitted by the North Carolina Department of Environment and Natural Resources – Division of Waste Management to dispose construction and demolition waste in the Phase II area of the White Street Landfill as authorized by permit number 41-03;

WHEREAS, in accordance with the new construction and demolition rules, 15A NCAC 13B .0547(4)(a), owners and operators of existing C&D landfill units on top of closed municipal solid waste landfill must submit a permit application by July 1, 2008 for the continued operations of those units. The permit application must contain local government approval in accordance with Rule .0536(c)(11) which states that "if the permit applicant is a unit of local government in which jurisdiction the proposed construction and demolition landfill site is located, the approval of the governing board shall be required;" and

WHEREAS, it is deemed in the best interest of the City to authorize the submission of a re-permitting application for the continued operation of a construction and demolition landfill unit in the Phase II area of the White Street Landfill and certification that such operation is consistent with existing land use/zoning requirements.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF GREENSBORO:

That the City of Greensboro is hereby authorized to submit a re-permitting application to the North Carolina Department of Environment and Natural Resources – Division of Waste Management for the continued operation of a construction and demolition landfill unit in the Phase II area of the White Street Landfill. Moreover, the Council of the City of Greensboro hereby certifies that the operation of the Phase II area of the White Street Landfill as a construction and demolition landfill unit is consistent with the land use/ zoning requirements of the Conditional District - Heavy Industrial (CD-HI) zoning district.

CITY COUNCIL MEETING SUMMARY

COUNCIL MEETING DATE: Tuesday, May 20, 2008 at 5:30 pm

Date Prepared:	Wednesday, May 21, 2008
Prepared By:	Diana Schreiber, Assistant Clerk

Please send Staff responses to Tom Murphy in the CMO

AGENDA ITEMS:

- All agenda items were adopted with the following exceptions:
  - Items 14 & 43 were amended and adopted.

OTHER COUNCIL ACTION:

- Took action with respect to boards and commissions.
- Discussed items and events of interest.

ITEMS FOR STAFF FOLLOW-UP:

- Manager proposed to add monthly Tuesday evening briefing sessions; on the second Tuesday, beginning at 4:30 pm. Further discussion to be held.
- Follow-up from Andy Scott wanted regarding $100,000 reduction in CRB and its affect on homelessness.
- Planning was requested to enhance the visibility of zoning signage.
- J. Covington was requested to keep Council updated on dates/times of community meetings relevant to the White Street Landfill
- Council member Perkins voiced interest in supporting the Revolution Mill Project to add public egress points and to consider support for possible expansion.
- Council member Wells asked Council to consider allowing re-districted voters to maintain contact with their current representatives until the election of 2009; further discussion will be held by full Council.
- Council member Barber requested Planning to review ordinance setbacks for sidewalk tables & chairs to ensure that setbacks coincide with businesses' hours.
- Council member Barber requested staff to investigate partnering with Guilford County Sheriff's Department to provide police coverage of annexed areas.
- Council member Matheny reiterated an earlier request for a proposal from Legal & Planning with regard to the processing of uncontested Comp Plan amendments and rezonings.
- Council encouraged to propose ways to shorten the duration of Council meetings.
- Council adopted a motion to provide additional financial support of the Greensboro Bicentennial.

153-08

RESOLUTION AUTHORIZING THE SUBMISSION OF A RE-PERMITTING APPLICATION FOR THE CONTINUED OPERATION OF A CONSTRUCTION AND DEMOLITION LANDFILL UNIT IN THE PHASE II AREA OF THE WHITE STREET LANDFILL AND CERTIFICATION THAT SUCH OPERATION IS CONSISTENT WITH EXISTING LAND USE/ZONING REQUIREMENTS

WHEREAS, the North Carolina Department of Environment and Natural Resources – Division of Waste Management has adopted new construction and demolition landfill rules which will continue the authorization of construction and demolition waste placement on top of closed municipal solid waste landfill units;

WHEREAS, the City of Greensboro is currently permitted by the North Carolina Department of Environment and Natural Resources – Division of Waste Management to dispose construction and demolition waste in the Phase II area of the White Street Landfill as authorized by permit number 41-03;

WHEREAS, in accordance with the new construction and demolition rules, 15A NCAC 13B .0547(4)(a), owners and operators of existing C&D landfill units on top of closed municipal solid waste landfill must submit a permit application by July 1, 2008 for the continued operations of those units. The permit application must contain local government approval in accordance with Rule .0536(c)(11) which states that "if the permit applicant is a unit of local government in which jurisdiction the proposed construction and demolition landfill site is located, the approval of the governing board shall be required;"

WHEREAS, it is deemed in the best interest of the City to authorize the submission of a re-permitting application for the continued operation of a construction and demolition landfill unit in the Phase II area of the White Street Landfill and certification that such operation is consistent with existing land use/zoning requirements.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF GREENSBORO:

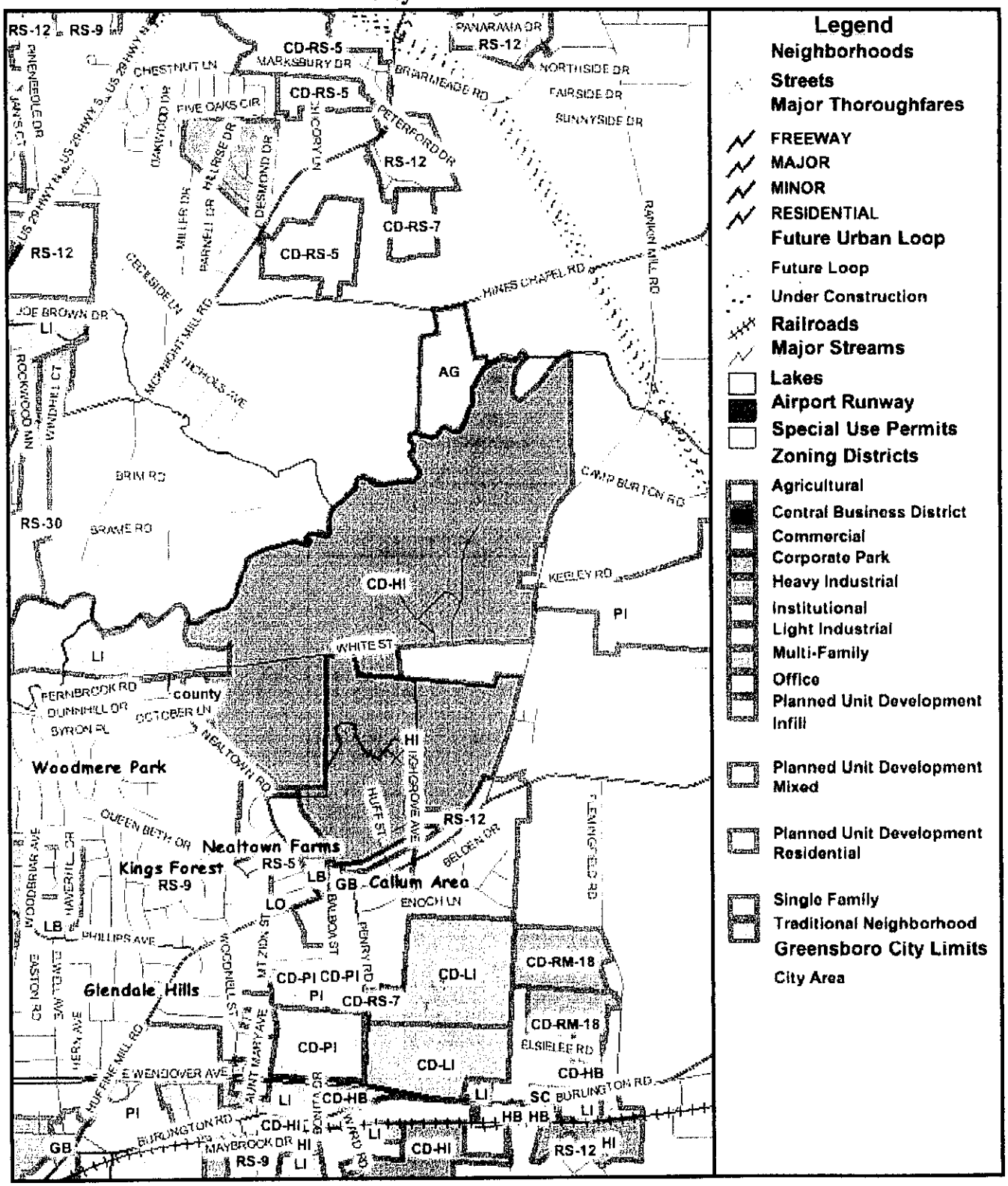
That the City of Greensboro is hereby authorized to submit a re-permitting application to the North Carolina Department of Environment and Natural Resources – Division of Waste Management for the continued operation of a construction and demolition landfill unit in the Phase II area of the White Street Landfill. Moreover, the Council of the City of Greensboro hereby certifies that the operation of the Phase II area of the White Street Landfill as a construction and demolition landfill unit is consistent with the land use/ zoning requirements of the Conditional District - Heavy Industrial (CD-HI) zoning district.

The foregoing resolution was adopted by the City Council of the City of Greensboro, NC on

5-20, 2008

Juanita F. Cooper
City Clerk

City of Greensboro



Disclaimer: Map data are believed to be accurate, but accuracy is not guaranteed. This is not a legal document and should not be substituted for a title search, appraisal, survey, or for zoning verification.

Map Scale
1 inch = 2554 feet

Public Meeting Notification
Legal Advertisement

News & Record

Published by
News & Record, Inc.
Greensboro, North Carolina

AFFIDAVIT OF PUBLICATION

North Carolina, Guilford County

Before the undersigned, a Notary Public of said County and State, duly commissioned, qualified and authorized by law to administer oaths, personally appeared the Publisher's Representative who being first duly sworn, deposed and says:

1. That he/she is the Publisher's Representative of the Greensboro News & Record, Inc. a corporation, engaged in the publication of newspapers known as "News & Record", published, issued and entered as second class mail in the City of Greensboro in said County and State.

2. That he/she is authorized to make this affidavit and sworn statement; that the notice or other legal advertisement, a copy of which is attached hereto, was published in the News & Record on the dates listed below.

3. That the said newspaper (or newspapers) in which such notice, paper, document, or legal advertisement was published was, at the time of each and every such publication, a newspaper meeting all of the requirements and qualifications of Section 1-597 of the General Statutes of North Carolina and was a qualified newspaper within the meaning of Section 1-597 of the General Statutes of North Carolina.

Publisher's Representative _____

Sworn to and subscribed before me, this 8th day of May, 2008.

Valerie McNeil
Notary Public

My commission expires: August 23, 2010

NOTARY PUBLIC
VALERIE McNEIL
GUILFORD COUNTY, NC
My Commission Expires August 23, 2010

Name	Ad #	Date	Edition	Class	PO	Ad Copy
CITY OF GSO ENVIRONMENTAL	30920899	05/08/08	News & Record	400	DISPOSAL PER	Public Meeting to Discuss the Renewal of

Ad ID 30920899 Date 05/07/2008 Time 11:47 AM

Public Meeting to Discuss the Renewal of the Construction and Demolition Disposal Permit at the White Street Municipal Solid Waste Landfill

City of Greensboro - Environmental Services Department
P.O. Box 3136
Greensboro, North Carolina 27402-3136

The City of Greensboro currently operates a construction and demolition disposal unit on top of the closed Phase II sanitary landfill. The construction and demolition landfill's operating permit (permit no. 41-03) is scheduled to expire on July 1, 2008 and the City is submitting an application to renew this permit. The construction and demolition landfill has remaining capacity of approximately 750,000 cubic yards.

Per the North Carolina Administrative Code, Title 15A Subchapter 13B .0536(c) (11), the City of Greensboro's Environmental Services Department is holding a public meeting to discuss the renewal of this permit.

The public meeting will be held on June 9, 2008 at the Peeler Recreational Facility, 1300 Sykes Ave., at 6:30 p.m.

The construction and demolition permit is available for review at the following locations during normal business hours:

City of Greensboro Central Library
219 North Church Street

McGirt-Horton Branch Library
2509 Phillips Avenue

Ad shown is not actual print size

Public Meeting Notification
Press Release

City of Greensboro

PO Box 3136
Greensboro, NC 27402-3136
Phone: 336-373-2787
Fax: 336-373-2988

Fax

To:	ABC	**From:**	Jeryl W. Covington, Director Environmental Services Department
Fax:	336- 723-8217	**Pages:**	4 (including cover sheet)
Phone:	336- 722-4545	**Date:**	5/8/2008
Re:	News Release Public Meeting Notice – June 9, 2008	**CC:**	

MESSAGE CONFIRMATION

05/08/2008 11:18
ID=GSO WASTE DISPOSALL

DATE	TIME	S.R-TIME	DISTANT STATION ID	MODE	PAGES	RESULT	
05/08	11:17	00'40"	3367238217	TX	04	OK	0000

City of Greensboro

PO Box 3136
Greensboro, NC 27402-3136
Phone: 336-373-2787
Fax: 336-373-2988

Fax

To:	Curtis Media	**From:**	Jeryl W. Covington, Director Environmental Services Department
Fax:	336- 517-2448	**Pages:**	4 (including cover sheet)
Phone:		**Date:**	5/8/2008
Re:	News Release Public Meeting Notice – June 9, 2008	**CC:**	

MESSAGE CONFIRMATION

05/08/2008 11:12
ID=GSO WASTE DISPOSALL

DATE	TIME	S.R-TIME	DISTANT STATION ID	MODE	PAGES	RESULT	
05/08	11:11	00'36"	336 517 2448	TX	04	OK	0000

City of Greensboro

PO Box 3136
Greensboro, NC 27402-3136
Phone: 336-373-2787
Fax: 336-373-2988

Fax

To:	News & Record	**From:**	Jeryl W. Covington, Director Environmental Services Department
Fax:	336- 373-7382	**Pages:**	4 (including cover sheet)
Phone:	336- 373-7000	**Date:**	5/8/2008
Re:	News Release Public Meeting Notice – June 9, 2008	**CC:**	

MESSAGE CONFIRMATION

05/08/2008 11:10
ID=GSO WASTE DISPOSALL

DATE	TIME	S.R-TIME	DISTANT STATION ID	MODE	PAGES	RESULT	
05/08	11:09	00'42"	336+373+7382	TX	04	OK	0000

City of Greensboro

PO Box 3136
Greensboro, NC 27402-3136
Phone: 336-373-2787
Fax: 336-373-2988

Fax

To:	News 14	**From:**	Jeryl W. Covington, Director Environmental Services Department
Fax:	336- 856-9499	**Pages:**	4 (including cover sheet)
Phone:	336- 856-9497	**Date:**	5/8/2008
Re:	News Release Public Meeting Notice – June 9, 2008	**CC:**	

MESSAGE CONFIRMATION

05/08/2008 11:08
ID=GSO WASTE DISPOSALL

DATE	TIME	S.R-TIME	DISTANT STATION ID	MODE	PAGES	RESULT	
05/08	11:07	00'56"	3368569499	TX	04	OK	0000

City of Greensboro

PO Box 3136
Greensboro, NC 27402-3136
Phone: 336-373-2787
Fax: 336-373-2988

Fax

To:	WFMY TV2 Assignment Desk	**From:**	Jeryl W. Covington, Director Environmental Services Department
Fax:	336- 230-0971	**Pages:**	4 (including cover sheet)
Phone:	336- 379-9369	**Date:**	5/8/2008
Re:	News Release Public Meeting Notice – June 9, 2008	**CC:**	

MESSAGE CONFIRMATION

05/08/2008 11:05
ID=GSO WASTE DISPOSALL

DATE	TIME	S.R-TIME	DISTANT STATION ID	MODE	PAGES	RESULT	
05/08	11:05	00'36"	WFMY NEWSROOM	TX	04	OK	0000

City of Greensboro

PO Box 3136
Greensboro, NC 27402-3136
Phone: 336-373-2787
Fax: 336-373-2988

Fax

To:	WGHP Fox News	**From:**	Jeryl W. Covington, Director Environmental Services Department
Fax:	336- 841-5169	**Pages:**	4 (including cover sheet)
Phone:	336- 275-1850	**Date:**	5/8/2008
Re:	News Release Public Meeting Notice – June 9, 2008	**CC:**	

MESSAGE CONFIRMATION

05/08/2008 10:59
ID=GSO WASTE DISPOSALL

DATE	TIME	S,R-TIME	DISTANT STATION ID	MODE	PAGES	RESULT	
05/08	10:56	01'06"	336 841 5169	TX	04	OK	0000

City of Greensboro

PO Box 3136
Greensboro, NC 27402-3136
Phone: 336-373-2787
Fax: 336-373-2988

Fax

To:	WXII 12	**From:**	Jeryl W. Covington, Director Environmental Services Department
Fax:	336- 721-0856	**Pages:**	4 (including cover sheet)
Phone:		**Date:**	5/8/2008
Re:	News Release Public Meeting Notice – June 9, 2008	**CC:**	

MESSAGE CONFIRMATION

05/08/2008 10:54
ID=GSO WASTE DISPOSALL

DATE	TIME	S,R-TIME	DISTANT STATION ID	MODE	PAGES	RESULT	
05/08	10:54	00'34"	336 721 0856	TX	04	OK	0000

Public Meeting to Discuss the Renewal of the Construction and Demolition Disposal Permit at the White Street Municipal Solid Waste Landfill

City of Greensboro- Environmental Services Department
P.O. Box 3136
Greensboro, North Carolina 27402-3136

The City of Greensboro currently operates a construction and demolition disposal unit on top of the closed Phase II sanitary landfill. The construction and demolition landfill's operating permit (permit no. 41-03) is scheduled to expire on July 1, 2008 and the City is submitting an application to renew this permit. The construction and demolition landfill has remaining capacity of approximately 750,000 cubic yards.

Per the North Carolina Administrative Code, Title 15A Subchapter 13B .0536(c) (11), the City of Greensboro's Environmental Services Department is holding a public meeting to discuss the renewal of this permit.

The public meeting will be held on June 9, 2008 at the Peeler Recreational Facility, 1300 Sykes Ave., at 6:30 p.m.

The construction and demolition permit is available for review at the following locations during normal business hours:

City of Greensboro Central Library
219 North Church Street

McGirt-Horton Branch Library
2509 Phillips Avenue

Public Meeting to Review Groundwater Corrective Measures for the White Street Municipal Solid Waste Landfill

City of Greensboro- Environmental Services Department
P.O. Box 3136
Greensboro, North Carolina 27402-3136

In accordance with Title 15A NCAC 13B .1635(d), the City of Greensboro- Environmental Services Department is holding a public meeting to discuss the implementation of phytoremediation as an additional corrective measure related to impacted groundwater associated with the formerly operated Phase II municipal solid waste landfill. The former Phase II landfill operated from 1978 to 1997. Phase II is within the White Street Landfill which is located at 2503 White Street.

After the public meeting, the City of Greensboro will select a remedy(ies) in accordance with the requirements of 15A NCAC 13B .1636 and submit the corrective measure(s) in a Corrective Action Plan for approval by the Solid Waste Section of the NC Department of Environment and Natural Resources.

The public meeting will be held on June 9, 2008 at the Peeler Recreational Facility, 1300 Sykes Ave., at 6:30 p.m.

The groundwater studies are available for public inspection at the following locations during normal business hours:

City of Greensboro Central Library
219 North Church Street

McGirt-Horton Branch Library
2509 Phillips Avenue

Public Meeting to Discuss the Phase III Permit Modification for the White Street Municipal Solid Waste Landfill

City of Greensboro- Environmental Services Department
P.O. Box 3136
Greensboro, North Carolina 27402-3136

The City of Greensboro currently maintains a municipal solid waste Subtitle D landfill permit (Permit No. 41-12) at the White Street Landfill. A permit modification is being submitted to the North Carolina Department of Environment and Natural Resources – Division of Waste Management in order to modify the previously permitted side slopes. The proposed amendment will re-configure the side slopes from 25% (4 horizontal to 1 vertical) to 33% (3 horizontal to 1 vertical); thus, increasing the disposal capacity. The current permit anticipates that the total municipal solid waste disposal capacity of Phase III is 5,645,000 cubic yards. The proposed modification increases the disposal capacity to approximately 6,669,000 cubic yards. The elevation of the disposal unit will not increase but will be maintained at an elevation of 920 feet.

Per the North Carolina General Statute, Chapter 130A-294(b1), the City of Greensboro's Environmental Services Department is holding a public meeting to discuss the permit modification. The public meeting will be held on June 9, 2008 at the Peeler Recreational Facility, 1300 Sykes Ave., at 6:30 p.m.

The permit modification for the Phase III municipal solid waste landfill is available for review at the following locations during normal business hours:

City of Greensboro Central Library
219 North Church Street

McGirt-Horton Branch Library
2509 Phillips Avenue

Public Meeting
Property Owner Notification

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1. Article Addressed to:

Ms. Wanda C. Ball
& Woodrow F. Childress, Jr.
1007 Eagle Rd.
Greensboro, NC 27407

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

MAY 12 2008 USPS GREENSBORO NC 27401

3. Service Type
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☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number
(Transfer from service label) 7004 1160 0000 9685 9134

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Sent To Ms. Wanda C. Ball
& Woodrow F. Childress, Jr.
Street, Apt. or PO Box 1007 Eagle Rd.
City, State, ZIP+4 Greensboro, NC 27407

PS Form ... Instructions

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- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. and Mrs. Glenn H. and Carey A. Campbell
2219 McKnight Mill Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☑ Agent ☑ Addressee

B. Received by (Printed Name) C. Date of Delivery 5-8-08

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number
(Transfer from service label) 7004 1160 0000 9685 9165

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

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Sent To Mr. and Mrs. Glenn H. and Carey A. Campbell
Street, Apt. or PO Box 2219 McKnight Mill Rd.
City, State, ZIP+4 Greensboro, NC 27405

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- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Ms. Alice M. Cook
Gertrude C Pegram Heirs & Geneva Cook Jessup
6182 Thacker Dairy Rd.
Whitsett, NC 27377

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Charlotte M. Fogleman ☐ Agent ☐ Addressee

B. Received by (Printed Name) Charlotte M. Fogleman
C. Date of Delivery 5/17/05

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9196

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

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Sent To
Ms. Alice M. Cook
Gertrude C Pegram Heirs & Geneva Cook Jessup
Street or PO
6182 Thacker Dairy Rd.
City, St
Whitsett, NC 27377

PS Form ... Instructions

7004 1160 0000 9685 9196

SENDER: COMPLETE THIS SECTION

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- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. David E. Dick
1477 Rankin Mill Rd.
McLeansville, NC 27301

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Ellen Dick ☐ Agent ☐ Addressee

B. Received by (Printed Name) Ellen Dick
C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9219

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

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Sent To
Mr. David E. Dick
Street or PO
1477 Rankin Mill Rd.
City, St
McLeansville, NC 27301

PS Form ... Instructions

7004 1160 0000 9685 9219

SENDER: *COMPLETE THIS SECTION*

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- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Ms. Vivian E. King Carter
Maxwell Harvey T. Heirs
25 Woodbine Ave.
Newark, NJ 71060

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Vivian E. Carter ☐ Agent ☐ Addressee

B. Received by (*Printed Name*) C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (*Extra Fee*) ☐ Yes

2. Article Number
(*Transfer from service label*) 7004 1160 0000 9685 9295

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

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GREENSBORO, NC 27425 USPS AIRMAIL CENTER

7004 1160 0000 9685 9295

Sent To Ms. Vivian E. King Carter
Maxwell Harvey T. Heirs
Street, Apt. No., or PO Box No. 25 Woodbine Ave.
City, State, ZIP+4 Newark, NJ 71060

PS Form 3800, August 2006 See Reverse for Instructions

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Ms. Louise M. Donnell
1711 Huffine Mill Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Louise Donnell ☐ Agent ☐ Addressee

B. Received by (*Printed Name*) Louise Donnell C. Date of Delivery 8-8-8

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (*Extra Fee*) ☐ Yes

2. Article Number
(*Transfer from service label*) 7004 1160 0000 9685 9226

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

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GREENSBORO, NC 27425 USPS AIRMAIL CENTER

7004 1160 0000 9685 9226

Sent To Ms. Louise M. Donnell
Street, Apt. No., or PO Box No. 1711 Huffine Mill Rd.
City, State, ZIP+4 Greensboro, NC 27405

PS Form 3800, August 2006 See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Ms. Jacqueline N. Ferguson
1320 Nealtown Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Jacqueline Ferguson ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery 5-8-08

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

Jacqueline Ferguson

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9233

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

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Sent To: Ms. Jacqueline N. Ferguson
Street, Apt. No., or PO Box No.: 1320 Nealtown Rd.
City, State, ZIP+4: Greensboro, NC 27405

PS Form 3800, June 2002 See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. and Mrs. John A and Edna M Ferguson
16420 Joy St.
Laurinburg, NC 28352

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Edna M. Ferguson ☐ Agent ☐ Addressee

B. Received by (Printed Name) EDNA M. FERGUSON C. Date of Delivery 5/8/08

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9240

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

7004 1160 0000 9685 9240

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

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Sent To: Mr. and Mrs. John A and Edna M Ferguson
Street, Apt. No., or PO Box No.: 16420 Joy St.
City, State, ZIP+4: Laurinburg, NC 28352

PS Form 3800, June 2002 See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

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- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Resident or Ferguson
1216 Nealtown Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Teresa Austin ☐ Agent ☐ Addressee

B. Received by (Printed Name): Teresa Austin
C. Date of Delivery: 5-8-8

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9394

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Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $

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7004 1160 0000 9685 9394

Sent Resident or Ferguson
Street or P.O. 1216 Nealtown Rd.
City, Greensboro, NC 27405

PS Form ... Instructions

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- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. and Mrs. Bossie and Josie W.
Gatson, Jr.
1403 Dans Rd.
Greensboro, NC 27401

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Bossie Gatson ☐ Agent ☐ Addressee

B. Received by (Printed Name)
C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9257

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

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Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $

Postmark Here
AIRMAIL CENTER USPS GREENSBORO NC 27401

7004 1160 0000 9685 9257

Sent Mr. and Mrs. Bossie and Josie W. Gatson, Jr.
Street or P.O. 1403 Dans Rd.
City Greensboro, NC 27401

PS Form ... Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. and Mrs. Kevin G. and Anita R. Harris
1232 Drivers Cir
Rocky Mount, NC 27804

COMPLETE THIS SECTION ON DELIVERY

A. Signature X ☐ Agent ☐ Addressee

B. Received by (Printed Name) KEVIN HARRIS C. Date of Delivery 5-9-08

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9264

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

7004 1160 0000 9685 9264

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Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

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Mr. and Mrs. Kevin G. and Anita R. Harris
1232 Drivers Cir
Rocky Mount, NC 27804

PS Form 3800, August 2006 See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Hines Chapel Baptist Church
3228 Hines Chapel Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature X ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

GREENSBORO NC SUMMIT STA MAY 09 2008 USPS 27415

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9127

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

7004 1160 0000 9685 9127

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Postage	$
Certified Fee	
Return Reciept Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here

Hines Chapel Baptist Church
3228 Hines Chapel Rd.
Greensboro, NC 27405

PS Form 3800, August 2006 See Reverse for Instructions

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Resident or Hines Chapel Baptist Church
3232 Hines Chapel Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) [signature] C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

MAY 09 2008

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label) 7004 1160 0000 9685 9448

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

7004 1160 0000 9685 9448

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Postage	$
Certified Fee	
Return Reciept Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	¢

Postmark Here

Resident or Hines Chapel Baptist Church
3232 Hines Chapel Rd.
Greensboro, NC 27405

PS Form 3800, August 2006 See Reverse for Instructions

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Holy Temple United Holy Church of Greensboro
1907 Huffine Mill Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) MORRIS LEWIS C. Date of Delivery 5/13/08

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label) 7004 1160 0000 9685 9103

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

7004 1160 0000 9685 9103

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Postage	$
Certified Fee	
Return Reciept Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	¢

Postmark Here

Holy Temple United Holy Church of Greensboro
1907 Huffine Mill Rd.
Greensboro, NC 27405

PS Form 3800, August 2006 See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Ms. Ruby Brown Kernodle
4029-A Hicone Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Ruby Kernodle ☐ Agent ☐ Addressee

B. Received by (Printed Name) CKeeys RK30
C. Date of Delivery 5/8/08

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9288

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

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Postage	$
Certified Fee	
Return Reciept Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here
AIRMAIL CENTER USPS GREENSBORO, NC 27425
MAY 2007

7004 1160 0000 9685 9288

Sent To Ms. Ruby Brown Kernodle
Street or PO Box 4029-A Hicone Rd.
City, Greensboro, NC 27405

PS Form 3800, August 2006 See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Resident or Kernodle
1245 Rankin Mill Rd.

McLEANSVILLE, NC 27301

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Joan K Rudd 5/9/08 ☐ Agent ☐ Addressee

B. Received by (Printed Name) Joan K Rudd
C. Date of Delivery 5/9/08

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9455

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Postage	$
Certified Fee	
Return Reciept Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here
AIRMAIL CENTER USPS GREENSBORO, NC 27425
MAY 2007

7004 1160 0000 9685 9455

Resident or Kernodle
1245 Rankin Mill Rd.
Greensboro, NC 27405

See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. Ralph Johnson
c/o Concerned Citizens of Northeast Greensboro
2402 Bothwell St.
Greensboro, NC 27401

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) Ralph Johnson C. Date of Delivery

D. Is delivery address different from Item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

MAY 15 2008

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9271

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

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Postage $
Certified Fee
Return Reciept Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $

Postmark Here

Sent Mr. Ralph Johnson
Street or Pt c/o Concerned Citizens of Northeast Greensboro
City, 2402 Bothwell St.
Greensboro, NC 27401

PS Form ... Instructions

7004 1160 0000 9685 9271

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. and Mrs. Robert L. and Lottie M. Neal
1202 Nealtown Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Robert Neal ☐ Agent ☐ Addressee

B. Received by (Printed Name) Robert Neal C. Date of Delivery

D. Is delivery address different from Item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9318

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Postage $
Certified Fee
Return Reciept Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $

Postmark Here

Sent Mr. and Mrs. Robert L. and Lottie M. Neal
Street or P 1202 Nealtown Rd.
City, Greensboro, NC 27405

PS Form ...

7004 1160 0000 9685 9318

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. and Mrs. James T. and Linda H. Plummer
2307 White Elder Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X James T. Plummer ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery 5-8-08

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9325

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

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Postage	$
Certified Fee	
Return Reciept Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	¢

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7004 1160 0000 9685 9325

Mr. and Mrs. James T. and Linda H. Plummer
2307 White Elder Rd.
Greensboro, NC 27405

See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Resident or Plummer
2300 White Elder Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery 5-10-08

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9479

PS Form 3811, August 2001 Domestic Return Receipt 102595-02-M-1540

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Postage	$
Certified Fee	
Return Reciept Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	¢

USPS AIRMAIL CENTER GREENSBORO, NC 27425 2008 Postmark Here

7004 1160 0000 9685 9479

Resident or Plummer
2300 White Elder Rd.
Greensboro, NC 27405

See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Resident
3242 Hines Chapel Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature ☐ Agent ☒ Addressee

B. Received by (Printed Name) C. Date of Delivery 5-8-8

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9332

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

7004 1160 0000 9685 9332

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Postage	$
Certified Fee	
Return Reciept Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here
ATMAIL CENTER USPS GREENSBORO, NC 27405

Sent To Resident
Street or PO Box 3242 Hines Chapel Rd.
City, State Greensboro, NC 27405

PS Form 3800, August 2002 See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. David Scales
1212 Nealtown Rd.
Greensboro, NC 27405

GREENSBORO SUMMIT MAY 9 2008 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature ☐ Agent ☒ Addressee

B. Received by (Printed Name) C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9516

PS Form 3811, August 2001 Domestic Return Receipt 102595-02-M-1540

7004 1160 0000 9685 9516

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Postage	$
Certified Fee	
Return Reciept Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here
ATMAIL CENTER USPS GREENSBORO, NC 27405

Sent To Mr. David Scales
Street or PO Box 1212 Nealtown Rd.
City, State Greensboro, NC 27405

PS Form 3800, August 2002 See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. and Mrs. Lloyd Felix and
Catherine V. Shaw, Jr.
3256 Hines Chapel Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature: Kathleen Shaw ☐ Agent ☐ Addressee

B. Received by (Printed Name): C. Date of Delivery: 5-4-8

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label): 7004 1160 0000 9685 9523

PS Form 3811, August 2001 Domestic Return Receipt 102595-02-M-1540

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Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

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Mr. and Mrs. Lloyd Felix and
Catherine V. Shaw, Jr.
3256 Hines Chapel Rd.
Greensboro, NC 27405

7004 1160 0000 9685 9523

ER: COMPLETE THIS SECTION

mplete items 1, 2, and 3. Also complete
4 if Restricted Delivery is desired.
t your name and address on the reverse
that we can return the card to you.
tach this card to the back of the mailpiece,
on the front if space permits.

Article Addressed to:

Resident or Shaw
3262 Hines Chapel Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature: Gary Perdue ☐ Agent ☐ Addressee

B. Received by (Printed Name): C. Date of Delivery: 5-4-8

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label): 7004 1160 0000 9685 9493

PS Form 3811, August 2001 Domestic Return Receipt 102595-02-M-1540

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Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

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Resident or Shaw
3262 Hines Chapel Rd.
Greensboro, NC 27405

7004 1160 0000 9685 9493

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Resident or Shaw
3262-R1 Hines Chapel Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature: Gary Perdue ☐ Agent ☐ Addressee

B. Received by (Printed Name) | C. Date of Delivery: 5-5-08

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☑ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9486

PS Form 3811, August 2001 Domestic Return Receipt 102595-02-M-1540

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Postage	$
Certified Fee	
Return Reciept Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here

7004 1160 0000 9685 9486

Sent To: Resident or Shaw
Street, Apt. or PO Box: 3262-R1 Hines Chapel Rd.
City, State: Greensboro, NC 27405

PS Form 3800, August 2006 See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. and Mrs. Christopher L and
Greta A. Smith
2820 Brame Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature: x Brenda Smith ☐ Agent ☐ Addressee

B. Received by (Printed Name) Brenda Smith | C. Date of Delivery: 5-3-08

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9530

PS Form 3811, August 2001 Domestic Return Receipt 102595-02-M-1540

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Postage	$
Certified Fee	
Return Reciept Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here

7004 1160 0000 9685 9530

Sent To: Mr. and Mrs. Christopher L and
Street, Apt. or PO Box: Greta A. Smith
2820 Brame Rd.
City, State: Greensboro, NC 27405

PS Form 3800, August 2006 See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Ms. Virgina Wade
1206 Nealtown Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature: X Virginia Wade ☐ Agent ☐ Addressee

B. Received by (Printed Name): Virginia Wade C. Date of Delivery: 5-7-8

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label): 7004 1160 0000 9685 9547

PS Form 3811, August 2001 Domestic Return Receipt 102595-02-M-1540

7004 1160 0000 9685 9547

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Postage	$
Certified Fee	
Return Reciept Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here
ALBANY CENTER USPS GREENSBORO, NC 27425

Ms. Virgina Wade
1206 Nealtown Rd.
Greensboro, NC 27405

See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Councilwoman, Dr. Goldie Wells
4203 Belfield Dr.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature: Ruth H. Fields ☐ Agent ☒ Addressee

B. Received by (Printed Name): Ruth H. Fields C. Date of Delivery: 5-8-8

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label): 7004 1160 0000 9685 9554

PS Form 3811, August 2001 Domestic Return Receipt 102595-02-M-1540

7004 1160 0000 9685 9554

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at www.usps.com®

OFFICIAL USE

Postage	$
Certified Fee	
Return Reciept Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here
ALBANY CENTER USPS GREENSBORO, NC 27425

Councilwoman, Dr. Goldie Wells
4203 Belfield Dr.
Greensboro, NC 27405

See Reverse for Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. and Mrs. Bob W. and Irene S. Wright
3234 Hines Chapel Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature: X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name): C. Date of Delivery: 5-8-8

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9561

PS Form 3811, August 2001 Domestic Return Receipt 102595-02-M-1540

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OFFICIAL USE

Postage	$
Certified Fee	
Return Reciept Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here

Mr. and Mrs. Bob W. and Irene S. Wright
3234 Hines Chapel Rd.
Greensboro, NC 27405

7004 1160 0000 9685 9561

Instructions

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Youth Focus Inc.
301 E Washington St.
Greensboro, NC 27401

COMPLETE THIS SECTION ON DELIVERY

A. Signature: X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name): C. Date of Delivery: 5-8

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9110

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

U.S. Postal Service™
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OFFICIAL USE

Postage	$
Certified Fee	
Return Reciept Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	

Postmark Here

Youth Focus Inc.
301 E Washington St.
Greensboro, NC 27401

7004 1160 0000 9685 9110

Instructions

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Resident or Youth Focus Inc.
1601 Huffine Mill Rd.
Greensboro, NC 27405

COMPLETE THIS SECTION ON DELIVERY

A. Signature: X [signature] ☒ Agent ☐ Addressee

B. Received by (Printed Name): Hannah Lucas

C. Date of Delivery: 5/8/08

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 1160 0000 9685 9509

PS Form 3811, August 2001 Domestic Return Receipt 102595-02-M-1540

7004 1160 0000 9685 9509

U.S. Postal Service™
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OFFICIAL USE

Postage	$
Certified Fee	
Return Reciept Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

AIRMAIL CENTER USPS GREENSBORO, NC 27425
Postmark Here
MAY 2008

Resident or Youth Focus Inc.
1601 Huffine Mill Rd.
Greensboro, NC 27405

PS Instructions

CITY OF GREENSBORO
P.O. BOX 3136
GREENSBORO, NC 27402-3136

7004 1160 0000 9685 9158

UNITED STATES POSTAGE PITNEY BOWES
02 1A $ 05.21⁰
0004382235 MAY 07 2008
MAILED FROM ZIP CODE 27402

Mr. Jimmy C. Bull
Veronica A. Ratliff T/C
1811 Huffine Mill Rd.
Greensboro, NC 27405

5-13
5-23

NIXIE 274 SE 1 08 05/28/08
RETURN TO SENDER
UNCLAIMED
UNABLE TO FORWARD
BC: 27402313636 *2090-04122-28-20

1024

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
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OFFICIAL USE

Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $

Postmark Here
AIRMAIL CENTER
GREENSBORO, NC 27405

7004 1160 0000 9685 9158

Sent To Mr. Jimmy C. Bull
Street, Apt. No.; or PO Box No. Veronica A. Ratliff T/C
City, State, ZIP+4 1811 Huffine Mill Rd.
Greensboro, NC 27405

PS Form 3800, August 2006 See Reverse for Instructions

CERTIFIED MAIL™

CITY OF GREENSBORO
P.O. BOX 3136
GREENSBORO, NC 27402-3136

7004 1160 0000 9685 9356

UNITED STATES POSTAGE PITNEY BOWES
02 1A $ 05.21⁰
0004382235 MAY 07 2008
MAILED FROM ZIP CODE 27402

Resident or Campbell
3130 Hines Chapel Rd.
Greensboro, NC 27405

5-8-8
5-13
5-23

NIXIE 274 SE 1 08 UNC
RETURN TO SENDER
UNCLAIMED
UNABLE TO FORWARD
BC: 27402313636

1024

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
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OFFICIAL USE

Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $

Postmark Here
AIRMAIL CENTER
GREENSBORO, NC 27405

7004 1160 0000 9685 9356

Sent To Resident or Campbell
Street, Apt. No.; or PO Box No. 3130 Hines Chapel Rd.
City, State, ZIP+4 Greensboro, NC 27405

PS Form 3800, August 2006 See Reverse for Instructions

CITY OF GREENSBORO
P.O. BOX 3136
GREENSBORO, NC 27402-3136

CERTIFIED MAIL

5/14
RJ

7004 1160 0000 9685 9349

02 1A $ 05.21⁰
0004382235 MAY 07 2008
MAILED FROM ZIP CODE 27402

Resident or Ball
2802 Brame Rd.
Greensboro, NC 27405

NSN

NIXIE 274 SC 1 08 05/13/08
RETURN TO SENDER
NO SUCH NUMBER
UNABLE TO FORWARD

BC: 27402313636 *2080-10698-13-16

1024

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
For delivery information visit our website at www.usps.com
OFFICIAL USE

Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $

Postmark Here

7004 1160 0000 9685 9349

Resident or Ball
2802 Brame Rd.
Greensboro, NC 27405

CITY OF GREENSBORO
P.O. BOX 3136
GREENSBORO, NC 27402-3136

CERTIFIED MAIL

7004 1160 0000 9685 9141

02 1A $ 05.21⁰
0004382235 MAY 07 2008
MAILED FROM ZIP CODE 27402

Ms. Phyllis T. Bradley
1247 Rankin Mill Rd.

McLEANSVILLE, NC
27301

1st
NL
<19/08

FORWARD
SCANNED

NIXIE 274 SC 1 08 05/26/08
RETURN TO SENDER
UNCLAIMED
UNABLE TO FORWARD

BC: 27402313636 *2080-09285-26-20

[redacted]

1024

U.S. Postal Service
CERTIFIED MAIL RECEIPT
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OFFICIAL USE

Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $

Postmark Here

7004 1160 0000 9685 9141

Ms. Phyllis T. Bradley
1247 Rankin Mill Rd.
Greensboro, NC 27405

CITY OF GREENSBORO
P.O. BOX 3136
GREENSBORO, NC 27402-3136

CERTIFIED MAIL

RTS
5/16

7004 1160 0000 9685 9363

UNITED STATES POSTAGE
PITNEY BOWES
02 1A $ 05.21⁰
0004382235 MAY 07 2008
MAILED FROM ZIP CODE 27402

NSN RR3
UAA RR3

Resident or Cook
4212 - 4224 Camp Burton Rd.

McLEANSVILLE, NC
2730

NIXIE 274 5C 1 08 05/14/08
RETURN TO SENDER
NO SUCH NUMBER
UNABLE TO FORWARD

BC: 27402313636 *2080-08351-14-21

[redacted]

1024

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
For delivery information visit our website at www.usps.com
OFFICIAL USE

7004 1160 0000 9685 9363

Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $

Postmark Here
MAY 2008
GREENSBORO, NC 27435
AIRMAIL CENTER USPS

Sent To
Resident or Cook
Street, Apt. or PO Box
4212 - 4224 Camp Burton Rd.
City, State
Greensboro, NC 27405

PS Form

CITY OF GREENSBORO
P.O. BOX 3136
GREENSBORO, NC 27402-3136

CERTIFIED MAIL

7004 1160 0000 9685 9202

UNITED STATES POSTAGE
PITNEY BOWES
02 1A $ 05.21⁰
0004382235 MAY 07 2008
MAILED FROM ZIP CODE 27402

UNCLAIMED

Mr. and Mrs. Mitchell Thomas and
Katherine K. Currie
4034 High Rock Rd.
Gibsonville, NC 27249

GIBSONVILLE, NC 27249
MAY - 8 2008
Here

NIXIE 274 5E 1 08 05/27/08
RETURN TO SENDER
UNCLAIMED
UNABLE TO FORWARD

BC: 27402313636 *2090-07307-27-23

1024

U.S. Postal Service
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OFFICIAL USE

7004 1160 0000 9685 9202

Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $

Postmark Here

Sent To
Mr. and Mrs. Mitchell Thomas and
Katherine K. Currie
Street, Apt. or PO Box
4034 High Rock Rd.
City, State
Gibsonville, NC 27249

PS Form

CITY OF GREENSBORO
P.O. BOX 3136
GREENSBORO, NC 27402-3136

CERTIFIED MAIL

7004 1160 0000 9685 9172

UNITED STATES POSTAGE PITNEY BOWES
02 1A $ 05.21⁰
0004382235 MAY 07 2008
MAILED FROM ZIP CODE 27402

Mr. Donald Jefferson Cates
3238 Hines Chapel Rd.
Greensboro, NC 27405

NIXIE 274 5E 1 08 05/20/08
RETURN TO SENDER
UNCLAIMED
UNABLE TO FORWARD
BC: 27402313636 *2080-04159-20-20

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Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $

Postmark Here
MAY 7 2008
GREENSBORO NC 27435
USPS

Sent To Mr. Donald Jefferson Cates
Street, Apt. No., or PO Box No. 3238 Hines Chapel Rd.
City, State, ZIP+4 Greensboro, NC 27405

PS Form 3800, August 2006 See Reverse for Instructions

7004 1160 0000 9685 9172

CERTIFIED MAIL

CITY OF GREENSBORO
P.O. BOX 3136
GREENSBORO, NC 27402-3136

A Rich History. A Bright Future.

7004 1160 0000 9685 9189

UNITED STATES POSTAGE PITNEY BOWES
02 1A $ 05.21⁰
0004382235 MAY 07 2008
MAILED FROM ZIP CODE 27402

Mr. Robert C. Christian
1819 Huffine Mill Rd.
Greensboro, NC 27405

NIXIE 274 5E 1 08 05/20/08
RETURN TO SENDER
UNCLAIMED
UNABLE TO FORWARD
BC: 27402313636 *2080-04162-20-20

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Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $

Postmark Here
MAY 7 2008
GREENSBORO NC 27435
USPS

Sent To Mr. Robert C. Christian
Street, Apt. No., or PO Box No. 1819 Huffine Mill Rd.
City, State, ZIP+4 Greensboro, NC 27405

PS Form 3800, August 2006 See Reverse for Instructions

7004 1160 0000 9685 9189

CITY OF GREENSBORO
P.O. BOX 3136
GREENSBORO, NC 27402-3136

7004 1160 0000 9685 9370

A Rich History. A Bright Future.

UNITED STATES POSTAGE
PITNEY BOWES
02 1A $ 05.21⁰
0004382235 MAY 07 2008
MAILED FROM ZIP CODE 27402

Resident or Dick
1409 Rankin Mill Rd.
Greensboro, NC 27405

NIXIE 274 SC 1 09 05/10/08
RETURN TO SENDER
NO SUCH NUMBER
UNABLE TO FORWARD
BC: 27402319636 *2080-01449-10-24

27402@3136

1024

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
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OFFICIAL USE

Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $

Postmark Here
AIRMAIL CENTER USPS
GREENSBORO, NC 27435

7004 1160 0000 9685 9370

Resident or Dick
1409 Rankin Mill Rd.
Greensboro, NC 27405

PS Form 3800, August 2006 See Reverse for Instructions

CERTIFIED MAIL

CITY OF GREENSBORO
P.O. BOX 3136
GREENSBORO, NC 27402-3136

7004 1160 0000 9685 9400

UNITED STATES POSTAGE
PITNEY BOWES
02 1A $ 05.21⁰
0004382235 MAY 07 2008
MAILED FROM ZIP CODE 27402

Resident or Ferguson
1214 Nealtown Rd.
Greensboro, NC 27405

NIXIE 274 SE 1 09 05/28/08
RETURN TO SENDER
UNCLAIMED
UNABLE TO FORWARD
BC: 27402319636 *2080-04129-28-20

27405$5533 27402@3136

1024

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CERTIFIED MAIL RECEIPT
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OFFICIAL USE

Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $

Postmark Here
AIRMAIL CENTER USPS
GREENSBORO, NC 27435

7004 1160 0000 9685 9400

Resident or Ferguson
1214 Nealtown Rd.
Greensboro, NC 27405

PS Form 3800, August 2006 See Reverse for Instructions

CITY OF GREENSBORO
P.O. BOX 3136
GREENSBORO, NC 27402-3136

CERTIFIED MAIL™

7004 1160 0000 9685 9097

02 1A $ 05.21⁰
0004382235 MAY 07 2008
MAILED FROM ZIP CODE 27402

Resident or Currie
3272 Hines Chapel Rd.
Greensboro, NC 27405

NIXIE 274 SE 1 08 05/20/08
RETURN TO SENDER
UNCLAIMED
UNABLE TO FORWARD
BC: 27402313636 *2080-04125-20-20

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7004 1160 0000 9685 9097

Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total

Postmark Here

Resident or Currie
3272 Hines Chapel Rd.
Greensboro, NC 27405

CITY OF GREENSBORO
P.O. BOX 3136
GREENSBORO, NC 27402-3136

CERTIFIED MAIL™

7004 1160 0000 9685 9

02 1A $ 05.21⁰
0004382235 MAY 07 2008
MAILED FROM ZIP CODE 27402

Resident or Dick
3200 Hines Chapel Rd.
Greensboro, NC 27405

NIXIE 274 SE 1 08 05/13/08
RETURN TO SENDER
NO MAIL RECEPTACLE
UNABLE TO FORWARD
BC: 27402313636 *2080-10707-13-16

1024

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7004 1160 0000 9685 9387

Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees

Postmark Here

Resident or Dick
3200 Hines Chapel Rd.
Greensboro, NC 27405

CERTIFIED MAIL

CITY OF GREENSBORO
P.O. BOX 3136
GREENSBORO, NC 27402-3136

7004 1160 0000 9685 9431

02 1A $ 05.21⁰
0004382235 MAY 07 2008
MAILED FROM ZIP CODE 27402

Resident or Harvey T. Maxwell
Heirs
1719 Huffine Mill Rd.
Greensboro, NC 27405

NIXIE 274 SE 1 08 05/10/08
RETURN TO SENDER
ATTEMPTED - NOT KNOWN
UNABLE TO FORWARD
BC: 27402313695 *2080-00628-10-24

NSN

2740535511 0027 27402313695

1024

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
For delivery information visit our website at www.usps.com
OFFICIAL USE

Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $

Postmark Here
MAY 2008
GREENSBORO, NC 27402
AIRMAIL CENTER USPS

7004 1160 0000 9685 9431

Resident or Harvey T. Maxwell
Heirs
1719 Huffine Mill Rd.
Greensboro, NC 27405

CERTIFIED MAIL

CITY OF GREENSBORO
P.O. BOX 3136
GREENSBORO, NC 27402-3136

5/16
RD

7004 1160 0000 9685 9462

02 1A $ 05.21⁰
0004382235 MAY 07 2008
MAILED FROM ZIP CODE 27402

Resident or Neal
1200 Nealtown Rd.
Greensboro, NC 27405

☐ Undeliverable as Addressed
☐ Moved, Left No Address
☐ Unclaimed
☐ Refused
☐ Attempted, Not Known
☐ No Such Street
☐ No Such Number
☐ No Receptacle
☐ Deceased
☐ Vacant

VAC

2740535530 0027

1024

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
For delivery information visit our website at www.usps.com
OFFICIAL USE

Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $

Postmark Here
MAY 2008
GREENSBORO, NC 27402
AIRMAIL CENTER USPS

7004 1160 0000 9685 9462

Resident or Neal
1200 Nealtown Rd.
Greensboro, NC 27405

CITY OF GREENSBORO
P.O. BOX 3136
GREENSBORO, NC 27402-3136

CERTIFIED MAIL™

7004 1160 0000 9685 9417

UNITED STATES POSTAGE
02 1A $ 05.21⁰
0004382235 MAY 07 2008
MAILED FROM ZIPCODE 27402

Resident or Gatson
~~1208~~ 1210 Nealtown Rd.
Greensboro, NC 27405

5-8-8
5-13
5-23

NIXIE 274 SC 1 08 05/28/08
RETURN TO SENDER
UNCLAIMED
UNABLE TO FORWARD
BC: 27402313636 *2080-04165-28-20

1024

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OFFICIAL USE

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here

Sent To: Resident or Gatson
Street, Apt. No.; or PO Box No.: 1208 - 1210 Nealtown Rd.
City, State, ZIP+4: Greensboro, NC 27405

PS Form 3800, August 2006 See Reverse for Instructions

7004 1160 0000 9685 9417

CERTIFIED MAIL™

CITY OF GREENSBORO
P.O. BOX 3136
GREENSBORO, NC 27402-3136

7004 1160 0000 9685 9424

UNITED STATES POSTAGE
02 1A $ 05.21⁰
0004382235 MAY 07 2008
MAILED FROM ZIPCODE 27402

Resident or Harris
1210 Nealtown Rd.
Greensboro, NC 27405

5-8-4
5-13
5-23

NIXIE 274 SE 1 08 05/28/08
RETURN TO SENDER
UNCLAIMED
UNABLE TO FORWARD
BC: 27402313636 *2080-04166-28-20

1024

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
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OFFICIAL USE

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here

Sent To: Resident or Harris
Street, Apt. No.; or PO Box No.: 1210 Nealtown Rd.
City, State, ZIP+4: Greensboro, NC 27405

PS Form 3800, August 2006 See Reverse for Instructions

7004 1160 0000 9685 9424

NIL ee 5/8

CITY OF GREENSBORO
P.O. BOX 3136
GREENSBORO, NC 27402-3136

CERTIFIED MAIL™

7004 1160 0000 9685 9301

02 1A $ 05.21
0004382235 MAY 07 2008
MAILED FROM ZIP CODE 27402

Mr. Daniel Kenneth Neal
3106 Spring Mill Rd.
Greensboro, NC 27406

NIXIE 274 SE 1 08 05/07/08
RETURN TO SENDER
UNCLAIMED
UNABLE TO FORWARD
BC: 27402313536 *2080-02041-07-17

1024 27406 35422 0013 27402313536

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
For delivery information visit our website at www.usps.com®
OFFICIAL USE

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here
GREENSBORO, NC 27425 MAIL CENTER USPS

Sent To Mr. Daniel Kenneth Neal
Street, Apt. No.; or PO Box No. 3106 Spring Mill Rd.
City, State, ZIP+4 Greensboro, NC 27406

7004 1160 0000 9685 9301

PS Form 3800, August 2006

June 9, 2008 Public Meeting
Attendees List

Public Meeting
City of Greensboro - White Street Landfill
North Carolina Department of Environment and Natural Resources
Division of Waste Management
June 9, 2008
Peeler Recreation Center

Name Lottie Neal			Do you want a copy of the presentation?
Address 1202 Nealtown Rd.			
City Greensboro	State NC	Zip Code 27405	Yes ☑ No ☐

Name Marikay Abuzuaiter			Do you want a copy of the presentation?
Address c/o 2321 Randleman Rd			
City GSO	State NC	Zip Code 27406	Yes ☑ No ☐

Name Ralph Johnson			Do you want a copy of the presentation?
Address 2402 Bothwell St			
City Greensboro	State NC	Zip Code 27401	Yes ☑ No ☐

Name Grace Carter			Do you want a copy of the presentation?
Address 1311 Aldmore Drive			
City Gso	State N.C	Zip Code 27401	Yes ☑ No ☐

Name ANN Wallington			Do you want a copy of the presentation?
Address 2312 Ford Pl			
City Greensboro	State NC	Zip Code 27406	Yes ☑ No ☐

Public Meeting
City of Greensboro - White Street Landfill
North Carolina Department of Environment and Natural Resources
Division of Waste Management
June 9, 2008
Peeler Recreation Center

Name Phillip Wade			Do you want a copy of the presentation?
Address 1206 Nealtown Road			
City Greensboro	State NC	Zip Code 27405	Yes ☑ No ☐

Name Virginia Wade			Do you want a copy of the presentation?
Address 1206 Nealtown Rd			
City Greensboro	State N.C.	Zip Code 27405	Yes ☑ No ☐

Name Robert L. Neal			Do you want a copy of the presentation?
Address 1202 Nealtown Rd.			
City Greensboro	State N.C. 27405	Zip Code	Yes ☑ No ☐

Name Harold C. Field			Do you want a copy of the presentation?
Address 1903 Belden Dr.			
City Greensboro	State N.C.	Zip Code 27405	Yes ☑ No ☐

Name James E. Brame			Do you want a copy of the presentation?
Address 1614 Woodbriar Ave.			
City Greensboro	State N.	Zip Code 27405	Yes ☑ No ☐

Public Meeting
City of Greensboro - White Street Landfill
North Carolina Department of Environment and Natural Resources
Division of Waste Management
June 9, 2008
Peeler Recreation Center

Name Louise Donnell			Do you want a copy
Address 1711 Huffine Mill Rd			of the presentation?
City Greensboro	State NC	Zip Code 27405	Yes ☐ No ☒

Name			Do you want a copy
Address			of the presentation?
City	State	Zip Code	Yes ☐ No ☐

Name			Do you want a copy
Address			of the presentation?
City	State	Zip Code	Yes ☐ No ☐

Name			Do you want a copy
Address			of the presentation?
City	State	Zip Code	Yes ☐ No ☐

Name			Do you want a copy
Address			of the presentation?
City	State	Zip Code	Yes ☐ No ☐

Public Meeting
City of Greensboro - White Street Landfill
North Carolina Department of Environment and Natural Resources
Division of Waste Management
June 9, 2008
Peeler Recreation Center

Name Rev Samuel Connor			Do you want a copy of the presentation?
Address 2907 Peninsula Dr.			
City Jamestown	State NC	Zip Code 27282	Yes ☒ No ☐

Name Charlie R McKoy			Do you want a copy of the presentation?
Address 1400 Woodbriar AVE			
City Greensboro	State N C.	Zip Code 27405	Yes ☒ No ☐

Name Jim Kee			Do you want a copy of the presentation?
Address 4302 Lord Jeff Dr.			
City Greensboro	State NC	Zip Code 27405	Yes ☑ No ☐

Name Bob DAVIS			Do you want a copy of the presentation?
Address 1407 Lord Foxley DRR			
City G'boro	State N.C	Zip Code 27405	Yes ☒ No ☐

Name Dorothenia Carter			Do you want a copy of the presentation?
Address 1405 Lord Foxley Drive			
City Greensboro	State N.C.	Zip Code 27405	Yes ☑ No ☐

Public Meeting
City of Greensboro - White Street Landfill
North Carolina Department of Environment and Natural Resources
Division of Waste Management
June 9, 2008
Peeler Recreation Center

Name Eric Bishop (News 14 Carolina)			Do you want a copy of the presentation?
Address			
City GSO	State NC	Zip Code	Yes ☐ No ☑

Name [illegible]			Do you want a copy of the presentation?
Address [illegible]			
City Greensboro	State NC	Zip Code 27425	Yes ☑ No ☐

Name			Do you want a copy of the presentation?
Address			
City	State	Zip Code	Yes ☐ No ☐

Name			Do you want a copy of the presentation?
Address			
City	State	Zip Code	Yes ☐ No ☐

Name			Do you want a copy of the presentation?
Address			
City	State	Zip Code	Yes ☐ No ☐

June 9, 2008 Public Meeting Transcript

White Street Landfill Public Meeting - June 9, 2008

The White Street Landfill's public meeting began at 6:35 p.m. Eighteen guests attended including one media representative. Attendees were requested to sign a registration sheet in order to document their attendance.

The meeting was conducted by Ms. Jeryl Covington, Environmental Services Director and began with the introduction of the attending staff, Mr. David Bost, Acting Waste Disposal Manager, and Mr. Greg Thomasson, Technical and Planning Support Manager (Waste Disposal Engineer). Following the introduction of staff, the purpose of the meeting was provided which stated that this meeting was being held in accordance with applicable waste disposal regulations associated with the proposed landfill activities.

As originally reported at the public meeting held on Thursday, December 20, 2007, the City of Greensboro is submitting information to the North Carolina Department of Environment and Natural Resources – Division of Waste Management regarding three activities at two of the operating units located at the White Street Landfill. These submissions include: re-permitting the construction and demolition landfill located above a formerly operated sanitary landfill; changing the municipal solid waste landfill's configuration by modifying the side slopes; thus, increasing the disposal capacity; and adding an additional remediation technology to the groundwater corrective action plan.

The City of Greensboro reported that the groundwater was consistently monitored in accordance with the regulatory requirements. One area adjacent to the formerly operated Phase II landfill continued to detect the occurrence of groundwater impact above the regulatory limits. The location of this impact was identified on an aerial photograph and a brief discussion educating the audience on the principals of groundwater flow was provided. The general direction of groundwater flow was described referencing the aerial photograph and identified as flowing from the southerly direction toward a northern-northeast direction. Residential neighborhoods were identified on the aerial photograph as being located uphill (up gradient) of the landfill's property. The groundwater flow direction was described as flowing from higher elevations (residential area) to lower elevations (North Buffalo Creek). In addition, it was reported that the recent groundwater sampling event (May 2008) revealed that the level of groundwater contamination was decreasing. In light of the recent sampling results, the City is proposing the planting of trees within the property boundaries and adjacent to North Buffalo Creek as an additional solution in remediating the groundwater. This form of remediation was referenced as phytoremediation. The process of phytoremediation was described as utilizing the root system of hybrid poplar trees to uptake existing contaminates in the groundwater. The poplars will require placement in a manner that will promote growth and reduce the opportunity for insect infestation and fungal diseases. The City hopes to obtain agronomy assistance from one of the local colleges or universities. The phytoremediation will be completed in conjunction with the monitored natural attenuation (MNA) that was originally discussed at the December 20, 2007 public meeting. A brief review of MNA was provided to the audience and described as being a natural breakdown in the contaminates due to the composition and make-up of subsurface media and oxygen levels in and around the subsurface groundwater.

The City of Greensboro reported that a permit modification has been submitted for the Phase III municipal solid waste landfill. This permit modification will request a change in the side slopes of the unit. A cross-sectional schematic was shown to the audience. The currently approved side slope configuration was identified and the proposed increase was depicted on the schematic. No change in the height of the landfill will result with the proposed side slope modification. The height of the landfill will remain at 872 feet above mean sea level. Approximately one (1) million cubic yards of disposal capacity will be gained with this modification. The audience was provided information regarding the current capacity of the Phase III unit. Mr. Jim Kee made inquiry about household waste returning to the site. If it were decided to return disposal activities to the site, the existing available landfill area would be consumed in less than five years. This is due to the fact that both construction and demolition waste and household waste will be utilizing the same landfill during the operational life of this unit during this period. Based upon current volumes, the construction and demolition landfill (phase II) will be full on or about 2011. As originally permitted in 1997, the Phase III landfill was designed for a ten-year capacity. The next landfill area could not be constructed and permitted during this timeframe.

The audience was provided a copy of the current waste generation volume being managed by the transfer station. The audience was recommended to participate in the City's recycling program and increase their recycling efforts. The transfer station operations were briefly described and photos of the operation were shown to the audience. The current hauling and disposal costs for the facility beginning June 2008 are $36.08 per ton with a $36.00 per ton rate being charged to the users. This increase results from the dramatic escalation in fuel costs. Mr. Harold Fields raised a question about the solid waste fee charges being increased due to this event. It was explained that the household solid waste fee was eliminated in 2004 and this fee was converted to the property tax. Mr. Fields further stated that the message being sent to the community is that the recent property tax increases are due to the closing of the landfill. A brief explanation was provided clarifying that a portion of the property tax increase was due to the opening of the transfer station. This portion was approximately $0.25 of the total property tax amount; other portions of the increase included costs for public safety and other municipal activities. Currently, no property tax increase is being proposed in the upcoming budget.

The audience was reminded that the solid waste disposal tax of $2.00 per ton will be in effect July 1, 2008. The solid waste legislation passed by the general assembly increased the regulatory requirements for the development of landfills within the state; thus, fewer landfills may be developed and the competition for disposal capacity may increase. The regulatory agency has provided information on the state's currently available solid waste disposal capacity to the legislature. They have stated that North Carolina will be facing a disposal capacity dilemma in future years. As a result, it is anticipated that the City will be facing competition for landfill disposal capacity as other cities consume their landfill space and resolve to find other disposal locations. Ms. Valeria Niles made inquiry about waste-to-energy (WTE) options. It was explained that currently one WTE facility operates in the state and is located in New Hanover County. This community decided to develop the WTE unit and preserve their lands for tourism and recreation. The cost associated with the operations of the WTE plant exceeds the cost of landfilling. The City of Greensboro's waste volume makes the development of a WTE plant in our community cost prohibitive. Ms. Niles referenced the St. Lucia, Florida WTE operation being developed. It was explained that the cost of land for landfill development makes the WTE development in Florida an equitable

solution for managing waste. North Carolina is currently considered a rural area, the cost of land is still relatively inexpensive; thus, landfill development remains relatively inexpensive in comparison to other alternatives. Other communities that have WTE or alternative waste disposal methods have landfill costs exceeding $60.00 per ton; North Carolina's average is $34.00 - $38.00 per ton. If WTE is developed within this area, other communities will need to participate in order to acquire the volume necessary to make the operation profitable. Currently, the cities of Winston-Salem and High Point have secured land to manage their waste generation for 15-20± years. Reverend Samuel Connor asked if the landfill were to reopen, what are the risks to the closest residents? It was explained that the landfill currently conducts groundwater monitoring and has a landfill gas collection in-placed to manage emissions. Both of these operations are required by the state for environmental protection. An audience member made inquiry regarding the arrangements made with Cone Mills for the landfill gas. It was explained that Cone Mills receives this gas at no charge. Inquiry was made with respect to the City's arrangements and the reasoning that allowed Cone Mills to receive the landfill gas for free. It was explained that department staff were not involved with the agreement and Councilmember Wells is not present to provide the background on the City Council's actions. Ms. Valerie Niles stated that Cone Mills received the landfill gas as an incentive in order to remain open and keep jobs; but instead, they have laid-off employees. Ms. Niles asked whether the City could sell the landfill gas? The response provided stated that there are other interested parties willing to purchase the gas and acquire the system; however, all of the currently generated landfill gas is provided to Cone Mills; there are no other sources of landfill gas available to sell.

The City of Greensboro reported that a permit submission will be made in order to continue the construction and demolition landfill operations above the formerly utilized sanitary landfill (Phase II). New construction and demolition regulations were adopted and facilities wishing to continue their operations are required to re-submit an application and request permit renewal. The application submissions are due on June 30, 2008. The City is proposing to continue the construction and demolition disposal activities at the White Street landfill. The materials being disposed will originate from construction and demolition sites and include brick, shingles, concrete, wood, and sheetrock, etc. Waste is screened at the entrance gate and at the lift. The City does not accept asbestos containing material nor does the City recycle this waste stream. Currently, the generators of construction and demolition waste remove any marketable recyclable materials prior to delivery to the landfill.

The City of Greensboro discussed future development plans for the landfill. The proposed Phase IV region was identified on the aerial photograph. The City is proposing to acquire two additional tracts of land prior to the development of this portion of the landfill. Mr. Harold Fields asked whether the City would purchase land located south of Huffine Mill Road for future landfill development. It was explained that the City has no plans to expand the boundaries in this direction. If this option were to be considered, it would be an expensive proposition based upon the number of homes required to be purchased in order to satisfy the regulatory buffer requirements. Mr. Harold Fields further expressed concern regarding the lack of maintenance along the roadway. It was explained that the City of Greensboro does not maintain the right-of–ways on state maintained roadways. Mr. David Bost provided his contact information to Mr. Fields in order to assist in addressing this concern.

The meeting concluded at 8:10 p.m.

.0542 Operational Plan

1.0 Introduction

The purpose of this section is to identify protocols for the overall operation and maintenance of the White Street Landfill Construction and Demolition Debris disposal Facility. This plan has been prepared in accordance with North Carolina Department of Environment and Natural Resources (NCDENR) rules. Detailed drawings for each phase landfill's development from existing conditions to final contours are presented in the Operational Drawings Section. By definition, the construction and demolition debris waste stream is originated solely from the construction, demolition, and remodeling or repair operations on pavement, buildings or other structures. In addition, the division may approve other inert wastes (such as land clearing debris but not yard waste) if it can be demonstrated to be inert through the toxicity characteristic leaching procedure. The current waste screening program will continue to be utilized by the Landfill staff for determination of accurate disposal areas and the prevention of prohibited wastes as described in Rule .0542 (e).

The City of Greensboro proposes to continue operation of the current construction and demolition disposal site as previously approved and permitted May 25, 2006 (permit #41-03). The proposed disposal area continues to operate within the area of the facility known as Phase II which is a closed MSWLF unit subject to the appropriate section of the .1600 rules (Map CD-77B). Regulatory closure of Phase II has been previously certified as closed in accordance with promulgated guidelines.

2.0 Personnel Structure

Responsibility for overall facility management and operation rests with the Solid Waste Disposal Manager.

D. Scott Bost (Acting)

Solid Waste Disposal Manager
(336) 373-2489
2503 White Street
Greensboro, NC 27405

This individual is designated as the contact person for regulatory compliance, and is responsible for ensuring adequate personnel and equipment in order to operate the facility in compliance with approved permit documents and the North Carolina Solid Waste Management Rules.

Landfill supervisory staff includes the Solid Waste Disposal Manager, the Landfill Supervisor, the Environmental Compliance Supervisor, the Yard Waste and Compost Supervisor, and the Scalehouse Supervisor. In addition to the supervisory staff, the landfill now operates with six full time heavy equipment operators, two full time heavy equipment mechanics, two full time maintenance workers, two full time heavy equipment operators at the yard waste and compost site, one landfill technician, and two full time scale operators.

3.0 Personnel Certifications and Training

The Solid Waste Disposal Manager maintains certifications as a Manager of Landfill Operations (MOLO), a Construction and Demolition Debris Manager and a Transfer Station Manager as issued by the Solid Waste Association of North America (SWANA).

The Landfill Supervisor maintains certification as a MOLO.

In compliance with North Carolina GS 130-309.25, all heavy equipment operators and the landfill technician maintain certification as Landfill Operation Specialists as issued by

the North Carolina Chapter of SWANA (NCSWANA). These staff members are then continuously recertified through onsite training as well as through industry and NCSWANA events. All training records are available at the scalehouse.

Personnel trained in landfill operations are on duty at all times while the facility is open for public use and at all times during active waste management operations.

4.0 Hours of Operation

The Landfill is open for operation between the hours of 7:00AM and 4:50 PM, Monday through Friday and from 7:00 AM to 1:00 PM on Saturday. The Landfill is closed on Sundays except where prior permission has been granted to receive wastes for special instances such as a natural disaster. The observed holidays are New Year's Day, Martin Luther King Jr. Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. The sign giving the hours of operation for the landfill is shown in Figure 1.

Fig 1.

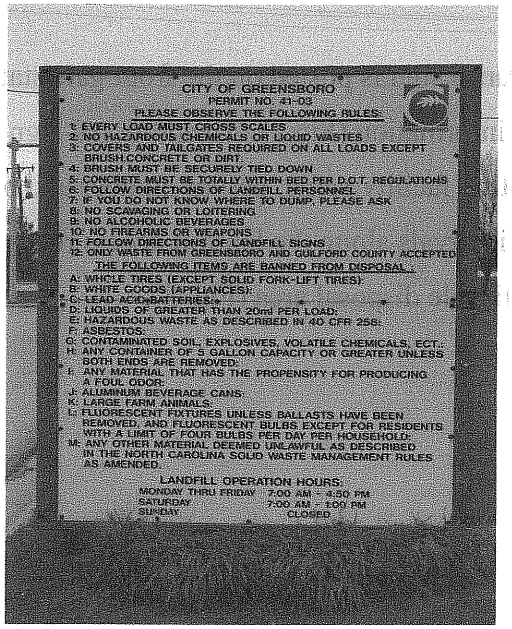


Fig. 2

5.0 Equipment Requirements

The landfill will utilize three compactors of the 100,000 lb class (Cat 836) and 2 bulldozers of the 85,000 (Cat D-8). The landfill will utilize a Cat D-6 LGP bulldozer for soil placement in the routine covering of the waste. Also available for operational and compliance activities are a Cat 14-G motorgrader and 3500 gallon water truck. A full inventory list of current equipment is presented in Appendix A, Table 1.

6.0 Inclement weather Operations

During periods of heavy rainfall or other adverse weather conditions, the working face of the waste disposal area will be kept as close as possible to the landfill service roads while allowing for safe and orderly dumping from the haulers. The waste will be covered in compliance with applicable regulations.

7.0 Traffic Routing

An entrance sign is posted on the front gate stating operating hours as well as emergency contact information (Fig 1). An additional sign is also posted immediately inside the front gate stating facility name, permit number and operating hours (Fig.2). Signs are posted at regular intervals along the landfill access roads indicating speed limit and directions to the applicable disposal area (Fig. 3).

Fig. 3

All trucks entering the landfill are required to weigh in at one of two scales at the scalehouse. The scales are operated by North Carolina Department of Agriculture Certified Weigh masters. The scales are calibrated and cleaned on a regular basis. Automobiles and pickup trucks are also required to weigh in.

The roads that allow access to the site and to monitoring locations are of all weather construction and maintained in good condition.

8.0 Litter Control

Litter control is an essential function in the proper operation of the Landfill. In order to effectively control litter and windblown debris, the working face is kept as small as

possible and waste is compacted as soon as possible after unloading. Cover material is applied at least once weekly and when the working face exceeds one-half acre. Cover is available daily and will be placed at more frequent intervals if necessary to control blowing litter. Temporary litter fences will be installed downwind of and in close proximity to the working face to prevent windblown debris. The disposal area as well as the landfill property and the streets feeding into the landfill are inspected and any fugitive debris is removed on a daily basis.

9.0 Odor, Noise, and Dust Control

Odors which emanate from the management of construction and demolition debris wastes are generally limited to within a short distance of the working face. The covering of the wastes as required prevents odors from becoming a nuisance.

The access road from the scalehouse to the waste disposal unit is paved. All other service and operating roads on the operating landfill unit are graded and maintained with stone as necessary to maintain smooth, well-drained surfaces. During dry conditions, operating roads will be sprayed with water to control dust issues. The paved access roads are washed periodically to maintain an overall neat appearance of the Landfill.

Noise resulting from landfill equipment is limited to the period of time during operating hours. To further reduce the possibility of noise nuisance, a vegetative buffer of coniferous and deciduous trees and other vegetation is maintained between the operating areas and other areas not designated for landfill operations. All landfill equipment is equipped with mufflers or similar noise-dampening devices. The on-site landfill maintenance facility maintains all landfill equipment in top operating condition further eliminating potential noise nuisances from equipment operations.

10.0 Waste Placement

Waste will only be disposed of inside the limits of the area labeled C&D Landfill as shown on Drawing CD-77B. Drawing CD-77B also indicates the buffers as maintained. The existing contours of the current waste placement operation as well as closed MSW areas are identified on Drawing CD-78B. Waste is to be placed vertically over existing construction and debris material and closed MSW areas. The removal of solid waste from the C&D landfill is prohibited.

Solid waste unloading at the landfill is controlled to prevent disposal in locations other than those permitted. Such control is also used to confine the working face to a minimum width, facilitating a safe and efficient operation. The waste shall be managed in the smallest area (working face) feasible. Upon dumping, the waste will be spread and compacted as densely as practical into cells utilizing a minimum of four passes over the waste with a D-8 size bulldozer (not less than 85,000 lbs) or an 836 size compactor (not less than 100,000 lbs).

The fill sequence using multiple lifts allows filling to occur uniformly across the site (Drawings C-01 through C-05 as prepared by HDR Engineering). This provides for elimination of depression areas and facilitates proper storm water movement and management. Waste disposal activities are currently being conducted in the northeast corner of the fill area (Drawing CD-78B). Once this area is complete, the waste disposal activities will turn and progress southward to the southwest corner of the footprint.

11.0 Asbestos

The White Street Landfill does not accept asbestos. Asbestos is listed as a banned material on the signage in Fig. 2 and staff is trained to detect and prevent disposal through the waste screening program.

12.0 Cover Requirements

A significant volume of soil is required to provide adequate cover and allow for safe and efficient waste disposal operations. In order to provide for these requirements, the landfill maintains a large permitted borrow area (Drawing CD-77B). The landfill also maintains a stockpile for soil that is brought to the landfill from outside sources (Drawing CD-77B). These outside soil sources must be approved by staff prior to being brought to the landfill for utilization as cover material.

12.1 Weekly Cover

In compliance with the latest rules as promulgated regarding management of construction and demolition debris waste, the waste will be covered at least once per week or when the working face exceeds one-half acre. The landfill will also have available daily, if needed, cover material to apply in times of adverse weather conditions. At this time, the landfill will be utilizing earthen material from the above described soil sources to cover the waste. This material has been demonstrated to control odors, vectors, blowing litter, and fires.

12.2 Intermediate Cover

Intermediate cover consisting of a total of 12 inches of earthen material is applied to all areas which will not have any waste placement occurring for a period of 12 months or more. Areas which have received intermediate cover are graded to facilitate proper drainage and to prevent any ponding of water. Once proper grading and drainage has been achieved, temporary vegetative grass cover will be

planted. Any erosion or damage to the intermediate cover is repaired on a routine basis.

13.0 Explosive Gases Control

With the construction and demolition disposal operations occurring on top of a closed MSW facility, the landfill monitors for migration of explosive gases. A gas monitoring system has been constructed along the east side of the landfill which abuts Rankin Mill Road. All buildings and enclosed structures on the landfill are monitored as part of the routine methane monitoring program (Drawing CD-79B). Routine monitoring for gas migration is performed in accordance with rule .1626 part (4)(b) on a quarterly basis to ensure that the following compliance levels for methane concentration are not exceeded: 1) the concentration of methane gas generated by the facility does not exceed 25% of the lower explosive limit (LEL) for methane gas in facility structures (1.25% methane); 2) the concentration of methane gas migrating from the landfill does not exceed the LEL for methane at the facility property boundary (5% methane).

13.1 Perimeter Explosive Gas Monitoring Well Placement

According to Rule .1624 (4), soil, hydrogeologic and hydraulic conditions, and proximity of structures and property boundaries should be considered when locating gas monitoring wells and determining monitoring frequency.

Landfill structures consist of the Administration Building, Compliance and Compost Operations Office, Maintenance Shop, Phase II LFG blower building, equipment and maintenance shed at the Compost site, and the Operations Building. The landfill also operates a landfill gas collection system on Phase II and Phase III. The Phase II system is comprised of approximately 99 vertical extraction wells, a main header pipe, condensate traps and collection system, and a blower station as shown on the as-built survey of the landfill gas system labeled Drawing No. 1.

The Phase II area of the landfill is bounded on the north and west sides by North Buffalo Creek, on the east by Rankin Mill Road, and on the south by landfill property. North Buffalo Creek will act as an impermeable barrier between the landfill and adjoining properties on the north side of the creek. Four locations labeled Surface Monitoring Points have been identified on the southern bank of North Buffalo Creek and are monitored as part of the quarterly landfill gas monitoring program.

It will be necessary to monitor gas migration along the landfill property line at Rankin Mill Road, and the church property on Rankin Mill Road. As shown on Drawing CD-79B six wells are located along Rankin Mill Road and two well are located near the church property. Permanently mounted gas monitors have been placed in the Administration Building, Compliance and Compost Operations Office, Maintenance Shop, Phase II LFG blower building, and the Operations Office. These structures are also monitored during the quarterly monitoring event.

13.2 Well Construction

All of the methane monitoring wells were constructed of 2-inch PVC pipe placed in a 6-inch diameter bore hole. The screened interval ranged from 5-10 feet, terminating just above the seasonally high water table or at auger refusal. A sand filter pack was placed around the screen and will extend 2 feet above the top of the screen. A bentonite seal was placed above the filter pack. The 2-inch casing pipe is protected by a 4-inch square steel outer casing with a locking steel cover. The outer casing is embedded in a 2'x2'x4" concrete pad.

13.3 Methane Monitoring Program

The City of Greensboro will continue to conduct routine methane monitoring events to ensure that methane concentrations do not exceed 25% of the lower explosive limit (LEL) in facility structures or 100% of the LEL at property boundaries, as required in Rule 1626 (4). Methane wells and locations along North Buffalo Creek will continue to be monitored quarterly as part of the program.

13.4 Sampling Procedures

The monitoring device that will be used during each quarterly monitoring event will be a portable combustible gas indicator. This is equipped with a flexible hose and rigid probe. Calibration of the instrument will be performed in accordance with the manufacturer's specifications.

Personnel designated to perform the monitoring program will be trained in the operation, maintenance, and calibration of the monitoring equipment. The following operating procedures and safety precautions will be adhered to by all personnel when monitoring for methane gas:

1: At least two people should be present at all times when monitoring for explosive gases.

2: At a minimum, safety glasses, gloves, work boots, will be worn. Other appropriate personal protective equipment will be worn as needed.

3: Smoking and open flames are strictly prohibited at all times during the monitoring event.

4: Fire extinguishers will be readily available when performing the monitoring event.

5: Personnel performing the monitoring event will have a City radio readily available which has direct access to emergency personnel.

13.5 Emergency Response Plan

In the event gas levels are detected that exceed allowable limits, the emergency response plan will be as follows:

1: For 100% LEL at landfill boundaries less than 250 feet from structures:

a: Greensboro Fire Department and Hazardous Material Team will be notified.

b: Implement procedures as outlined in Rule 1626 (4).

2: For 100% LEL at landfill boundaries where the distance is greater than 250 feet from structures:

a: Notify the Division.

3: For structures detection levels greater than 25% LEL:

a: Evacuate the structure immediately.

b: Notify Greensboro Fire Department and Hazardous Material Team.

14.0 Prevention of Fires

In accordance with the Clean Air Act, open burning is prohibited at this site, unless approved by the Division for the infrequent burning of land clearing debris as generated from natural disasters or emergency clean-up operations. In order to control accidental fires occurring at the site, the following preventative measures have been taken:

1: The Scale operators and equipment operators screen incoming waste loads for signs of hot loads such as smoke, steam, or heat being released from the waste. If evidence of a hot load is detected, the hauler is diverted to the paved road directly east of the scalehouse. This prevents the load from entering the disposal unit and provides a safe area for emergency crews to manage the situation.

2: As described in the City of Greensboro Smoking Policy, smoking is confined to designated areas only. Smoking is not allowed within the footprint of the disposal unit, in any of the landfill equipment, or the landfill buildings. Smoking is also disallowed at the fuel dispensing station, in the vicinity of any of the landfill gas collection system structures or facilities or other fire sensitive area.

3: Motorized equipment is not parked near fuel dispensing stations longer than necessary for refueling.

4: Fuel spills are reported immediately and contained by berming the area and cleaned up immediately using an approved absorbent material.

5: Landfill equipment does not remain on the active disposal area of the site overnight.

6: Landfill equipment is washed routinely and kept free of ignitable debris.

7: Landfill equipment is maintained through a rigorous on-site routine preventative maintenance program to ensure integrity of all operating systems and fluid conveyance lines.

8: Dead trees, brush, or vegetation, adjacent to the landfill are removed immediately, and grass and weeds are routinely mowed so that brush fires cannot spread to the landfill. The landfill employs several types of large bush-hog and lawn type mowers to accomplish this task.

In the event of a fire, the Greensboro Fire Department is notified immediately. Fires and explosions that occur at the C&D Landfill will be verbally communicated to the Division within 24 hours and followed by written communication within 15 days.

15.0 Waste Screening Program

In order to assure that prohibited wastes are not entering the landfill facility, a Waste Screening Program has been implemented at the landfill. Waste received at the scalehouse and wastes taken to the working face are inspected by trained personnel.

15.1 Waste Receiving and Inspection

All vehicles (customers and visitors) must stop at the scalehouse. All refuse containing vehicles are weighed and their load assessed. All visitors must report in the scalehouse and sign in. The scale operator requests from the driver of the refuse containing vehicle a brief description of the waste to ensure that unacceptable wastes are not allowed in the landfill. The scale operator then requests from the driver the following information to document all inspections:

- Date and time
- Source and type of wastes
- Hauling company, vehicle and driver identification
- Net weight of load

The landfill will notify the Division within 24 hours of attempted disposal of any waste the C&D landfill is not permitted to receive, including waste from outside it's service area.

15.2 Waste Screening

Each day, haulers are subject to being screened as part of the Waste Screening program. The current waste screening program will continue to be utilized by the Landfill staff for determination of accurate disposal areas and the prevention of prohibited wastes as described in Rule .0542 (e).

Waste Screening Program

1: The scale operators utilize a computer based random number generator to determine the vehicles to be screened that day.

2: The scale operators notify the landfill technician when the incoming loads are five loads away from the number that has been selected for screening.

3: Once the incoming load has been selected, the scale operator informs the hauler that the load will be inspected, collects the name of the waste generator, the origin of the waste, the type of waste, and the weight of the waste. The truck is then directed to the correct disposal area.

4: Upon arrival at the disposal site, the waste hauler is directed where to deposit the load for inspection. The waste will be deposited in an area separate and away from the working face of the disposal area. The waste hauler then presents the weigh ticket to the inspector who records the ticket number, waste hauler information, date, and time.

5: The inspector will examine the load. The inspector will verify the waste complies with all items on the WASTE SCREENING form (Appendix B, Form 1). The inspector will also include a brief description of the waste on the form.

6: The driver must remain with the waste until it is determined by the inspectors that it is acceptable for disposal. If it is deemed acceptable, the driver and truck may be released. The waste material is then moved to the working face for disposal. The inspection area is cleaned and prepared to receive another load.

7: If through the normal procedures of the Waste Screening Program or regular daily operations, a hauler has been identified as routinely bringing prohibited wastes for disposal, that hauler will be subject to daily screening in addition to the random load(s) as selected for that day.

Any prohibited wastes detected through this program are recorded on the Waste Screening inspection form and the incident is described in detail on the Report of Attempted Disposal of Hazardous or Prohibited Waste form (Appendix B, Form 2). If unacceptable wastes are found, the load will be isolated and secured. The Solid Waste Disposal Manager will then notify the Waste Management Specialist of NCDENR within 24 hours of attempted disposal.

All Waste Screening inspection forms, hauler information, reports of attempted disposal of prohibited wastes, and records of disposition of rejected wastes are maintained in the operating record in the scalehouse. These records are routinely archived electronically and also stored on media and secured in the records storage room in the Operations Building 2503 –B.

16.0 Hazardous Waste Contingency Plan

In the event that identifiable hazardous waste or waste of questionable character is discovered at the landfill, whether through the Waste Screening program or normal operations, the Hazardous Waste Contingency Plan (Appendix C) shall be instituted immediately.

17.0 Access Control

Entry to the site is limited to landfill personnel, approved waste haulers, and properly identified persons whose entry is authorized by the site management and properly logged in. The City reserves the right to restrict access to the site. The landfill routinely performs public information and educational tours of the facility for civic groups and local grade schools and universities. These tours are conducted with a landfill staff member present at all times. Visitors may be allowed near the active area only when accompanied by one of the landfill staff.

As shown in Fig. 1, a sign is posted at the entrance of the landfill stating the facility name, permit number, operating hours, and prohibited wastes. As shown in Fig. 3, there is additional signage posted periodically throughout the landfill to direct traffic flow and to provide information on the location of appropriate disposal sites.

The facility is surrounded on the west, southwest, south, southeast and eastern sides by means of a chain link fence. All gates in this fence network are secured with locks and chains preventing vehicular access and illegal dumping. As stated in landfill property deeds, the northern and northwestern property line of the landfill facility is the center of North Buffalo Creek. This creek, being a natural barrier also prohibits vehicular access and illegal dumping.

18.0 Drainage, Sedimentation and Erosion Control

The landfill facility has an extensive network of sedimentation and erosion control devices to restrict sediments being carried from the site. The landfill facility has developed a Storm Water Pollution and Prevention Plan (SWPPP, Map CD-80B) to further manage runoff and protect the integrity of North Buffalo Creek. Sediment basins also prevent the discharge of pollutants into the waters of the United States, including wetlands that violate any requirements of the Clean Water Act, including but not limited to Non Pollution Discharge Elimination System (NPDES) requirements. Areas which will not have additional waste placed on them for three months or more, but where final

termination of disposal operations has not occurred, vegetative cover will be present to prevent on-site erosion. Drainage channels, benches, and other features will have appropriate control devices installed. Where needed, down slope drains will be constructed of 15" corrugated plastic pipe. All devices are routinely inspected and repairs are made as necessary and as soon as possible after detection.

No solid waste will be disposed of in standing water and surface water will be diverted away from the active face. In addition, surface water will not be impounded over or in waste.

19.0 Water Protection

The landfill has a comprehensive surface and groundwater monitoring program (Drawing CD-81B) to provide early detection information to allow for the prevention of pollution to groundwater. This program is also comprised of a Groundwater Monitoring Plan prepared by S&ME, project number 1584-98-081 which is included herewith and made a part thereof and is included in Appendix D.

20.0 Maintenance

20.1 Repair of Security Control Devices

Should the routine inspection process note any deficiencies in any of the security and access control devices, maintenance and repair will be performed as necessary. Locks, vehicular gates, and fencing will be replaced if functioning improperly. Warning and information signs will be kept legible at all times and will be replaced if damaged by inclement weather or vandalism.

20.2 Erosion Damage Repair

Should the routine inspection process note any evidence of erosion in any areas of the final cap system, maintenance, repair, and reseeding will be performed as

necessary and as soon as possible after detection. Excessive slopes will be flattened if possible by adding clean fill material. If necessary, erosion control fabrics will be used to expedite re-vegetation of slopes and to secure topsoil in place.

20.3 Correction of Settlement, Subsidence, and Displacement

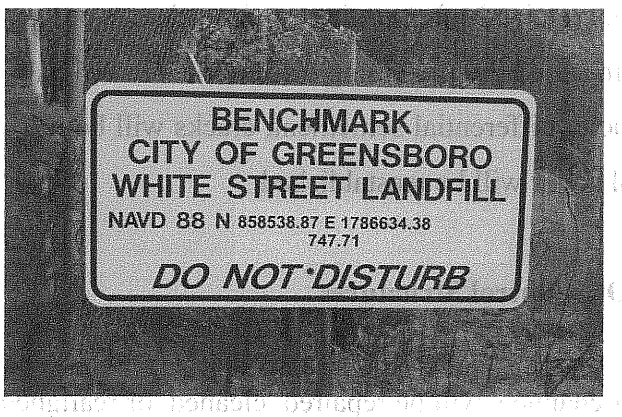
Minimum slopes of 5% will be maintained after settlement in order to prevent ponding and allow for proper drainage while preventing infiltration. If vertical or horizontal displacement occurs due to differential settlement, cracks will be filled with appropriate material and final cover will be reestablished.

20.4 Repair of Run-On/Run-Off Control Structures

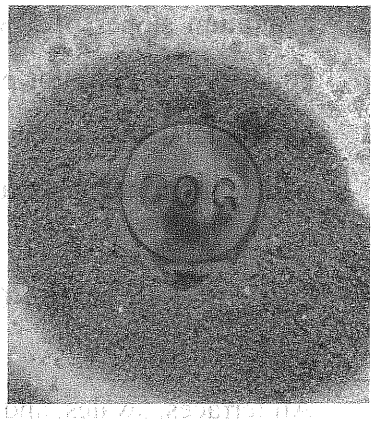
All terraces, swales, and perimeter channels will be repaired, cleaned, or realigned to maintain original conditions and performance. Any culverts, pipe, or other control device that becomes damaged will be repaired or replaced.

21.0 Benchmarks

The Landfill has a comprehensive horizontal and vertical control benchmark network (Drawing CD-82B). This network is based on NAD 83 and NAVD 88. In addition to the on-site benchmarks, the landfill facility has one NCGS control point (57W-200) on site and five points on the west, south and east sides of the facility.



Typical benchmark signage



Brass COG Monument

22.0 Record Keeping

The City of Greensboro maintains detailed records of all activities relating to the landfill. These records are kept on site. The records, generated electronically and hard copy are maintained electronically in the Administration building and archived on readily accessible media in the records storage room in the Operations building (2503 B). The records generated, maintained and available upon request by the Division are:

1: Waste Inspection records
2: Waste determination records
3: Amounts of waste received
4: Gas monitoring results
5: Financial assurance
6: Any demonstration, certification, finding, monitoring, testing, or analytical data required by Rules .1630 thru .1637
7: Any monitoring, testing, or analytical data as required by rule .1627.
8: Employee training records
9: Manager's certifications
10: Landfill specialist certifications
11: Reports of attempts at disposal of prohibited wastes
12: Facility inspections
13: Notation of date and time of cover placement
14: Notation of date of approval and name of Division personnel who approved burning (if applicable)
15: Approved Operation and Engineering Plan
16: Current permit to construct and permit to operate
17: Approved Monitoring Plan

.0543 Closure Plans

1.0 Closure

In accordance with the Division's Policy, and upon achievement of the final design and approved contours, the City of Greensboro proposes to construct the regulatory cap system over the construction and demolition debris landfill area. Prior to the placement of the final cap, the City of Greensboro will verify that fill area slopes constructed within the disposal area meet the approved slope requirements. The City will construct the areas such that post-settlement slopes of a minimum of 5 percent to a maximum of 25 percent can be achieved. Additionally, final contours will be established to enhance drainage from the construction and demolition debris fill areas to reduce the potential for infiltration into the waste mass.

Commencement of closure activities will begin as required in accordance with rule .543 as promulgated. Once begun, closure will proceed and continue in compliance with rule .543.

A sign indicating the anticipated date of the final waste acceptance into the construction and demolition debris disposal unit as well as anticipated closure will be conspicuously posted at the facility at least 30 days in advance. The City of Greensboro may employ other avenues and devices to notify the public of the planned closure. These may include advertising in the local print media, advertising on local television, mailing to regular account customers, and notices on the City of Greensboro cable television channel. Prior to beginning closure of the unit, or portions thereof, the division will be notified that intent to close has been placed in the operating record.

A cap system will be designed and constructed at least to the current minimum standards. The proposed cap system will minimize infiltration with the use of a low-permeability barrier that contains a minimum 18 inches of earthen material. The proposed permeability barrier will be less than or equal to the permeability of any base liner system or in-situ

subsoils underlying the landfill, or a permeability specified for the final cover in the effective permit, or a permeability no greater than 1x10 E-5 cm/sec, whichever is less. Additionally, erosion of the cap system will be minimized with the placement of at least 18 inches of earthen material that is capable of sustaining native plant growth. This layer will assist in the reduction of root penetration and protect the low permeability barrier layer.

The construction of the regulatory cap system will utilize borrow material from on-site landfill sources that satisfy the permeability requirements. Off-site materials that satisfy the permeability requirements will supplement volume differentials. In order to assure that the material meets the established criteria, the material will be tested prior to use and after placement. The low permeability layer of 18 inches will be placed in 6-inch lifts and compacted to 0-5% of optimum moisture to a 95% Standard Proctor density or greater. Soil testing will be performed on this material during placement. A minimum of one sample per 2 acres will be retrieved and analyzed for percent fines, water content, compaction and soil description. Permeability testing will be performed at a minimum of one per 5 acres.

The material for the 18-inch erosion layer will be selected considering: soil type, erodibility, pH and other factors. Finished sideslopes shall be stable and configured to adequately control erosion and run-off. The final cover will be graded, seeded, and stabilized. All cover material will be free of construction waste, vegetation, and rocks. Vegetation for the 18-inch erosion layer will be selected considering: locally adapted grasses resistant to drought or temperature extremes, shallow root systems which will not disrupt the low permeability layer, ability to thrive in low nutrient soil while developing and maintaining growth and developing and sound root system to resist erosion. The cap will be mowed on a routine basis to ensure growth of large, deep-rooted vegetation does not occur.

2.0 Closure Verification

The following procedures will be implemented following closure of the construction and demolition debris disposal unit in Phase II:

1: A Construction Quality Assurance (CQA) report shall be submitted to the Division. The report shall describe the observations and tests used before, during, and upon completion of cap construction to ensure that the construction materials meet the design specifications and the construction and certification requirements. The CQA report shall contain as built drawings.

2: A signed certification from an independent registered professional engineer verifying that closure has been completed in accordance with the closure plan will be submitted to the Division.

3: At least one sign notifying all persons of the closing of the disposal unit and that wastes are no longer accepted there will be posted. Suitable barriers will be installed and maintained to ensure against further waste disposal.

4: Within 90 days, a survey plat, compliant with G.S. 47-30 will be prepared by a professional land surveyor registered in the State of North Carolina. The plat shall be place in the operating record of the facility.

5: A notation shall be recorded on the facility deed (or deeds) notifying the public that the land has been used as a solid waste management disposal facility and that future use is restricted under paragraph (8) of Rule.1627. A copy of the deed notation as recorded shall be filed with the operating record.

3.0 Post Closure Plan

This post-closure plan has been developed to outline steps to be taken to ensure environmental soundness of the landfill during its post-closure care period. The post-closure care period will last at least 30 years after closure completion and at a minimum will consist of the following:

1: Maintaining integrity and effectiveness of the final cover system
2: Continued implementation of the approved groundwater monitoring plan through routine groundwater and surface water monitoring events
3: Maintaining and operating a landfill gas control system and routine landfill gas monitoring events
4: Maintaining surface run-on and run off controls

3.1 Post Closure Monitoring Plan

The closed unit will be monitored for a minimum of 30 years. A series of inspections shall be scheduled to ensure the integrity and effectiveness of the cap system, storm water management system, groundwater monitoring system, gas collection and control system, and to protect human health and the environment. Inspections will be conducted utilizing the Post-Closure inspection Checklist as exhibited in Appendix E. No wastes will remain exposed after the closure of the disposal unit. Access to the closed site by the public or domestic livestock will not pose a health hazard. After official closure of the disposal unit has occurred, the area will be maintained with grass vegetation.

3.2 Closed Unit Monitoring and Inspections

Routine monitoring and inspections of the closed disposal unit will occur on a quarterly and semi-annual basis. All inspections records, reports and actions taken will be filed with and made a part of the operating record of the facility.
Quarterly inspections of the closed site will include examination of the security of control devices for signs of deterioration or vandalism to ensure access to the

facility is limited to authorized persons. The previous disposal area will be checked to ensure the integrity of the final cover system is maintained, erosion damage is repaired, vegetative cover persists, and that cover settlement, subsidence and displacement are minimal. Drainage ditches, channels and other control devices will be cleared and repairs made as necessary. Benchmark integrity will be noted and maintained.

Semi-annual inspections will include drainage of the final cover system, settlement, subsidence and displacement. Semi-annual inspections will also include the semi-annual groundwater and surface water monitoring event as well as the landfill gas collection and control system.

In addition to the routine inspection program, landfill staff, during the normal course of the workday, note and report any deficiencies in the operations and effectiveness of the entire landfill facility. These deficiencies are then repaired and corrected as necessary.

4.0 Maintenance

4.1 Repair of Security Control Devices

Should the routine inspection process note any deficiencies in any of the security and access control devices, maintenance and repair will be performed as necessary. Locks, vehicular gates, and fencing will be replaced if functioning improperly. Warning and information signs will be kept legible at all times and will be replaced if damaged by inclement weather or vandalism.

4.2 Erosion Damage Repair

Should the routine inspection process note any evidence of erosion in any areas of the final cap system, maintenance, repair, and reseeding will be performed as

necessary and as soon as possible after detection. Excessive slopes will be flattened if possible by adding clean fill material. If necessary, erosion control fabrics will be used to expedite re-vegetation of slopes and to secure topsoil in place.

4.3 Correction of Settlement, Subsidence, and Displacement

Minimum slopes of 5% will be maintained after settlement in order to prevent ponding and allow for proper drainage while preventing infiltration. If vertical or horizontal displacement occurs due to differential settlement, cracks will be filled with appropriate material and final cover will be reestablished.

4.4 Repair of Run-On/Run-Off Control Structures

All terraces, swales, and perimeter channels will be repaired, cleaned, or realigned to maintain original conditions and performance. Any culverts, pipe, or other control device that becomes damaged will be repaired or replaced.

City of Greensboro
North Carolina

CITY OF GREENSBORO

LETTER FROM CHIEF FINANCIAL OFFICER

June 23, 2008

Ms. Amy Kadrie
Compliance Officer
North Carolina Department of Environment
and Natural Resources – Division of Waste Management
Solid Waste Section
1646 Mail Service Center
Raleigh, NC 27699-1646

Dear Ms. Kadrie:

I am the chief financial officer of the City of Greensboro, North Carolina. This letter is in support of this unit of local government's use of the financial test to demonstrate financial assurance, as specified in 15A NCAC 13B Rule.1628 (e)(1)(F) for the fiscal year ending June 30, 2007, as amended for the addition of estimated closure and post-closure costs of the City's C & D Landfill, as well as certain estimated remediation costs associated with the Phase II Landfill groundwater.

This unit of local government is the owner and operator of the following facilities for which financial assurance for closure, post-closure, or corrective action is demonstrated through the financial test specified in 15A NCAC 13B Rule.1628 (e)(1)(F). The current closure and post-closure cost estimate covered by the test are shown for Permit No. 41-03, White Street Sanitary Landfill, Phase II, located at 2503 White Street, Greensboro, North Carolina, 27405. Of the 135 acres of the Phase II footprint, 101 are owned by Guilford County and leased to the City of Greensboro. We believe, however, that actually only 98 acres of the 101 acres owned by Guilford County is actually utilized as part of the landfill footprint area. The City completed final closure of Phase II during fiscal year 1998-99. Upon closure, the MSW Landfill was re-permitted for construction and demolition debris disposal above the regulatory closure cap, consisting of approximately 38 acres. As of June 30, 2007, the City of Greensboro had expended $3,876,035 to complete the closure of Phase II MSW Landfill. Future closure costs of the C&D unit are estimated at $4,559,000. It is estimated that total Phase II post-closure care costs,

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including the C&D unit will amount to $7,466,400 ($248,880 per year) over 30 years following closure, of which $2,090,383 has been paid as of June 30, 2007 for the MSW Landfill.

The current closure and post-closure cost estimate covered by the test are also shown for Phase III, Cells 1, 2 and 3, White Street Sanitary Landfill, located at 2503 White Street, Greensboro, North Carolina, 27405. The permit number for Phase III is 41-12. Phase III opened on January 1, 1998 and Cell 1 completed filling as of June 30, 2001. It is estimated that $4,220,461 will be required in total for closure activities at the White Street Sanitary Landfill Phase III, Cell 1, and post-closure activities will require $60,935 annually for 30 years after closure or $1,828,060. The City's recorded liability for closure and post-closure care costs of Phase III Cell 1 as of June 30, 2007 was $6,048,521 based on full capacity used.

Phase III, Cell 2 opened on July 1, 2001. It is estimated that $2,194,640 will be required in total for closure activities at the White Street Sanitary Landfill Phase III, Cell 2, and post-closure activities will require $31,686 annually for 30 years after closure or $950,591. The City's recorded liability for closure and post-closure care costs of Phase III Cell 2 as of June 30, 2007 was $3,145,231 based on 100% capacity used.

Phase III, Cell 3 began filling in 2005. It is estimated that $2,194,640 will be required in total for closure activities at the White Street Sanitary Landfill Phase III, Cell 3, and post-closure activities will require $31,686 annually for 30 years after closure or $950,591. The City's recorded liability for closure and post-closure care costs of Phase III Cell 3 as of June 30, 2007 was $1,383,117 based on 44% capacity used.

Inflation-adjusted costs are based on estimates provided by an independent engineering firm contracted by the City in FY2005 and were increased by 2.9% for FY 2007 along with the recommended inflation adjustments for each of the intervening years. Recent (2008) independent engineering cost estimates were provided for C&D closure and post-closure, as attached. Resources totaling $1,745,962 to fund landfill expansion, closure and post-closure care costs have been set aside in a Solid Waste Capital Reserve Fund as of June 30, 2007. In addition, available operating funds totaled $5,342,771 as of June 30, 2007 for solid waste collection and disposal purposes, including $1,444,951 appropriated for FY 2008 activities.

Should any corrective actions be deemed necessary, a detailed written estimate of current costs associated with the required corrective action remedies shall be submitted to the Division of Solid Waste Management. Groundwater remediation costs, as provided to us by our groundwater consultants, S&ME, Inc., were included in the information submitted to NC DENR on August 31, 2007. See attached cost estimates and background information.

The current fiscal year of this unit of local government ended on June 30, 2007. The figures for the following items marked with an asterisk are derived from this local government's Annual Financial Information Report (AFIR) for the latest completed fiscal year ended June 30, 2007.

I hereby certify that the wording of this letter is identical to the wording specified in 15A NCAC 13B.1628 (e) (2) (G) as such rules were constituted on the date shown immediately below. I further certify the following: (1) that the unit of local government has not operated at a total

operation fund deficit equal to five percent or more of total annual revenue in either of the past two fiscal years, (2) that the unit of local government is not in default on any outstanding general obligation bonds or long-term obligations, and (3) does not have any outstanding general obligation bonds rated lower than Baa as issued by Moody's, BBB as issued by Standard & Poor's, BBB as issued by Fitch's, or 75 as issued by the Municipal Council.

Sincerely,

R. L. Lusk

Richard L. Lusk
Finance Director
City of Greensboro
June 23, 2008

Attachments

CITY OF GREENSBORO, NORTH CAROLINA
BOND RATING INDICATOR OF FINANCIAL STRENGTH - FY 2007 (AS REVISED)

1. Sum of current closure and post-closure cost estimates:

(a) Phase III, Cell I closure	$4,220,461
(a) Phase III, Cell I post-closure	1,828,060
(a) Phase III, Cell 2 closure	2,194,640
(a) Phase III, Cell 2 post-closure	950,591
(a) Phase III, Cell 3 closure	2,194,640
(a) Phase III, Cell 3 post-closure	950,591
(b) Phase II, Closure (C&D)	4,559,000
(b) Phase II, Post-closure	5,376,017
Total closure and post-closure costs	$22,274,000

2. Current bond rating of most recent issuance and name of rating service:

	Enterprise System Revenue Bonds	Certificates of Participation	General Obligation Bonds
Standard & Poor's Corp.	AAA	AA+	AAA
Moody's Investors Service	Aa2	Aa1	Aaa
Fitch	AA+	AA+	AAA
3. Date of issuance bond:	June, 2007	June, 2005	February, 2008
4. Date of maturity bond:	June, 2029	June, 2009	February, 2028

5. Assured environmental cost to demonstrate financial responsibility in the following amounts under Division rules:

MSWLF under 15A NCAC 13B Section.1600:	$22,274,000
Hazardous waste treatment, storage and disposal facilities under 15A NCAC 13B Rules .0009 and .0010:	$0
Petroleum underground storage tanks under 15A NCAC 2N Sections .0100 - 0800:	$130,200
Underground injection Control System facilities under 15A NCAC 2D Section .0400 and 15A NCAC 2C Section .0200:	$0
PCB commercial storage facilities under 15A NCAC 20 Section .0100 and 15A NCAC 2N Section .0100:	$0
Other: Groundwater remediation Phase II	2,022,750
Total assured environmental costs:	24,426,950

6. Total Annual Revenue (AFIR Part 2): (2007 Report) $447,942,298

7. Is line 5 divided by line 6 less than or equal to 0.43? Yes/No? **Yes**

(a) Based on 2007 inflation adjusted cost estimates
(b) Based on 2008 engineering cost estimates

From: Covington, Jeryl (Jeri)
Sent: Friday, June 20, 2008 10:32 AM
To: Lusk, Rick; Druga, Marlene
Subject: FW: FY 2008-09 CIP Phase II Groundwater.doc
Importance: High

I have a correction and some clarification for the highlighted estimate for the pump and treatment statement listed below. The groundwater pump and treat system will not operate for a 30-year term. We believe that improvements in the groundwater condition will occur before 30 years. According to the documentation provided by S&ME, the system should be in place for a period of 3-5 years. The correction in the estimate does not include the $30,000.00 annual maintenance and upkeep costs.

The design, equipment, and construction costs will range from $345,000.00 - $552,000.00. The annual costs is $30,000 for 3-5 years ($90,000.00 – $150,000.00); thus, the pump and treatment system will cost $435,000.00 - $702,000.00 (2008 dollars).

The cost estimate for the monitored natural attenuation will remain the same from $669,000.00 to $1,320,750.00 (2008 dollars).

The combined costs estimates corrective action system (MNA and pump and treatment) for which financial assurance must be made is: $1,104,000.00 – $2,022,750.00.

Again, I am hoping that the facility will not need to expend these costs for full implementation. We are continuing our monitoring and evaluation of the groundwater conditions.

Capital Improvement Project FY 2008-2009
White Street Landfill Phase II Groundwater Remediation - Regulatory Compliance

Capital Project Background

The White Street Phase II landfill currently operates under a municipal solid waste disposal permit number 41-03. Historically, the Phase II landfill was owned and operated as an unlined sanitary landfill by Guilford County. Ownership of the landfill was transferred to the City of Greensboro. Disposal activities continued until State regulations required the closure of all unlined sanitary landfills. The City complied with the closure requirements and the Phase II landfill was later approved to be re-permitted for construction and demolition debris disposal above the regulatory closure cap. Since 1998, the Phase II landfill has been utilized for construction and demolition disposal.

Modifications in the State's waste disposal regulations required an assessment of groundwater quality with respect to the established State's groundwater standards. Groundwater monitoring wells were installed around the perimeter of the Phase II landfill. Topographically, upgradient groundwater monitoring wells were additionally constructed to establish the background groundwater quality conditions prior to the groundwater intercepting in-situ waste.

Groundwater sampling events were completed on a semi-annual basis. Results of this analysis detected groundwater quality exceedances for the following compounds: tetrachloroethene, vinyl chloride, 2-butanone, and vanadium. These compounds were repeatedly documented above the established North Carolina Administrative Code 2L groundwater standard and the groundwater protection standards. However, the detection level of vanadium was determined to be influence by its presence of in-situ soils. Per 15A NCAC 13B.1635 of the North Carolina Department of Environment and Natural Resources (NC DENR) – Division of Waste Management, whenever it is documented that one or more constituents listed in the Appendix II groundwater standard has been detected at a statistically significant level exceeding the groundwater standards, an assessment of corrective actions measures must be completed. A corrective actions assessment evaluated potential remedies to control and remediate impacted groundwater. A Nature and Extent report documenting the groundwater exceedances was submitted to NC DENR in August 2007 and a public meeting was held in December 2007 to discuss the groundwater impact within Phase II of the landfill and possible remediation solutions.

The Environmental Services Department has contracted with environmental consultants to develop possible groundwater remediations solutions. To date, NC DENR has not approved any recommended options for this property. The Environmental Services Department will recommend the implementation of a conventional groundwater pump and treatment remediation system in conjunction with monitored natural attenuation.

The proposed groundwater pump and treatment system removes contaminants that are dissolved in groundwater for treatment at the surface. The system's implementation involves the installation of subsurface, extraction wells. The extracted groundwater is discharged to a publicly owned treatment works. The remediation timeframe for a pump

and treatment system is dependent on the placement of the extraction wells. The remediation goal at the compliance boundary may be achieved as soon as three to five years. The natural attenuation process reduces the mass concentration of the contaminate by physical, biological, and chemical degradation.

Capital Improvement Expenditure Estimates

Engineering estimates for the implementation of the groundwater remediation systems are as follows:

Pump and Treatment System with Discharge to POTW

Design costs:
- Pilot test.....$15,000 - $20,000
- Engineering costs.....$20,000 - $40,000
- Permitting costs.....$5,000 - $10,000

Equipment Costs:
- Collection system, pumps, piping, control, etc.....$50,000 - $100,000
- Transfer piping and lift station.....$135,000 - $160,000

Construction costs
- Extraction well and system installation..... $40,000 - $80,000
- Construction oversight and documentation.....$30,000 $60,000
- Power supply to the site.....$5,000 - $10,000

Contingencies.....$45,000 - $72,000

Total estimated Implementation costs.....$345,000 - $552,000

Annual maintenance and upkeep costs associated with the pump and treatment system is approximately $30,000.

Monitored Natural Attenuation

Initial start-up costs:
- Pilot study and baseline data collection..... $20,000 - $40,000

Design Costs
- Engineering costs..... $10,000 - $20,000
- Permitting costs..... $0 - $5,000

Construction costs:
- Additional wells as needed.....$30,000 - $40,000

Contingencies.....$9,000 - $15,750

Total estimated natural attenuation costs.....$69,000 - $120,750

Annual monitoring and reporting costs associated with monitored natural attenuation are estimated as $20,000 to $40,000.

WHITE STREET LANDFILL

ESTIMATED CLOSURE AND POST-CLOSURE COSTS [4]

Year	1 FY 07/08	2 FY 08/09	3 FY 09/10	4 FY 10/11	5 FY 11/12
CAPITAL COSTS					
Phase 3 Partial Closure Costs (21 Acres) [1]	$ 5,535,000	0	0	0	0
Phase 2 C&D Closure Costs (38 Acres)	$ 4,559,000	0	0	0	0
Post Closure Costs (Phase 1, and 2) [2]	$ 248,880	$ 261,324	$ 274,390	$ 288,110	$ 302,515
Post Closure Costs (Phase 3) [3]	$ 143,520	$ 150,696	$ 158,231	$ 166,142	$ 174,449
TOTAL COST	***$ 10,486,400***	***$ 412,020***	***$ 432,621***	***$ 454,252***	***$ 476,965***

(1) Assumes partial closure of Phase 3 area.
(2) Post Closure costs based in current costs incurred by the City.
(3) Post Closure costs are escalated at 5% inflation
(4) Costs were estimated in conjunction with City staff.

ENGINEER'S COST ESTIMATE

NORTH CAROLINA PROFESSIONAL SEAL 025495 ENGINEER MICHAEL D. PLUMMER 6/18/08

Michael D. Plummer, PE

REVISED FOR 2008
CITY OF GREENSBORO, WHITE STREET LANDFILL, PHASE II C&D
COST ESTIMATE FOR CLOSURE OF THE UNIT
(BASED ON 38 ACRE C&D CLOSURE)

ITEM	QUANTITY	UNIT	UNIT COST	TOTAL
Construction:	38	AC		
Mobilization, CQC, Project Admin., Bonds	1	LS	4.00%	$141,700
Surveying and Control	38	AC	$3,000	$114,000
1×10^{-5} Infiltration Layer (18 inches):				
Transportation (20 miles @ $3.00/mile/load)	9,196	Load	$60	$551,760
Material	91,960	CY	$6.00	$551,760
Placing/Grading/Compaction	91,960	CY	$6.00	$551,760
Vegetative Support Layer (18 inches):				
Transportation (20 miles @ $3.00/mile/load)	9,196	Load	$60	$551,760
Material	91,960	CY	$3.50	$321,860
Placing/Grading/Compaction	91,960	CY	$3.50	$321,860
Seeding and Mulching	38	AC	$1,700	$64,600
Backfill/Grading/Stormwater Drainage	1	LS	$400,000	$400,000
Methane Gas Control (passive extraction)	38	AC	$6,000	$228,000
Subtotal				$3,799,060
Contingency (15%)				$569,859
CQA	5	%	$189,953	$189,953
			TOTAL CONSTRUCTION	**$4,559,000**

Note:
1. These estimates are based on costs bid for similar work at a nearby landfill.
2. This estimate assumes soil material will come from offsite sources.

REVISED FOR 2008
CITY OF GREENSBORO, WHITE STREET LANDFILL, PHASE I & II
ESTIMATED AVERAGE ANNUAL POST-CLOSURE COST
(BASED ON 205 ACRES)

ITEM	QUANTITY	UNIT	UNIT COST	TOTAL
Engineering Certificate	1	LS	$17,400	$17,400
Site Inspection and Recordkeeping:	160	HR	$100	$16,000
Cap Maintenance:				
Mowing	205	AC	$100	$20,500
Gates/Fences and Access Control	1	LS	$2,300	$2,300
Erosion Control	1	LS	$5,800	$5,800
Surface Water Control	1	LS	$3,500	$3,500
Seeding	16	AC	$1,400	$22,400
Monitoring:				
Methane Gas Monitoring and Report (quarterly)	4	3 mo.	$5,800	$23,200
Groundwater Sampling/Lab and Report (semiannual)	1	LS	$46,800	$46,800
Monitor well Maintenance	1	LS	$1,500	$1,500
Methane Gas System Repairs	1	LS	$48,000	$48,000
Subtotal				$207,400
Contingency (20%)				$41,480
			AVERAGE ANNUAL COST	$248,880

Note: These estimates are for a third party and include labor.

Unit Costs were originally in 2005 dollars and have been inflated to 2008 dollars.
inflation rate: 5%

TABLE 8-1a
REVISED FOR 2003
CITY OF GREENSBORO, WHITE STREET LANDFILL, PHASE III
COST ESTIMATE FOR CLOSURE OF THE UNIT
(BASED ON 51 ACRES)

ITEM	QUANTITY	UNIT	UNIT COST	TOTAL
Construction:				
Geomembrane (60 mil HDPE)	2,270,000	SF	$0.50	$1,135,000
Geonet Drainage Layer	2,270,000	SF	$0.55	$1,248,500
Infiltration Layer (18 inches):				
Transportation (20 miles @ $2.00/mile/load)	12,600	Load	$40	$504,000
Material	126,000	CY	$3.50	$441,000
Placing/Grading/Compaction	126,000	CY	$4.50	$567,000
Vegetative Support Layer (24 inches):				
Transportation (20 miles @ $2.00/mile/load)	16,800	Load	$40	$672,000
Material	168,000	CY	$3.50	$588,000
Placing/Grading/Compaction	168,000	CY	$4.50	$756,000
Seeding and Mulching	51	AC	$1,600	$81,600
Backfill/Grading/Drainage	1	LS	$250,000	$250,000
Methane Gas Control (active extraction)	51	AC	$8,000	$408,000
Subtotal				$6,651,100
Contingency (20%)				$1,330,220
CQA	51	AC	$5,500	$280,500
			TOTAL CONSTRUCTION	**$8,262,000**

Note: These estimates are for a third party and include labor and installation.

ESTIMATE FOR 38 ACRE CLOSURE

Acres to close	38
Total acres of Phase III	51
Percent closing	0.75
Estimated cost for closure (05/06 Budget year)	**$6,156,000**

Total estimated cost for Closure of Phase III in FY 05/06 **$6,156,000**

REVISED FOR 2008
CITY OF GREENSBORO, WHITE STREET LANDFILL, PHASE III
COST ESTIMATE FOR CLOSURE OF THE UNIT
(BASED ON 21 ACRE PARTIAL CLOSURE) *

ITEM	QUANTITY	UNIT	UNIT COST	TOTAL
Construction:				
Geomembrane (40 mil LLDPE)	943,000	SF	$0.50	$471,500
Geonet Drainage Layer	943,000	SF	$0.61	$575,230
1×10^{-5} Infiltration Layer (18 inches):				
Transportation (20 miles @ $3.00/mile/load)	5,240	Load	$60	$314,400
Material	52,400	CY	$6.00	$314,400
Placing/Grading/Compaction	52,400	CY	$6.00	$314,400
Vegetative Support Layer (24 inches):				
Transportation (20 miles @ $3.00/mile/load)	16,800	Load	$60	$1,008,000
Material	168,000	CY	$3.50	$588,000
Placing/Grading/Compaction	168,000	CY	$3.50	$588,000
Seeding and Mulching	21	AC	$1,700	$35,700
Backfill/Grading/Drainage	1	LS	$350,000	$350,000
Methane Gas Control (active extraction) (1)	21	AC	$2,500	$52,500
Subtotal				$4,612,130
Contingency (15%)				$691,820
CQA	5	%	$230,607	$230,607
			TOTAL CONSTRUCTION	$5,535,000

Note:
1. The majority of the methane gas extraction system in the Phase III closure area has been completed. This item is to finalize the gas collection system.
2. These estimates are based on average costs bid for similar work at a nearby landfill.
3. This estimate assumes soil material will come from offsite sources.
4. The quantities include an increase in area based on the 3:1 slope factor

* Considered "full closure", as previously reported for Financial Assurance test.

TABLE 1
CITY OF GREENSBORO WHITE STREET LANDFILL
CURRENT EQUIPMENT INVENTORY

DESCRIPTION	MAKE/MODEL	NO.	COMMENT
LANDFILL COMPACTOR	CAT 836G	2	
COMPACTOR	AL-JON525	1	
BULLDOZER	CAN D-8N	1	
BULLDOZER	CAT D-8R	1	
BULLDOZER	CAT D-6LGP	1	
BULLDOZER	DRESSER -TD-25	1	
MOTORGRADER	CAT 140-G	1	
LOADER	WA-250 KOMATSU	1	
LOADER	FIAT ALLIS 250	1	
EXCAVATOR	SAMSUNG 450	1	
DUMPTRUCK	40 TON/OFFROAD	3	
FARM TRACTOR	NEW HOLLAND8360	1	
FARM TRACTOR	JOHN DEERE2355	1	
WATER TRUCK	INT. 3500 GAL.	1	
ATV UTILITY	POLARIS	1	
ATV UTILITY	BOBCAT	1	
ATV UTILITY	POLARIS	1	
TANDEM DUMP TRUCK	STERLING	1	
TRUCK	INT.	1	FUEL TRUCK
TRUCK	INT.	1	SERVICE TRUCK
TRUCK	FORD F-450 4X4	1	MAINTENANCE TRUCK
TRUCK	CHEV. S/10 4X4	1	
TRUCK	CHEV. S/10 4X4	1	
TRUCK	FORD F-250 4X4	1	LFG/LF TECHNICIAN

Appendix B

WASTE SCREENING

City of Greensboro - Waste Disposal Facility

Date:_____ Time:_____ Inspected By: _____

Are there any visible labels of hazardous waste found? No_____ Yes_____

Are there any strong or irritating odors detected? No_____ Yes_____

Are there any visible or noisy reactions detected? No_____ Yes_____

Are there any liquids in containiers or liquid saturated waste detected? No_____ Yes_____

Are there any grindings, shavings, or fine particles detected? No_____ Yes_____

Are there any sludges or bulk liquids detected? No_____ Yes_____

EXCLUDED WASTE FOUND

	No	Yes	If yes, how was the waste handled/disposed
Hazardous Waste			
Liquid Waste PCB Waste			
Tires			
White Goods			
Yard Waste			
Used Motor Oil			
Anti-Freeze			
Batteries			
Aluminum Cans (Bulk)			
Other (specify)			

WASTE FOUND REQUIRING SPECIAL ATTENTION

	No	Yes	If yes, how was the waste handled/disposed
Asbestos			
Sludges			
Medical Waste			
Other (specify)			

Hauler: _____ Vehicle # _____ Driver ID _____

Source _____ Waste Type: _____

Net Tonnage Of Load _____ Ticket # _____

City of Greensboro
White Street Sanitary Landfill

Report of Attempted Disposal of Hazardous or Prohibited Materials

Date: _____ **Time:** _____

Description of Material: _____

Detected By: _____

Hauler: _____

Owner: _____

Describe Exposure to Landfill Personnel and Customers(if applicable):

☐ EMS ☐ MEDICAL SERVICES ☐ OTHER_____

☐ GFD HazMat Incident Commander:_____

Describe Contamination of Property or Equipment (if applicable):

Containment, clean-up and disposition of material:

Narrative:

HAZARDOUS MATERIALS CONTINGENCY PLAN

1: Facility Identification and General Information

Owner/Operator:	The City of Greensboro Department of Environmental Services Waste Disposal Division White Street Sanitary Landfill
Location:	2503 White Street Greensboro, NC 27405
Mailing Address:	PO Box 3136 Greensboro, NC 27402
Telephone:	336-373-7658 (Administration office) 336-373-7661 (Landfill Operations) 336-430-6171 (Landfill Operations Cell Phone)

Facility Type:

The site is a Solid Waste Management Disposal facility comprised of the following operations: (a) MSWLF disposal sites (active and closed), (b) construction and demolition debris landfill, (c) Yard Waste composting facility, (d) Heavy equipment maintenance garage, (e) Automated fuel dispensing station, (f) Three administrative office buildings, (g) equipment and material storage facility, (h) two phase Landfill gas systems.

The White Street Landfill is not a RCRA Hazardous Waste generator or disposer. Any hazardous materials encountered on this site will be as a result of an attempt to improperly dispose of materials banned from this site or materials exempt from regulation.

2: Emergency Coordinators

	Home Phone	Cell Phone
D. Scott Bost Acting Solid Waste Disposal Manager Landfill operations Supervisor 605 Magnolia Street Greensboro, NC 27401	336-373-1051	336-430-6171

Secondary Emergency Coordinators

Rob Rash Yard Waste Supervisor	336-442-4776
Lewis Walker Landfill Environmental Compliance	Cell Phone 336-383-6534
Dewayne Wheeler Landfill Environmental Compliance	Cell Phone 336-383-6534
Greg Thomasson Technical and Planning Support Manager	336-430-6546

3: Emergency Phone Numbers:

Fire and/or Hazmat	911 or 373-2222
Police	911 or 373-2222
Emergency Medical Service	911
Emergency Management Greensboro/Guilford County	373-2278
Emergency Management NCDENR	800-858-0368
Division of Solid Waste Management NCDENR – Winston Salem	336-771-4631
National Response Center	800-424-8802

4: Emergency Response Procedures

In the event that hazardous or suspicious materials are detected at the landfill, the following steps will be taken:

The individual discovering the situation will immediately notify the Administration Building. The operator receiving the call shall immediately notify the Emergency Coordinator.

The emergency Coordinator shall assess the situation and take action as necessary. In the event of an actual emergency situation, the Emergency Coordinator must immediately take the following steps:

1: Notify all landfill personnel.

2: Evacuate personnel and customers to a safe location, as appropriate.

3: Require transporter to remain at facility, as appropriate.

4: Implement the appropriate action plan (see appendix)

5: Notify Greensboro Fire Department and/or Hazmat Team if appropriate.

6: As soon as possible, notify NCDENR, Division of Solid Waste Management.

7: If the Emergency Coordinator has determined that the facility has had a release, fire or explosion that could threaten human health or environment outside the facility, then the NCDENR Emergency Management Center and the National Response Center must be notified and the report shall the information as follows:

A: Name and number of reporter
B: Name and address of facility
C: Time and type of incident (release, fire, etc.)
D: Name and quantity of material involved
E: The extent of any injuries
F: Possible hazards to human health or the environment outside the facility.

5: Follow-Up

The emergency Coordinator will ensure that, after a hazardous materials emergency has occurred, all recovered waste, contaminated soil and waster will be disposed of in accordance with EPA guidelines.

The Emergency Coordinator will also ensure that an investigation be conducted determine the cause of the incident and that steps will be taken to prevent its reoccurrence.

Within five days of the incident, the Emergency Coordinator must submit a written report to the Division of Waste Management (Appendix B, Form 2).

6. Appendix

Hazardous or Suspect Materials Action Plans

1: Then employee that discovers the hazardous or suspect material shall see that all personnel, customers and visitors are evacuated a safe distance upwind from the affected area.

2: The employee will then notify the Emergency Coordinator. The Emergency Coordinator will notify the emergency team.

3: The Emergency Coordinator shall assess the situation and determine if an emergency situation exists and then select the appropriate action.

4: The transporter of the material will be instructed to remain on the landfill facility.

5: If the emergency Coordinator determines that an actual emergency situation exists, the Greensboro Police/Fire communications shall be notified and request a response from the Hazmat Team.

6: Lead operators will be responsible for a roll call in their area, as well as accounting for customers and visitors. The lead operators will report personnel status to the Landfill Supervisor immediately. If anyone is injured and unable to evacuate themselves from the affected area this shall be reported immediately. In order to prevent additional casualties, rescue of any inured persons from the affected area will be the responsibility of Fire and/or EMS personnel and will not be attempted by landfill personnel.

7: Due to the landfill waste disposal activities being considered an essential and critical function of the City of Greensboro, should a spill or release of material occur, interrupting normal operation of the landfill disposal activities, a secondary disposal area will be opened as soon as possible to allow disposal operations to continue. Selection of an alternative disposal site will be based on permitted area available, distance from affected area, wind direction and any other factors which may influence continued safe operation.

8: Containment and clean up of hazardous materials shall be the responsibility of Greensboro Fire Department/Hazmat and the owner of the material.

Radiation Emergency Action plan

1: If the radiation detectors on either Scale 1 or Scale 2 goes to alarm mode, (>1000 cpm) the scale operator will instruct the driver to turn off all unnecessary electrical components on his vehicle. If the detector continues to alarm, the driver will be instructed to move his vehicle to the paved road leading to the Operations Building. Once the driver has moved his vehicle to the road and parked it halfway between the scalehouse and the Operations building, he will secure the vehicle, abandon the vehicle and report to the scalehouse.

2: The scale operator shall notify the Emergency Coordinator.

3: All personnel will be kept a safe distance from the vehicle.

4: The Emergency Coordinator will notify GFD/Hazmat, Greensboro/Guilford County Emergency Management, NCDENR SWM Division, and NCDENR Emergency Management.

5: Containment, clean up and removal of the waste shall be the responsibility of GFD/Hazmat and the owner.

Appendix D

WATER QUALITY MONITORING PLAN
WHITE STREET LANDFILL
PHASE I AND II AREAS
WHITE STREET
GREENSBORO, NORTH CAROLINA

S&ME Project No. 1584-98-081

Prepared for:
The City of Greensboro

Prepared by:
S&ME, Inc.
3718 Old Battleground Road
Greensboro, North Carolina 27401

December 2007

S&ME

I hereby certify this 14th day of December, 2007, that this report was prepared by me or under my direct supervision.

NORTH CAROLINA LICENSED SEAL 1246 EDMUND Q. B. HENRIQUES

Edmund Q.B. Henriques, P.G.
Environmental Department Manager

Technical review performed by:

Wayne H. Watterson, P.E.
Senior Engineer

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WATER QUALITY MONITORING PLAN

1. PURPOSE AND INTENT

The purpose of this plan is to provide a program which describes the collection and evaluation of ground water monitoring samples collected from compliance wells installed within the uppermost aquifer adjacent to the Phase I (closed) and Phase II (closed MSW and active C&D) portions of the White Street Landfill in Greensboro, North Carolina, and surface water quality samples from the same vicinity. The intent of this plan is to provide detection monitoring throughout the active life and post-closure care period at the White Street Landfill.

This plan was prepared in accordance with the rules codified under the North Carolina Solid Waste Management 15A NCAC 13B, Sections .1630 through .1637 under the guidance of a North Carolina Licensed Geologist. The water quality monitoring plan is effective in providing early detection of any release of hazardous constituents from the MSWLF unit to the uppermost aquifer, so as to be protective of public health and the environment.

2. DESCRIPTION OF PLAN COMPONENTS

This plan describes the basic field data collection and reporting requirements for the collection of ground water and surface water quality samples for the evaluation of site conditions relating to the disposal of solid waste at the above referenced facility. Sections of this plan describe the rationale behind background and downgradient well selection, selection of surface water sample locations, well purging and sampling techniques, surface water sampling techniques, decontamination procedures, ground water and surface water analytical parameters with quality assurance/quality control (QA/QC) requirements, and statistical analysis options, and reporting requirements.

3. DATA COLLECTION PROCEDURES

3.1 Water Quality Sampling Locations

The following sections discuss the general rationale used to select the upgradient (background) compliance wells and the downgradient (detection) compliance wells based on available geologic and hydrogeologic data. All well locations were selected on their basis to provide water quality data from the uppermost aquifer beneath the facility. The rationale for selection of surface water monitoring points is also discussed.

3.1.1 Background Wells

Using the historical water-table elevation data collected during multiple ground water monitoring events at the facility, background compliance wells were selected on the basis of hydraulic position in relation to the solid waste management units. Wells hydraulically "upgradient" of the unit were selected first. Existing ground-water monitoring well MW-13 fit this scenario for Phase I while existing monitor well MW-14 fit this scenario for Phase II. **Tables 1a and 1b** summarize the existing background monitoring wells for the Phase I and Phase II portions of the landfill, respectively, and their estimated distances

from their respective compliance boundaries. The location of these wells can be seen on **Figures 1 and 2** located in **Appendix II**.

3.1.2 Downgradient (Detection) Wells

The hydrogeologic and geologic characteristics of the facility and surrounding land, and the quantity, quality, and direction of ground water flow, were evaluated to determine the appropriate selection of downgradient (detection) wells. In addition to the criteria above, the distance of each proposed well relative to the waste unit (less than 250 feet) and the boundary of the property (50 feet or greater) were also considered. **Tables 1a and 1b** summarize the downgradient (detection) monitoring wells for the Phase I and Phase II portions of the landfill, respectively, and their estimated distances from their respective compliance boundaries. The location of these wells can be seen on **Figures 1 and 2** located in **Appendix II**. Soil boring logs and monitoring well construction record drawings for these wells are included in **Appendix III.**

3.1.3 Surface Water Sample Locations

The locations of the five surface sample points are referenced on **Figures 1 and 2**. SW-2 is located on a southern tributary of North Buffalo Creek several hundred feet before it joins the main creek west of the landfill entrance. SW-3 is located on North Buffalo Creek just below the North Buffalo Creek Wastewater Treatment Plant outfall, upstream of the landfill. SW-4 is downstream of the landfill at the U.S.G.S. gauging station on North Buffalo Creek. Finally, SW-5 is located downstream of the landfill on another southern tributary of North Buffalo Creek.

3.2 Monitoring Well Data Collection

The following data will be collected and reported during the period of performance for this water quality plan. A brief discussion on the collection of and analysis of these data is provided in the sections to follow. Field conditions (e.g., temperature, weather conditions, purge start/stop times, sample collection start/stop times, etc.) during each sampling event will be recorded on Daily Field Report forms (**Attachment 1**), or equivalent. The primary objectives of groundwater sampling are (1) to obtain a representative groundwater sample and (2), to prevent the sample from being altered or contaminated during withdrawal from the well or during sample preparation.

The City of Greensboro has elected to use dedicated sampling pumps to collect groundwater samples from monitor wells around the landfill. With proper techniques for low-flow purging and sampling, the pumps offer the potential of obtaining groundwater samples with lower turbidity than may be obtainable with bailers. However, the City reserves the right to use conventional sampling methods (dedicated bailer sampling) to sample the wells in the event of pump malfunction, or as may be required by site specific conditions.

The following sections discuss specifications and procedures applicable to both sampling methods. Detailed discussion of proper sampling procedures for each method can be found in relevant guidance documents prepared by the North Carolina Division of Waste

Management Solid Waste Management Section, or the United States Environmental Protection Agency (USEPA).

3.2.1 Equipment Specifications

It is the intent of these specifications that the sampling pump or the bailer be constructed of inert materials. Sample collection equipment should not alter the analyte concentrations, cause loss of analytes via sorption, or result in analytes desorption, degradation or corrosion of the pump components. Sampling equipment should cause minimal sample agitation and should be selected to minimize sample contact with the atmosphere during sample transfer. The following section discusses the specifications of the dedicated pumps and bailers.

3.2.1.1 Dedicated Pneumatic Sampling Pumps

Dedicated sampling pumps shall be all-pneumatic, bladder pumps driven by a portable air controller supplied with compressed air from a portable oil less air compressor or compressed air bottle. Pump effluent will pass through a portable flow-through cell and water analyzer which will monitor temperature, pH, conductivity, oxidation reduction potential (ORP), and dissolved oxygen to indicate when stabilization has occurred.

The sampling pump shall be a positive gas displacement bladder pump. The pump shall be constructed such that no gas or liquid is introduced into the well during the pumping operation. The pump shall be constructed of 316 stainless steel with a Teflon bladder. Bladders shall be field-replaceable and warranted for a period of 10 years. Bladder clamps shall also be constructed of 316 stainless steel. Pumps will be equipped with a screen having an opening not exceeding 0.012 inches. Sample pumps shall employ self polishing hard seat internal check valves.

The manufacturer shall warrant all pumps to be of new construction and shall certify all pumps and screens to be free of all EPA Method 601, 602, base neutral, and acid extractable contaminants. Certification and copies of the analytical reports with test batch numbers will be provided with each pump. Pump airline and discharge tubing shall be of new material, sized to match fittings supplied with each pump. The tubing bundle will consist of polyethylene air supply line heat bonded to a Teflon-lined polyethylene water supply line. The sample discharge tube shall provide a separate flow path without exposure to pump drive air and shall assure that discharge from the pump contacts only the Teflon inner tubing. The manufacturer shall certify that only virgin PTFE (Teflon) has been used in the manufacture of the inner tubing.

The pump air supply line and discharge tubing shall be attached to a well head assembly that will allow attachment of the air supply line to the well head with use of a quick - connect fitting. The well head assembly shall have an opening to allow measurement of water level with an electric water level probe. The discharge piping shall allow attachment of a Teflon elbow (QED part number 34485 or equivalent) to facilitate collection of the sample.

well volumes. By using low-flow pumping rates during well evacuation, stabilized conditions can be obtained with removal of less than 1 well volume.

3.2.3.1 Low-Flow Well Evacuation With Dedicated Pumps

Purging should be performed by removing water from the well at a flow rate as close to actual groundwater flow rate. If this determination is impractical at the time, a default purging rate of around 100 ml. per minute should be used. The purge rate should be low enough that recharge water does not become overly agitated or to lessen the draw of colloids into the well bore. Purging should be continued until field measurements of pH, conductivity, turbidity[1], oxidation-reduction potential (ORP), and dissolved oxygen[2] in-line measurements have stabilized to within approximate 10 percent over at least 3 consecutive measurements over time.

3.2.3.2 Well Evacuation Techniques Using a Bailer

Determination of the quantity of water to be bailed from each well will be made by calculating the volume of water in the well. This quantity can be made by subtracting the depth to the water surface from the total depth of the well as measured from the top of the well casing, and multiplying the difference by the cross-sectional area inside the well casing. For example, a 2-inch diameter (I.D.) pipe (Schedule 40) has 0.1632 gallons per foot of pipe length. Therefore, five times the volume of a 2-inch diameter well having a seven-foot water column would be equal to 5.7 gallons (0.1632 gal/ft x 7 ft x5 volumes). For moderate to high yield wells, a minimum of 3 to 5 times the volume of water standing in the well will be removed prior to sampling. For low yield wells, a minimum of 1.5 times the well volume will be removed if evacuated to dryness.

During manual purging, the bailer will be slowly lowered into the water column until full, the slowly retrieved from the well. The quantity of water removed from the well can be gauged by filling a calibrated bucket. Insertion of the bailer into the water column should be performed gently to minimize turbidity that results from redevelopment of the well. The bailer should not contact the ground surface or the container during well purging.

3.2.4 Sample Collection

It is desirable to have the analytical laboratory prepare and supply the sample containers in a protective cooler or transpack. Delivery of the empty containers by the laboratory to the sampler will be noted on the Chain of Custody. The same Chain of Custody will remain with the containers until they are delivered to the laboratory for testing.

A complete set of precleaned and prelabeled sample bottles will be removed from the cooler, prior to lowering the bailer in the well, or turning on the pump to collect the sample. Once collected, a portion of the sample from the bailer or pump (for each well) will be transferred into a fresh container. Preservatives will be added as necessary (in accordance with EPA Methods SW-846) to the sample bottles either by the laboratory or in the field immediately prior to sampling. One trip blank prepared by the laboratory will

[1] When turbidity is greater than 10 NTUs

[2] When final dissolved oxygen concentrations are less than 1 mg/L, the stabilization criteria will be $\pm$ 0.2 mg/L.

be analyzed each event. Equipment blanks are not recommended when the dedicated pumps are used for well evacuation and sampling. An equipment blank will be used when wells are evacuated and sampled using bailers.

Because water samples are analyzed for various parameters, several types of containers are required. The sample collection will proceed as follows: volatile organic compounds (VOCs) will be collected first in 40 ml glass vials with Teflon caps. The vials will be filled completely with no headspace remaining. Samples to be analyzed for inorganic constituents (metals) will be collected next. The containers are usually plastic cubes or bottles that have acid placed in the container as a preservative. These containers should not be rinsed prior to sampling.

If organic contamination is suspected, additional samples may be analyzed for semi-volatiles. Semi-volatiles, if required, will be collected following the inorganic compounds. Generally, the semi-volatiles are collected in a 1- liter amber bottle. Water samples to be analyzed for radiological parameters will be collected next, followed by bacteriological parameters. The radiological samples will be collected in 1 – liter bottles and the bacteriological samples in 120 – ml plastic bottles containing sodium thiosulfate as a preservative.

After transferring the sample to the container, it will be sealed and placed in chilled cooler or transpack pending completion of the sampling event and delivery to the laboratory. After completion of sampling at each well location, the well will be capped and secured. The samples will be secured in the coolers, or transpacks, and shipped or delivered to the laboratory as soon as practical.

3.2.4.1 Sample Collection With Dedicated Pumps

Following stabilization of field parameters, samples should be collected directly from the discharge port of the pump tubing, prior to passing through the flow-through cell. The purging pumping rate should be maintained or slightly reduced for sampling. Flow rates should be low enough to prevent aeration of the samples. For the volatile organic containers, the vials should be filled so that there are no air bubbles in the sample. There should be no headspace remaining in the vial after sample collection.

All sample containers will be labeled with well I.D. number, sample date, sample time, sampler initials, and the parameters in which to be analyzed. Each sample will be placed on ice for transport to a North Carolina Certified (15A NCAC 2H .0800) Laboratory for analysis. A Chain of Custody (see Attachment 2) will accompany the samples to the laboratory. **Table 2** summarizes the various Appendix I and II analytical parameters with their recommended sample container(s), preservatives, minimum sample volume, and maximum holding times.

3.2.4.2 Sample Collection with Bailers

Ground water samples will be collected within 24 hours of purging. Samples will be collected using either disposable Teflon® bailers or decontaminated (non-dedicated) Teflon® bailers. If disposable Teflon® bailers are used, they will be certified to have been

cleaned according to EPA protocol. This certification will accompany the well sampling and analysis data. If non-dedicated bailers are used, they shall be laboratory decontaminated prior to each use, in accordance with the decontamination procedures outlined in Section 3.3 of this document. New nylon cord and sampling gloves will be used at each new well location during sampling. All sampling materials not to be reused (e.g. surgical gloves, nylon cord, disposable Teflon® bailers) will be properly disposed of.

Ground water samples will be collected in the order of sensitivity to volatilization as follows:

- Volatile Organic Compounds (VOCs)
- Semi-Volatile Organic Compounds
- Total Metals
- Cations and Anions (including pH, Temperature, and Specific Conductance)

All samples for total metals analysis will be collected unfiltered. Volatile organics will be collected in 40 ml vials without headspace (i.e. no air bubbles). Bailers will be gently lowered to the water table so as not to agitate the ground water to be sampled.

All sample containers will be labeled with appropriate well ID number, sample date, sample time, sampler initials, and the parameters for which to be analyzed. Each sample will be placed immediately on ice for transport to a North Carolina DEM Certified (15A NCAC 2H .0800) Laboratory for ground water analysis. A Chain-of-Custody Record (see Attachment 2) will accompany the samples to the laboratory. **Table 2** summarizes the various Appendix I and II analytical parameters with their recommended sample container(s), preservative, minimum sample volume, and maximum holding times.

3.2.5 Surface Water Sampling Procedures

Surface water samples will be collected at the designated locations using the following procedures.

1. Gently lower the sample container into the water and rinse the container once prior to sample collection (unless a pre-measured amount of a preservative has been added).
2. Submerge the container (mouth down) below the water level and orient the mouth of the container towards the current at a depth of approximately six inches below the surface (do not breach the surface with the mouth of the container).
3. Lift the container from the water and secure the lid on the container. Volatile organics will be collected in 40 ml vials without headspace (i.e. no air bubbles).

During times of low stream flow, the container will be slowly moved side to side during filling. If water levels in the stream are too low to facilitate submerging the container, a small pool will be created and allowed to fill with water prior to sample collection (after settlement of suspended sediment). New surgical gloves will be worn for both the upstream (background) and downstream (detection) sampling events.

3.3 Decontamination Procedures

All non-dedicated sampling and data collection equipment will be decontaminated prior to each use, except as noted elsewhere in this plan, in accordance with the following procedures:

1. Tap water and non-phosphate laboratory detergent (Liquinox or equivalent) wash.
2. Tap water rinse.
3. 10% nitric acid rinse (delete this step for stainless steel item decon).
4. Rinse with deionized or distilled water.
5. Rinse with high grade isopropanol and allow to air dry.
6. Wrap with aluminum foil, if necessary, to prevent contamination during storage or transport.

3.4 Sample Parameters and Frequency

3.4.1 Ground Water Analytical Methods

The ground-water samples collected from the background and downgradient compliance wells at the Phase I portion of the landfill will be analyzed, at a minimum, for the constituents listed in the current Solid Waste Section requirements for sampling at Closed Sanitary Landfills. **Table 3a** summarizes these constituents as well as the preferred analytical method and Solid Waste Section Limit (SWSL) for each constituent. The ground-water samples collected from the background and downgradient compliance wells at the Phase II portion of the landfill will be analyzed, at a minimum, for the constituents listed in Appendix I of 40 CFR Part 258 entitled "Appendix I Constituents for Detection Monitoring." **Table 3b** summarizes Appendix I constituents as well as the preferred analytical method and Solid Waste Section Limit (SWLS) for each constituent.

3.4.2 Ground Water Sampling Frequency

Water quality samples will be collected on a semiannual basis for the life of the facility and the required post-closure monitoring period, except as required by the State.

3.4.3 Surface Water Analytical Methods

Surface water samples will be analyzed for the same analytical parameters (Appendix I list) as the Phase II ground-water quality samples.

3.4.4 Surface Water Sampling Frequency

Surface water samples will be collected on a semiannual basis for the life of the facility and the required post-closure monitoring period, except as required by the State.

3.4.5 QA/QC Procedures

One trip blank and one field blank will be taken during each sampling event to provide QA/QC evaluation of decontamination procedures, sampling handling procedures, and container shipping procedures. Trip blanks will be analyzed for volatile organics only, while equipment blanks will be analyzed for the full analytical suite. A duplicate water quality sample will be collected at least once a year from a selected monitoring well in order to check laboratory accuracy and QA/QC. Duplicate samples will be analyzed for the entire parameter list.

4. STATISTICAL EVALUATION OF MONITORING DATA

Five methods have been deemed acceptable by the NCDENR for the statistical evaluation of quality data from MSWLF facilities. Each of these tests have inherent advantages and disadvantages which render them more or less useful, depending on site and data set characteristics. Each method is briefly described below.

4.1 ANOVA (Parametric)

A parametric analysis of variance (ANOVA) followed by multiple comparison procedures to identify specific sources of difference is the preferred method for a facility in the early stages of monitoring. The procedures include estimation and testing of the contrasts between the mean concentrations at each compliance well and those at the background well for each constituent.

Analysis-of-variance models are used to analyze the effects of an independent variable on a dependent variable. For monitoring data, a well or group of wells is the independent variable, and the aqueous concentration of certain constituents or of a specified contaminant or contaminants is the dependent variable. An analysis-of-variance can determine whether observed variations (differences) in aqueous concentrations between compliance and background wells are statistically significant. Use of analysis-of-variance models is appropriate in situations where background concentrations of specific constituents can be determined and the data are normally or log normally distributed. The constituents which are most appropriately evaluated using ANOVA approaches are naturally occurring metals and other geochemical parameters such as chloride, nitrate-N, and specific conductivity.

4.2 ANOVA (Non-Parametric)

A non-parametric analysis of variance (ANOVA) based on ranks followed by multiple comparison procedures to identify specific sources of difference can be used when the data are not normally distributed and cannot be transformed into a log-normal distribution. The procedure includes estimation and testing of the contrasts between the median of each compliance well and the background well for each constituent. This is a non-parametric procedure, which means that the laboratory values are not used; only the relative ranks are used.

4.3 Tolerance/Prediction Intervals

A tolerance interval or a prediction interval for each constituent is established from the background data. The concentration of each constituent in each compliance well is compared to set upper (or lower) tolerance or prediction limits.

Tolerance intervals define, with a specified probability, a range of values that are expected to contain a discrete percentage of the sample population (95%). Tolerance intervals are most appropriate for facilities which do not have high degrees of spatial variability between background and compliance well (e.g. areas underlain by homogeneous geologic materials such as granitic saprolite). With monitoring data, tolerance intervals can be constructed from concentrations found in the background well(s); these intervals are most often expressed as limits defined by the mean

background well concentration plus a population size determined multiple of the standard deviation of the mean. Possible contamination is indicated when concentrations of the specified constituent(s) at the compliance well(s) plot above the calculated tolerance interval limits.

Prediction intervals are intervals in which the user is confident at a specified percentage (95%) that the next observation will lie within the interval, and are based on the number of previous observations, the number of new measurements to be made, and the level of confidence that the user wishes to obtain. This method of statistical analysis can be used in both detection and compliance monitoring programs. The mean concentration and standard deviation are estimated from the background wells. In a compliance monitoring program, prediction intervals are constructed from compliance well concentrations beginning at the time the facility entered the compliance monitoring program. Each compliance well observation is tested to determine if it lies within the prediction interval. If it is greater (or lower) than the historical prediction limits, water quality has deteriorated to such a point that further action may be warranted.

4.4 Control Charts

A control chart approach provides control limits for each constituent which can be used to evaluate data produced by repeated sampling and analysis for each well in the monitoring network. This is an intrawell approach which does not involve a comparison between background and compliance wells. If any compliance well has a value or a sequence of values that lie outside of the control limits for that constituent, this may constitute statistically significant evidence of contamination.

Control charts are based on repeated independent sampling events conducted over time and may be developed for each constituent of interest. Different statistical measurements, such as the means, standard deviation and mean of replicate values at a point in time, are computed and plotted graphically together with upper predetermined limits on a chart in which the x-axis represents time. When a data point plots above these boundaries, the process is "out of control," and when it plots below the boundaries, the process is "in control." Control charts can be used to analyze the inherent statistical variation of monitoring data, to note aberrations, and to detect trends in the data. Further investigation of "out of control" points is necessary before taking any direct action. A control chart can be constructed for each constituent in each well to monitor the concentration of that constituent over time. New samples can be compared to the historical data from the well to determine if the well is "in or out of control." Control charts can also be used to evaluate monitoring data when these data have been adjusted and/or transformed as appropriate.

4.5 Other Statistical Methods

Other statistical methods submitted by the facility owner or operator and approved by the NCDEHNR may also be used. This could include development of confidence intervals in which data are compared to Federal or State established maximum contaminant limits (MCLs) or alternate contaminant limits (ACLs).

5. DATA REPORTING PROCEDURES

A report will be prepared which summarizes the sampling event, including field observations relating to the condition of the monitoring wells, well completion records and boring logs for background and downgradient wells, field observation data, laboratory data, statistical analysis, sampling methodologies, quality assurance and quality control data, information on flow direction, and calculations of flow rate.

5.1 Ground Water Direction and Flow Measurements

A water table elevation will be calculated for each monitoring well using surveyed top-of-casing elevations prepared by a North Carolina registered land surveyor. Calculated potentiometric surface elevations, for each sampling event, will be placed on a scaled base map of the facility beside each respective monitoring point and contoured to produce a water table potentiometric surface map depicting potential ground water flow direction(s) across the landfill.

5.2 Seepage (Pore Water) Calculations

In addition, estimated ground water flow velocities for each compliance monitoring point will be calculated for each water quality sampling event. Using the static water table potentiometric data, measured aquifer material porosity and hydraulic conductivity values developed during the site study, and the calculated hydraulic gradients at each monitoring well for the respective sample event, an estimated seepage (pore water) velocity at each monitoring well will be calculated to evaluate potential contaminant migration. **Table 4** lists the *in situ* hydraulic conductivity, total porosity, and effective porosity for each compliance monitoring well to be used in these calculations.

5.3 Detection Monitoring Reporting

The reporting of detection monitoring data will occur within 14 days from the completion of the statistical analysis of the ground-water quality analytical data. A report will be prepared which summarizes the sampling event, including field observations relating to the condition of the monitoring wells, field data, laboratory, statistical analysis, sampling methodologies, quality assurance and quality control data, information on ground-water flow direction, and calculations of ground-water flow rate.

5.4 Assessment Monitoring Program

In the event that a statistically significant increase in concentration over background levels is detected in one or more of the constituents listed in Appendix I (Phase II monitoring) or a violation of the North Carolina ground-water quality standards (15A NCAC 2L, .0202) has occurred, the current landfill detection monitoring program will be switched to an assessment monitoring program (in accordance with 15A NCAC 13B, .1634) within 90 days of one of either of the two conditions stated above.

5.4.1 Analytical Parameters and Sampling Frequency

As part of this assessment monitoring program, all previous detection monitoring wells will be sampled in accordance with this plan and analyzed for all constituents identified in Appendix II of 40 CFR Part 258 "Appendix II List of Hazardous Inorganic and Organic Constituents

5.4.2 Assessment Monitoring Reporting

Once the ground-water quality results from the initial or subsequent assessment sampling event(s) has been collected, a "Notice of Detection" of Appendix II constituents will be submitted to the Division within 14 days. Once assessment monitoring has been initiated, sampling will be required at a minimum twice each year. One sampling event will be for all Appendix II constituents, and one sampling event will be for Appendix I constituents plus previously detected Appendix II constituents. A report of each sampling event will be developed and submitted to the Division for placement into the operating record.

Depending upon the constituent(s) detected, deletions to the Appendix II list may be requested if evidence can be provided to show that these constituents are not expected to be in or derived from the waste contained within the solid waste unit.

5.4.3 Establishment and Reporting of Background Concentrations

If any constituent listed in Appendix II is detected in a downgradient monitoring well, four independent sampling events will be performed on all program wells to establish new background levels for the newly detected constituents.

Once the background concentration for the detected Appendix II constituents has been determined, these concentrations will be reported to the Division to obtain a determination to establish ground-water protection standards for all detected parameters.

5.4.4 Evaluation of Background and Assessment Data

During the course of assessment monitoring, the evaluation of background and assessment data can lead to the execution of several options depending on the results of the statistical analysis of the sampling data. These options include:

1. If during the performance of assessment monitoring, compliance well concentrations for Appendix II constituents are at or below the determined background concentrations for two (2) consecutive sampling events, a request will be made to the Division to return to detection monitoring.
2. In the event that the concentration of detected Appendix II constituents is above the established background levels but are below the Division established ground-water protection standards, assessment monitoring will be continued until such time that conditions under option 1 are achieved.
3. If one or more of the detected Appendix II constituents are above the approved ground-water protection standards (in any sampling event), a report shall be submitted to the Division within 14 days of this finding and a notice placed in the operating record.

5.5 Assessment of Corrective Measures

In order to characterize the nature and extent of the release causing the detection of Appendix II constituents, additional ground water monitoring wells may be installed, as necessary. At least one additional well installed at the facility boundary in the hydraulically-downgradient direction of contaminant migration should be sampled in

accordance with the assessment monitoring program. Landowners downgradient of the release shall be notified in the event that off-site migration is expected.

Within 90 days of discovering statistically significant levels of Appendix II constituents over the approved ground-water protection standards, an assessment of corrective measures will be implemented in accordance with Rule 15A NCAC 13B, .1635.

APPENDIX I

Tables

TABLE 1A

SUMMARY OF PROPOSED DETECTION MONITORING AND SAMPLING LOCATIONS

White Street Sanitary Landfill (Phase I)
Greensboro, North Carolina

SAMPLE ID NUMBER	SAMPLE TYPE	INTERVAL MONITORED	SAMPLE LOCATION AND POSITION		DETECTION MONITORING FUNCTION
			Distance and Direction From Waste Cell Boundary	Hydrogeologic Position	
I-1	Ground Water	Uppermost Aquifer	30 Feet West	Lateral	Provide Water Level and Quality Data
I-2	Ground Water	Uppermost Aquifer	5 Feet West	Lateral	Provide Water Level and Quality Data
I-3	Ground Water	Uppermost Aquifer	25 Feet West-Northwest	Downgradient	Provide Water Level and Quality Data
I-4	Ground Water	Uppermost Aquifer	25 Feet North	Downgradient	Provide Water Level and Quality Data
MW-13	Ground Water	Uppermost Aquifer	2,650 Feet Southwest	Upgradient	Provide Background Water Quality Data

All distances from waste cell boundary are approximates based on measurements taken from the scaled base map Drawing D-1.

TABLE 1B

SUMMARY OF PROPOSED DETECTION MONITORING AND SAMPLING LOCATIONS

White Street Sanitary Landfill (Phase II)
Greensboro, North Carolina

SAMPLE ID NUMBER	SAMPLE TYPE	INTERVAL MONITORED	SAMPLE LOCATION AND POSITION		DETECTION MONITORING FUNCTION
			Distance and Direction From Waste Cell Boundary	Hydrogeologic Position	
II-1	Ground Water	Uppermost Aquifer	100 Feet Northwest	Downgradient	Provide Water Level and Quality Data
II-2	Ground Water	Uppermost Aquifer	75 Feet North	Downgradient	Provide Water Level and Quality Data
II-3	Ground Water	Uppermost Aquifer	100 Feet North	Downgradient	Provide Water Level and Quality Data
II-4	Ground Water	Uppermost Aquifer	50 Feet East-Northeast	Downgradient	Provide Water Level and Quality Data
II-5	Ground Water	Uppermost Aquifer	35 Feet East	Downgradient	Provide Water Level and Quality Data
II-6	Ground Water	Uppermost Aquifer	100 Feet West-Northwest	Downgradient	Provide Water Level and Quality Data
II-7	Ground Water	Uppermost Aquifer	75 Feet North	Downgradient	Provide Water Level and Quality Data
II-8	Ground Water	Uppermost Aquifer	100 Feet West	Downgradient	Provide Water Level and Quality Data

II-12	Ground Water	Uppermost Aquifer	100 Feet South-Southwest	Downgradient	Provide Water Level and Quality Data
MW-13	Ground Water	Uppermost Aquifer	4,350 Feet Southwest	Upgradient	Provide Background Water Quality Data
MW-14	Ground Water	Uppermost Aquifer	1,200 Feet South	Upgradient	Provide Background Water Quality Data
SW-2	Surface Water	Creek/Stream	3540 Feet West-Southwest	Not Applicable	Provide Downstream Surface Water Quality
SW-3	Surface Water	North Buffalo Creek	4000 Feet West-Southwest	Not Applicable	Provide Downstream WWTP Water Quality
SW-4	Surface Water	North Buffalo Creek	1350 Feet Northeast	Not Applicable	Provide Downstream Surface Water Quality
SW-5	Surface Water	North Buffalo Creek	250 Feet North	Not Applicable	Provide Downstream Surface Water Quality

All distances from waste cell boundary are approximates based on measurements taken from the scaled site map Drawing D-2.

TABLE 2

SUMMARY OF SAMPLE PARAMETER MINIMUM QA/QC REQUIREMENTS

White Street Landfill
Greensboro, North Carolina

Parameter	Sampling Program	Container	Preservative	Volume	Holding Time
Antimony (Sb)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Arsenic (As)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Barium (Ba)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Beryllium (Be)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Cadmium (Cd)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Chromium (Cr)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Cobalt (Co)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Cyanide	Appendix II	plastic, glass	NaOH, pH >9	500 ml	14 days
Copper (Cu)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Lead (Pb)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Mercury (Hg)	Appendix II	plastic, glass	HNO_3, pH <2	100 ml	6 months
Nickel (Ni)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Selenium (Se)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Silver (Ag)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Sulfide	Appendix II	plastic, glass	H_2SO_4, pH <2	500 ml	7 days
Thallium (Tl)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Tin (Sn)	Appendix II	plastic, glass	HNO_3, pH <2	100 ml	6 months
Vanadium (Va)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
Zinc (Zn)	Appendix I	plastic, glass	HNO_3, pH <2	100 ml	6 months
8240/8260 (VOC)	Appendix I/II	VOA	4° C	160 ml	14 days
8270 (Semi-VOC)	Appendix II	GA	4° C	1 liter	7/40 days
Chlor. Herbicides	Appendix II	GA	4° C	1 liter	7/40 days
Pesticides/PCBs	Appendix II	GA	4° C	1 liter	7/40 days
pH (std. units)	Appendix I/II	plastic, glass	4° C	100 ml	immediately
Specific Cond.	Appendix I/II	plastic, glass	4° C	100 ml	28 days

VOA - Volatile organic analysis vial (40 ml).
Plastic - Polyethylene bottle with a polypropylene cap.
GA - Glass amber bottle with Teflon® lined cap.
xx/xx days - days from extraction date/days for analysis after extraction.
HNO_3 - Nitric acid.
H_2SO_4 - Sulfuric acid.
NaOH - Sodium hydroxide.
8240/8260 - SW-846 GC/MS Method.

TABLE 3A

SUMMARY OF WATER QUALITY ANALYTICAL SAMPLE PARAMETERS

White Street Landfill (Phase I)
White Street
Greensboro, North Carolina

Metals:

PARAMETER	CERTIFICATION	METHOD	SWSL
Arsenic	low level	6010B	10
Barium	low level	6010B	100
Cadmium	low level	6010B	1
Chromium	low level	6010B	10
Lead	low level	6010B	10
Mercury	low level	7470A	0.2
Selenium	low level	6010B	10
Silver	low level	6010B	10

SWSL – Solid Waste Section Limit in parts per billion (ppb).

Volatile Organic:

ORGANIC CONSTITUENT	METHOD	SWSL
Acetone	8240/8260	100
Acrylonitrile	8240/8260	55
Benzene	8240/8260	1
Bromochloromethane	8240/8260	3
Bromodichloromethane	8240/8260	1
Bromoform	8240/8260	3
Carbon Disulfide	8240/8260	100
Carbon Tetrachloride	8240/8260	1
Chlorobenzene	8240/8260	3
Chloroethane	8240/8260	10
Chlorodibromomethane	8240/8260	3

TABLE 3a (continuation)
SUMMARY OF WATER QUALITY ANALYTICAL SAMPLE PARAMETERS

White Street Landfill (Phase I)
White Street
Greensboro, North Carolina

Volatile Organic:

ORGANIC CONSTITUENT	METHOD	SWSL
Chloroform	8240/8260	5
1,2-Dibromo-3-Chloropropane	8240/8260	13
Ethylene Dibromide	8240/8260	1
O-Dichlorobenzene	8240/8260	5
P-Dichlorobenzene	8240/8260	1
T-1,4-Dichloro-2-Butene	8240/8260	100
1,1-Dichloroethane	8240/8260	1
1,2-Dichloroethane	8240/8260	1
1,1-Dichloroethene	8240/8260	1
Cis-1,2-Dichloroethene	8240/8260	5
T-1,2-Dichloroethene	8240/8260	5
1,2-Dichloropropane	8240/8260	1
Cis-1,3-Dichloropropene	8240/8260	1
T-1,3-Dichloropropene	8240/8260	1
Ethylbenzene	8240/8260	1
Methyl Butyl Ketone	8240/8260	50
Methyl Bromide	8240/8260	10
Methyl Chloride	8240/8260	1
Methylene Bromide	8240/8260	10
Methylene Chloride	8240/8260	1
MEK; 2-Butanone	8240/8260	100
Methyl Iodide	8240/8260	10
Methyl Isobutyl Ketone	8240/8260	100

SWSL – Solid Waste Section in parts per billion (ppb).

TABLE 3a (continuation)
SUMMARY OF WATER QUALITY ANALYTICAL SAMPLE PARAMETERS

White Street Landfill (Phase I)
White Street
Greensboro, North Carolina

Volatile Organic:

ORGANIC CONSTITUENT	METHOD	SWSL
Styrene	8240/8260	1
1,1,1,2-Tetrachloroethane	8240/8260	5
1,1,2,2-Tetrachloroethane	8240/8260	3
Tetrachloroethylene	8240/8260	1
Toluene	8240/8260	1
1,1,1-Trichloroethane	8240/8260	1
1,1,2-Trichloroethane	8240/8260	1
Trichloroethylene	8240/8260	1
Trichlorofluoromethane	8240/8260	1
1,2,3-Trichloropropane	8240/8260	1
Vinyl Acetate	8240/8260	50
Vinyl Chloride	8240/8260	1
Xylenes	8240/8260	5

SWSL – Solid Waste Section Limit in micrograms per liter (ug/l).

Water Quality Field Measurements:

PARAMETER	METHOD	SWSL
Temperature	Field Thermometer or equivalent	NE
Specific Conductance	Field-Calibrated Meter	NE
pH	Field-Calibrated Meter	NE

TABLE 3B

SUMMARY OF GROUND-WATER QUALITY ANALYTICAL PARAMETERS
White Street Sanitary Landfill (Phase II)
Greensboro, North Carolina

Metals:

PARAMETER	CERTIFICATION	METHOD	SWSL
Antimony	Low Level	6020B	6
Arsenic	Low Level	6010B	10
Barium	Low Level	6010B	100
Beryllium	Low Level	6010B	1
Cadmium	Low Level	6010B	1
Chromium	Low Level	6010B	10
Cobalt	Low Level	6010B	10
Copper	Low Level	6010B	10
Lead	Low Level	6010B	10
Mercury	Low Level	7470A	0.2
Nickel	Low Level	6010B	50
Selenium	Low Level	6010B	10
Silver	Low Level	6010B	10
Thallium	Low Level	6020B	5.5
Tin	Low Level	6010B	100
Vanadium	Low Level	6010B	25
Zinc	Low Level	6010B	10

SWSL – Solid Waste Section Limit in parts per billion (ppb).

TABLE 3b (continuation)

SUMMARY OF GROUND-WATER QUALITY ANALYTICAL PARAMETERS
White Street Sanitary Landfill (Phase II)
Greensboro, North Carolina

Volatile Organics:

ORGANIC CONSTITUENT	METHOD	SWSL
Acetone	8240/8260	100
Acrylonitrile	8240/8260	55
Benzene	8240/8260	1
Bromochloromethane	8240/8260	3
Bromodichloromethane	8240/8260	1
Bromoform	8240/8260	3
Carbon Disulfide	8240/8260	100
Carbon Tetrachloride	8240/8260	1
Chlorobenzene	8240/8260	3
Chloroethane	8240/8260	10
Chloroform	8240/8260	5
Chlorodibromomethane	8240/8260	3
1,2-Dibromo-3-Chloropropane	8240/8260	13
Ethylene Dibromide	8240/8260	1
O-Dichlorobenzene	8240/8260	5
P-Dichlorobenzene	8240/8260	1
T-1,4-Dichloro-2-Butene	8240/8260	100
1,1-Dichloroethane	8240/8260	5
1,2-Dichloroethane	8240/8260	1
1,1-Dichloroethene	8240/8260	5
Cis-1,2-Dichloroethene	8240/8260	5

SWSL – Solid Waste Section Limit in micrograms per liter (ug/l).

TABLE 3b (continuation)

SUMMARY OF GROUND-WATER QUALITY ANALYTICAL PARAMETERS
White Street Sanitary Landfill (Phase II)
Greensboro, North Carolina

Volatile Organics:

ORGANIC CONSTITUENT	METHOD	SWSL
T-1,2-Dichloroethene	8240/8260	5
1,2-Dichloropropane	8240/8260	1
Cis-1,3-Dichloropropene	8240/8260	1
T-1,3-Dichloropropene	8240/8260	1
Ethylbenzene	8240/8260	1
Methyl Butyl Ketone	8240/8260	50
Methyl Bromide	8240/8260	10
Methyl Chloride	8240/8260	1
Methylene Bromide	8240/8260	10
Methylene Chloride	8240/8260	1
MEK; 2-Butanone	8240/8260	100
Methyl Iodide	8240/8260	10
Methyl Isobutyl Ketone	8240/8260	100
Styrene	8240/8260	10
1,1,1,2-Tetrachloroethane	8240/8260	5
1,1,2,2-Tetrachloroethane	8240/8260	3
Tetrachloroethylene	8240/8260	1
Toluene	8240/8260	1
1,1,1-Trichloroethane	8240/8260	1
1,1,2-Trichloroethane	8240/8260	1
Trichloroethylene	8240/8260	1

SWSL – Solid Waste Section Limit in micrograms per liter (ug/l).

TABLE 3b (continuation)

SUMMARY OF GROUND-WATER QUALITY ANALYTICAL PARAMETERS

White Street Sanitary Landfill (Phase II)
Greensboro, North Carolina

Volatile Organics:

ORGANIC CONSTITUENT	METHOD	SWSL
Trichlorofluoromethane	8240/8260	1
1,2,3-Trichloropropane	8240/8260	1
Vinyl Acetate	8240/8260	50
Vinyl Chloride	8240/8260	1
Xylenes	8240/8260	5

SWSL – Solid Waste Section Limit in micrograms per liter (ug/l).

Water Quality Field Measurements:

PARAMETER	METHOD	SWSL
Temperature	Field Thermometer or equivalent	0.1 °c
Specific Conductance	Field-Calibrated Meter	1.0 umhos/cm^3
pH	Field-Calibrated Meter	0.01 su

TABLE 4

SUMMARY OF DETECTION MONITORING WELL HYDROGEOLOGIC PARAMETERS

White Street Landfill
Greensboro, North Carolina

Well #	Hydraulic Conductivity cm/sec	Hydraulic Conductivity ft/day	Estimated Porosity, % Total[3]	Estimated Porosity, % Effective[4]
II-1[1]	4.21×10^{-5}	0.119	35-50	15
II-2[1]	1.16×10^{-4}	0.329	35-50	15
II-3[1]	1.34×10^{-4}	0.380	35-50	15
II-4[1]	7.06×10^{-5}	0.200	35-50	15
II-5[1]	1.49×10^{-5}	0.042	35-50	15
II-6[2]	7.8×10^{-5}	0.221	35-50	15
II-7[2]	3.8×10^{-4}	1.077	35-50	15
II-8[2]	8.3×10^{-4}	2.353	35-50	15
MW-13[1]	5.00×10^{-5}	0.142	35-50	15
MW-14[2]	2.61×10^{-4}	0.740	35-50	15

[1] Hydraulic conductivity values provided by BPA Environmental & Engineering, Inc. Data analyzed using method of Hvorslev, M.J., Time Lag and Soil Permeability in Groundwater Observations, US Army Corps of Engineers Waterways Experimental Station, Bulletin 36, 1951.

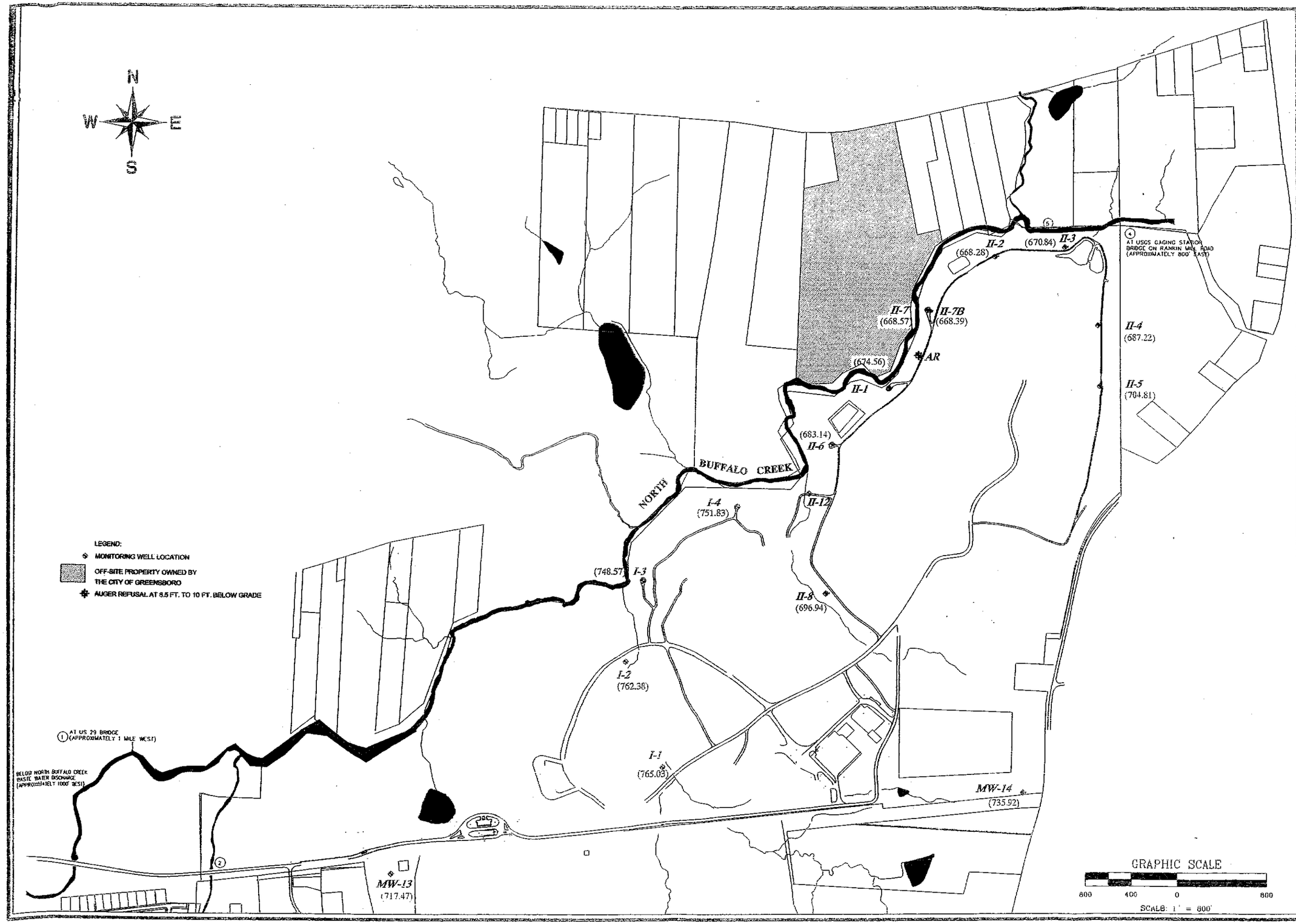
[2] Hydraulic conductivity values provided by HDR Engineering, Inc. Data analyzed using method of Bouwer, H. and Rice, R.C., 1976, A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells, Water Resources Research, v. 12, pp. 423-428.

[3] Total porosity values estimated from undisturbed samples taken elsewhere at the White Street Landfill. These are a typical range of values for the sandy silts to silty sands found at the site.

[4] Estimated effective porosity values are from Table 3-1 in the "Interim Final Guidance Document on the Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities," USEPA, April 1989. Based on boring logs, although some silty sands were present, sandy silt soil was chosen as the typical and more conservative texture for the aquifer at each detection monitoring well.

APPENDIX II

Sample Location Maps

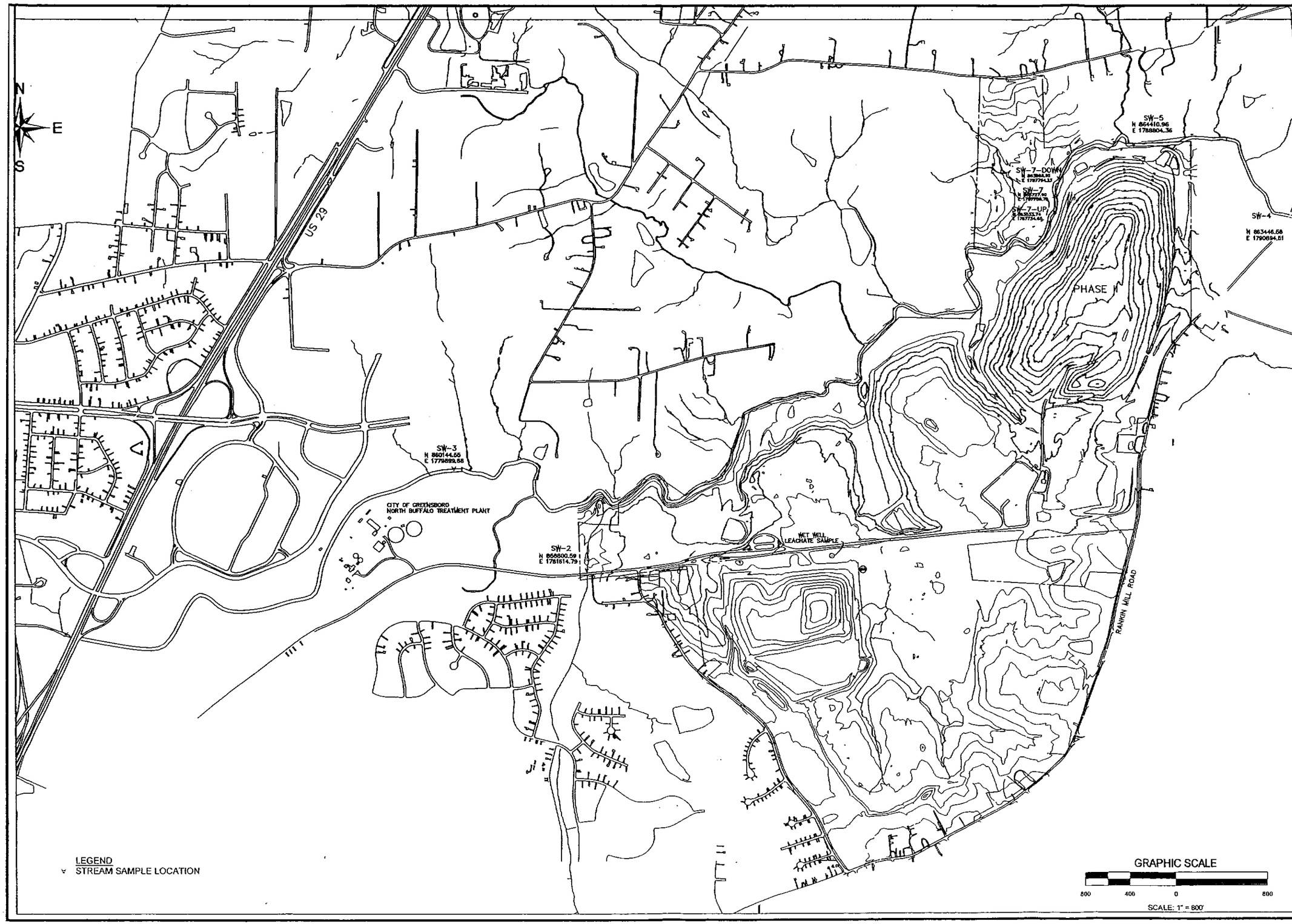


PHASE I and II GROUNDWATER SAMPLING PLAN

WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA

SCALE: AS SHOWN	DRAWN BY: DSB/RDM	CHECKED BY: CDW	
JOB NO. 1584-98-081	DATE: DECEMBER 2007	FIGURE NO. 1	

S&ME
ENVIRONMENTAL SERVICES
ENGINEERING · TESTING



PHASE I and II
SURFACE WATER SAMPLING LOCATIONS
WHITE STREET LANDFILL
GREENSBORO, NORTH CAROLINA

SCALE: AS SHOWN	DRAWN BY: DSB/RDM	CHECKED BY: LE	
JOB NO. 1584-98-081	DATE: DECEMBER 2007	FIGURE NO. 2	

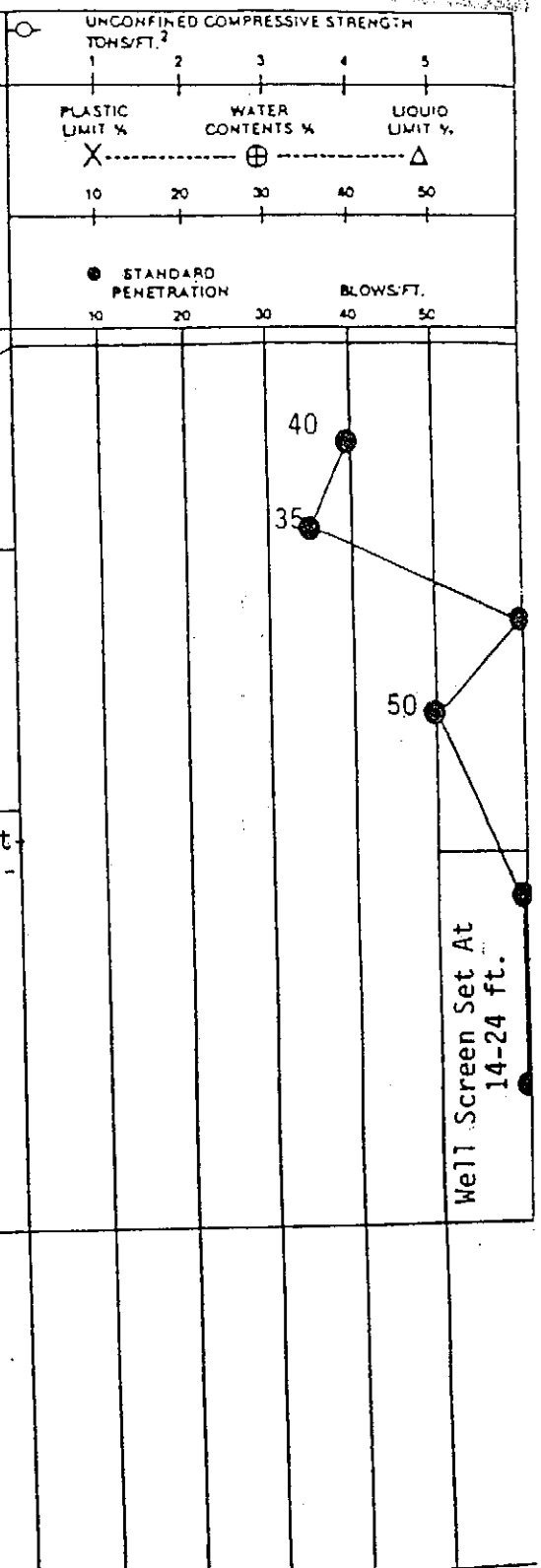
S&ME
ENVIRONMENTAL SERVICES
ENGINEERING · TESTING

APPENDIX III

Soil Boring Logs and Well Construction Records

OWNER	BORING NUMBER
City of Greensboro	B-1
PROJECT NAME: Greensboro Landfill	ARCHITECT-ENGINEER
SITE LOCATION: Greensboro, NC	JOB. NO. 88-387-E

DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH FROM-TO	DESCRIPTION OF MATERIAL / SURFACE ELEVATION
				6" Topsoil
	1	ss	2.5 4.0	SILTY SAND, tan, white, stiff, (SM-ML). NOTE: Residual Soil/Saprolite.
5	2	ss	5.0 6.5	
	3	ss	7.5 9.0	SILTY SAND, tan, white, v/stiff, (SM-ML). NOTE: Saprolite/weathered rock, coarse to fine grained sand.
10	4	ss	10.0 11.5	
15	5	ss	15.0 16.5	V/hard. NOTE: Weathered rock consisting predominately of sand to gravel-size frags. consisting of quartz feldspar and mica, obvious parent rock of above soils.
20	6	ss	20.0 21.5	
25				Auger Refusal at 24.0'
30				



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES: IN-STU. THE TRANSITION MAY BE GRADUAL

WATER TABLE DATA — DEPTH BELOW SURFACE	BORING STARTED 5-9-89	BORING COMPLETED 5-9-89	
8.0 (BAR) ● 0 HRS. ● HRS.	RIG B-50 FOREMAN R. Barron	APP'D BY ABN	AUGER 6" HSA

ENGINEERING TECTONICS, P. A.

N. C. Department of Human Resources
Division of Health Services

WELL COMPLETION RECORD

ETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C. PARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH, . BOX 2091, RALEIGH, N.C. 27602

AE OF SITE: Greensboro Landfill	PERMIT NO.: Well No. 1
DRESS: Off White Street in Greensboro, NC	OWNER (print): City Of Greensboro
ILLING CONTRACTOR: Engineering Tectonics, P.A.	REGISTRATION NO.: 835

ng Type: Sch 40 PVC dia. 2 in.
ng Depth: from 0 to 14 ft. - dia. 2 in.
en Type: PVC .010 Slot dia. 2 in.
en Depth: from 14 to 24 ft. - dia. 2 in.

Grout Depth: from 0 to 11 ft. - dia. 6 in.
Bentonite Seal: from 11 to 12 ft. - dia. 6 in.
Sand/Gravel PK: from 12 to 24 ft. - dia. 6 in.
Total Well Depth: from 0 to 24 ft. - dia. 6 in.

c Water Level: _____ feet from top of casing — Date Measured ___ / ___ / ___

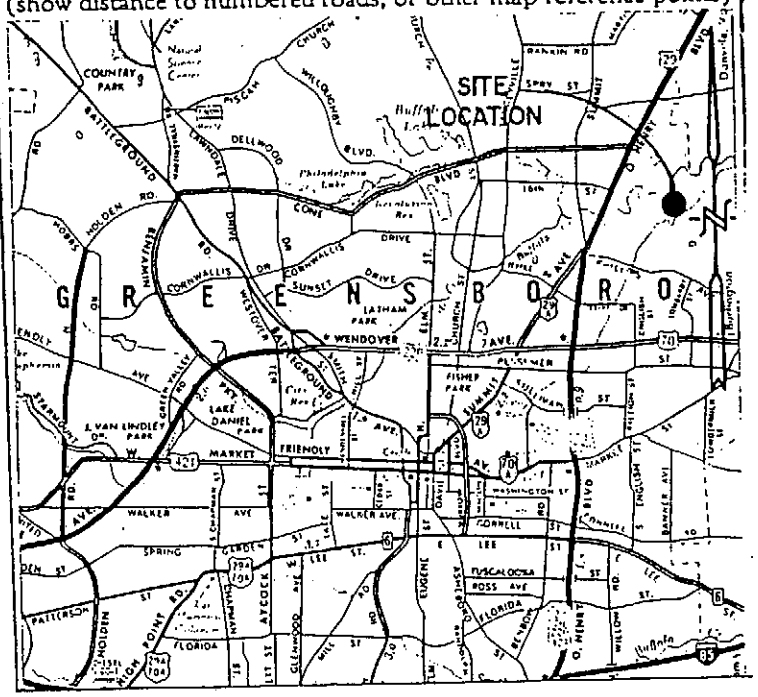
d (gpm): _____ Method of Testing: _____ Casing is _____ feet above land surface

DRILLING LOG

DEPTH M	TO	FORMATION DESCRIPTION
		See Attached Boring Log

LOCATION SKETCH

(show distance to numbered roads, or other map reference points)



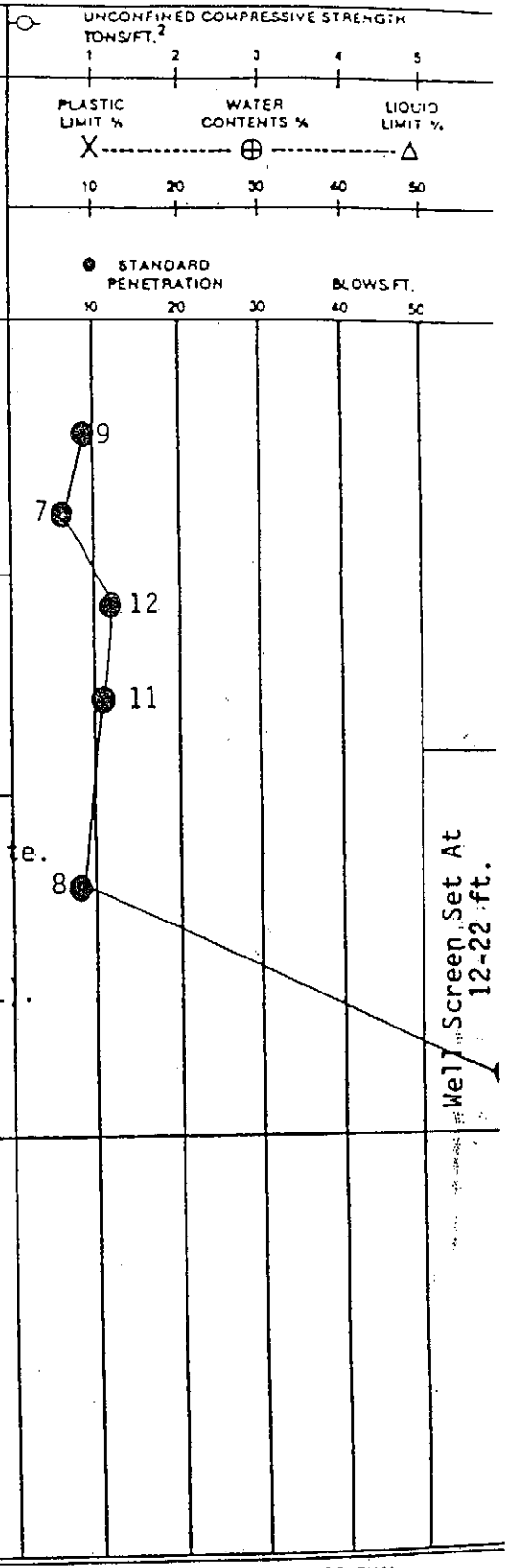
EMARKS: _____

ATE: 7-14-89 SIGNATURE: _____

Sheet 1 of 1

OWNER	BORING NUMBER
City of Greensboro	B-2
PROJECT NAME: Greensboro Landfill	ARCHITECT-ENGINEER
SITE LOCATION: Greensboro, NC	JOB. NO. 88-387-E

DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH FROM-TO	DESCRIPTION OF MATERIAL (SURFACE ELEVATION)
	1	ss	2.5 4.0	CLAYEY SILT, w/little gravel, brown, black, gray, red, soft, (ML-CL). NOTE: Residual soil with abundant organics (roots, stems, grass, etc.)
5	2	ss	5.0 6.5	
	3	ss	7.5 9.0	CLAY, w/little sand, gray, tan, firm, (CL-CH). NOTE: Residual Soil/ Saprolite.
10	4	ss	10.0 11.5	
				SANDY CALY, gray, red, tan, soft, (CL-CH). NOTE: Residual Soil/Saprolite.
15	5	ss	15.0 16.5	
				SANDY SILT, green, gray, v/hard, (ML). NOTE: Residual Soil/Saprolite.
20	6	ss	20.0 21.5	
				Auger Refusal at 22'.
25				
30				



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES. IN-STU. THE TRANSITION MAY BE GRADUAL

WATER TABLE DATA — DEPTH BELOW SURFACE	BORING STARTED	BORING COMPLETED
16.0' (BAR) @ 0 HRS.	5-11-89	5-11-89
@ HRS.	RIG B-50 / FOREMAN R. Barron	APP'D BY ABN / AUGER 6" HSA

ENGINEERING TECTONICS, P. A.

N. C. Department of Human Resources
Division of Health Services

WELL COMPLETION RECORD

ETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C. ARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH, BOX 2091, RALEIGH, N.C. 27602

ME OF SITE: Greensboro Landfill

PERMIT NO.: Well No. 2

DRESS: Off White Street in Greensboro, NC

OWNER (print): City Of Greensboro

LLING CONTRACTOR: Engineering Tectonics, P.A.

REGISTRATION NO.: 835

ng Type:	SCH 40 PVC	dia.	2	in.	Grout Depth:	from	0	to	9	ft. - dia.	6 in.
ng Depth:	from 0	to	12	ft. - dia.	2 in.	Bentonite Seal:	from	9	to	10	ft. - dia. 6 in.
en Type:	PVC .010 slot	dia.	2	in.	Sand/Gravel PK:	from	10	to	22	ft. - dia.	6 in.
en Depth:	from 12	to	22	ft. - dia.	in.	Total Well Depth:	from	0	to	22	ft. - dia. 6 in.

c Water Level: _____ feet from top of casing Date Measured ___/___/___

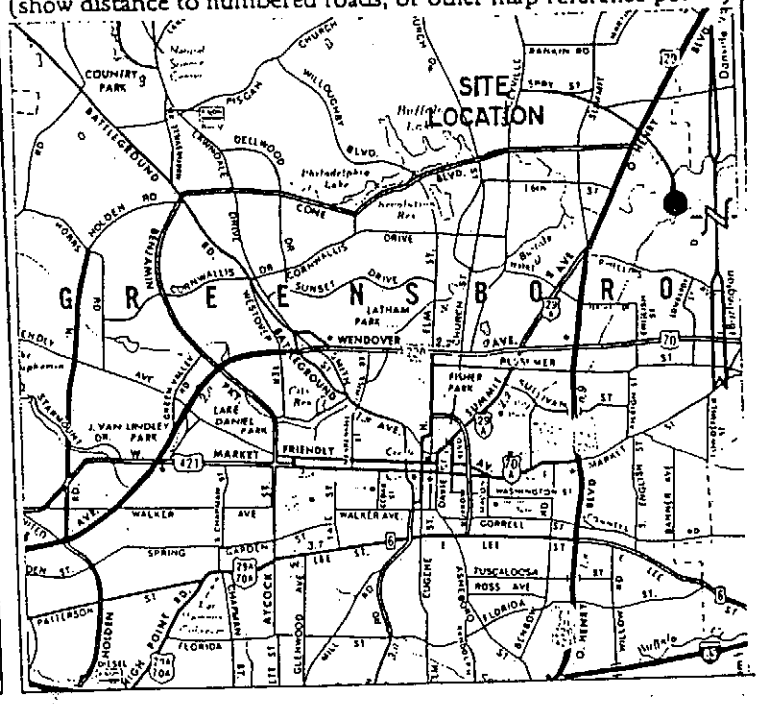
d (gpm): _____ Method of Testing: _____ Casing is _____ feet above land surface

DRILLING LOG

DEPTH FROM	TO	FORMATION DESCRIPTION
		See Attached Boring Log

LOCATION SKETCH

(show distance to numbered roads, or other map reference points)



EMARKS: _____

ATE: 7-14-89 SIGNATURE: _____

Sheet 1 of 1

OWNER: City of Greensboro	BORING NUMBER: B-4
PROJECT NAME: Greensboro Landfill	ARCHITECT-ENGINEER:
SITE LOCATION: Greensboro, NC	JOB. NO.: 88-387-E

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} (1, 2, 3, 4, 5)

PLASTIC LIMIT % X ---------- WATER CONTENTS % ⊕ ---------- LIQUID LIMIT % Δ (10, 20, 30, 40, 50)

● STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50)

DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH FROM-TO	DESCRIPTION OF MATERIAL (SURFACE ELEVATION)	STANDARD PENETRATION BLOWS/FT.
				SANDY CLAY, brown, black, soft, (CL). NOTE: Alluvial/fill?	
	1	ss	2.5 4.0		7
5	2	ss	5.0 6.5	SILTY CLAY, brown, gray, tan, soft, (CL). NOTE: Alluvial/fill?	4
	3	ss	7.5 9.0	SILTY SAND, gray, red, soft, (SM). NOTE: Residual Soil/Saprolite, fine-grained well sorted sand.	4
10	4	ss	10.0 11.5	GRAVELLY SAND, black, tan, white, (SP). NOTE: Saprolite/weathered rock consisting of quartz, feldspar, mica and mafic mineral, abundant sand to gravel size rock frags.	
15	5	ss	15.0 16.5	CLAYEY GRAVELLY SILT, brown, gray, tan, v/hard, (SC). NOTE: Saprolite/weathered rock with abundant sand to gravel size rock frags.	
				Boring Terminated at 16.0'.	
20					
25					
30					

Well Screen Set At 6-16 ft.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES: IN-STU. THE TRANSITION MAY BE GRADUAL

WATER TABLE DATA — DEPTH BELOW SURFACE: 6.0' (BAR) @ 0 HRS. @ ____ HRS.	BORING STARTED		BORING COMPLETED
	RIG B-50	FOREMAN R. Barron	APP'D BY ABN	AUGER 6" HSA

ENGINEERING TECTONICS, P. A.

N. C. Department of Human Resources
Division of Health Services

WELL COMPLETION RECORD

.TE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C. ARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH,). BOX 2091, RALEIGH, N.C. 27602

ME OF SITE: Greensboro Landfill

PERMIT NO.: Well No. 4

)RESS: Off White Street in Greensboro, NC

OWNER (print): City Of Greensboro

LLING CONTRACTOR: Engineering Tectonics, P.A.

REGISTRATION NO.: 835

ıg Type:	SCH 40 PVC dia. 2 in.	Grout Depth:	from 0 to 3 ft. - dia. 6 in.
ıg Depth:	from 0 to 6 ft. - dia. 2 in.	Bentonite Seal:	from 3 to 4 ft. - dia. 6 in.
en Type:	PVC .010 Slot dia. 2 in.	Sand/Gravel PK:	from 4 to 16 ft. - dia. 6 in.
:n Depth:	from 6 to 16 ft. - dia. 2 in.	Total Well Depth:	from 0 to 16 ft. - dia. 6 in.

ıc Water Level: _____ feet from top of casing Date Measured ___ /___ /___

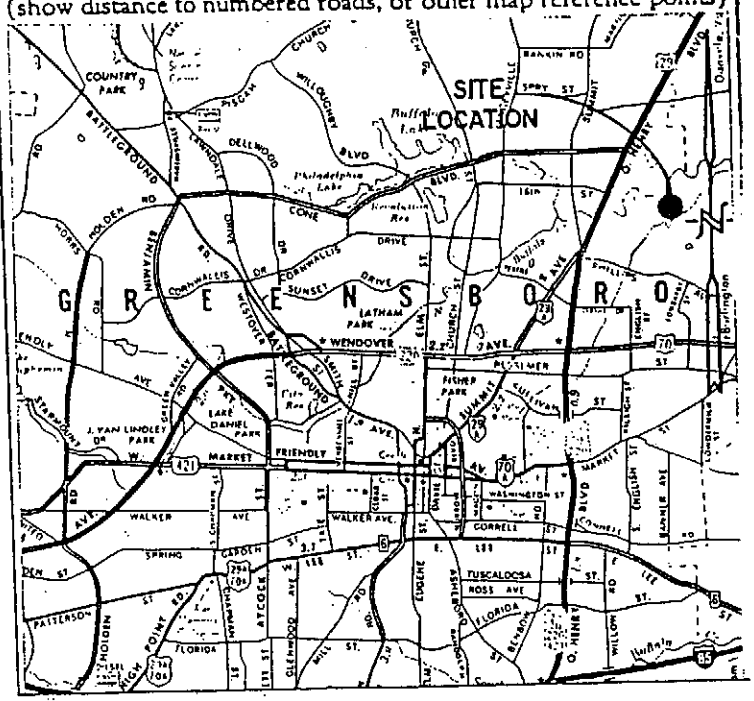
l (gpm): _____ Method of Testing: _____ Casing is _____ feet above land surface

DRILLING LOG

DEPTH (	TO	FORMATION DESCRIPTION
See Attached Boring Log		

LOCATION SKETCH

(show distance to numbered roads, or other map reference points)



:MARKS: _____

ATE: 7-14-89 SIGNATURE: _____

ES 1367 (6-85)

Sheet ___ of ___

OWNER: City of Greensboro	BORING NUMBER: B-5A
PROJECT NAME: Greensboro Landfill	ARCHITECT-ENGINEER:
SITE LOCATION: Greensboro, NC	JOB. NO.: 88-387-E

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2} (1, 2, 3, 4, 5)

PLASTIC LIMIT % X — WATER CONTENTS % ⊕ — LIQUID LIMIT % Δ (10, 20, 30, 40, 50)

● STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50)

DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH FROM-TO	DESCRIPTION OF MATERIAL / SURFACE ELEVATION	STANDARD PENETRATION BLOWS/FT.
	1	ss	2.5 4.0	SANDY SILT, w/little gravel, gray, tan, stiff to v/stiff, (ML-SM). NOTE Residual Soil/Saprolite, samples wet below 7.0'.	42
5	2	ss	5.0 6.5		45
	3	ss	7.5 9.0		
10	4	ss	10.0 11.5		
15	5	ss	15.0 16.5	GRAVELLY SAND, black, gray, tan, white, v/stiff, (SP). NOTE: Saprolite/ Weathered rock.	
20	6	ss	20.0 21.5	CLAYEY SAND, brown, tan, white, v/stiff, (CL-SC). NOTE: Saprolite/ Weathered rock.	50
25				Auger Refusal at 24.0'.	
30					

Well Screen Set At 14-24 ft.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES: IN-STU. THE TRANSITION MAY BE GRADUAL

WATER TABLE DATA — DEPTH BELOW SURFACE: 22' (BAR) @ 0 HRS. ___ @ ___ HRS.	BORING STARTED: 6-14-89	BORING COMPLETED: 6-14-89	
	RIG: B-50	FOREMAN: R. Barron	APP'D BY: ABN	AUGER: 6" HSA

ENGINEERING TECTONICS, P. A.

N. C. Department of Human Resources
Division of Health Services

WELL COMPLETION RECORD

.ETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C. PARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH,). BOX 2091, RALEIGH, N.C. 27602

ME OF SITE: Greensboro Landfill

PERMIT NO.: Well No. 5

DRESS: Off White Street in Greensboro, NC

OWNER (print): City Of Greensboro

ILLING CONTRACTOR: Engineering Tectonics, P.A.

REGISTRATION NO.: 835

ng Type:	Sch 40 PVC	dia.	2 in.	Grout Depth:	from	0	to	11	ft. - dia.	6	in.
ng Depth:	from 0	to 14	ft. - dia.	2 in.	Bentonite Seal:	from	11	to	12	ft. - dia.	6 in.
en Type:	PVC .010 Slot	dia.	2 in.	Sand/Gravel PK:	from	12	to	24	ft. - dia.	6 in.	
en Depth:	from 14	to 24	ft. - dia.	2 in.	Total Well Depth:	from	0	to	24	ft. - dia.	6 in.

ic Water Level: _____ feet from top of casing Date Measured ___/___/___

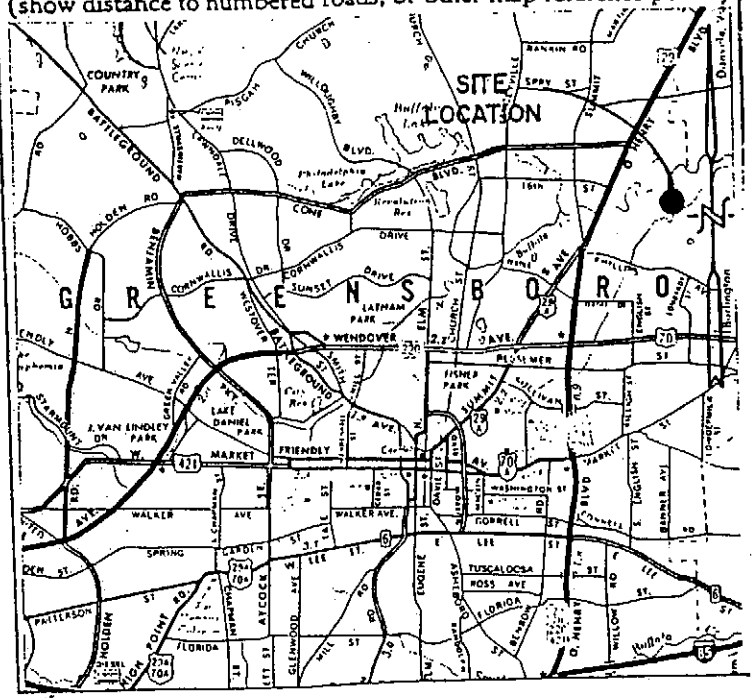
d (gpm): _____ Method of Testing: _____ Casing is _____ feet above land surface

DRILLING LOG

DEPTH FROM	TO	FORMATION DESCRIPTION
		See Attached Boring Log

LOCATION SKETCH

(show distance to numbered roads, or other map reference points)



EMARKS: _____

ATE: 7-14-89 SIGNATURE: _____

Sheet 1 of 1

OWNER: City of Greensboro	BORING NUMBER: B-7
PROJECT NAME: Greensboro Landfill	ARCHITECT-ENGINEER:
SITE LOCATION: Greensboro, NC	JOB. NO.: 88-387-E

DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH FROM-TO	DESCRIPTION OF MATERIAL (SURFACE ELEVATION)	STANDARD PENETRATION BLOWS/FT.
	1	ss	2.5 4.0	SILT, w/little clay, reddish-brown, firm, (ML). NOTE: Trace organics (fine roots) with an occasional gravel size rock frag., fill.	17
5	2	ss	5.0 6.5		14
	3	ss	7.5 9.0		9
10	4	ss	10.0 11.5		15
15	5	ss	15.0 16.5	SILTY CLAY, w/trace sand, gray, tan, soft to firm, (CL-ML). NOTE: Residual Soil/Alluvial?	7
20	6	ss	20.0 21.5		10
25	7	ss	25.0 26.5	SANDY SILT, w/little gravel, gray, v/stiff to v/hard, (ML-SM). NOTE: Saprolite/weathered rock with granitic and quartz gravel size rock fragments.	56
30	8	ss	30.0 31.5	Boring Terminated at 30'.	

Well Screen Set At 20-30 ft.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES: IN-STU. THE TRANSITION MAY BE GRADUAL

WATER TABLE DATA — DEPTH BELOW SURFACE	BORING STARTED	BORING COMPLETED
-- @ 0 HRS.	6-13-89	6-13-89
18.34' @ Below TOC HRS. 7-12-89	RIG B-50 / FOREMAN R. Barron	APP'D BY ABN / AUGER 6" HSA

ENGINEERING TECTONICS, P. A.

N. C. Department of Human Resources
Division of Health Services

WELL COMPLETION RECORD

.ETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, A[illegible] FORM TO THE N.C. PARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE [illegible] NT BRANCH,). BOX 2091, RALEIGH, N.C. 27602

ME OF SITE: Greensboro Landfill	PERMIT NO.: Well No. 7
DRESS: Off White Street in Greensboro, NC	OWNER (print): City Of Greensboro
ILLING CONTRACTOR: Engineering Tectonics, P.A.	REGISTRATION NO.: 835

ing Type:	Sch 40 PVC dia. 2 in.	Grout Depth:	from 0 to 17 ft. - dia. 6 in.
ing Depth:	from 0 to 20 ft. - dia. 2 in.	Bentonite Seal:	from 17 to 18 ft. - dia. 6 in.
:en Type:	PVC .010 Slot dia. 2 in.	Sand/Gravel PK:	from 18 to 30 ft. - dia. 6 in.
:en Depth:	from 20 to 30 ft. - dia. 2 in.	Total Well Depth:	from 0 to 30 ft. - dia. 6 in.

ic Water Level: 18.34 feet from top of casing — Date Measured 7 / 12 / 89

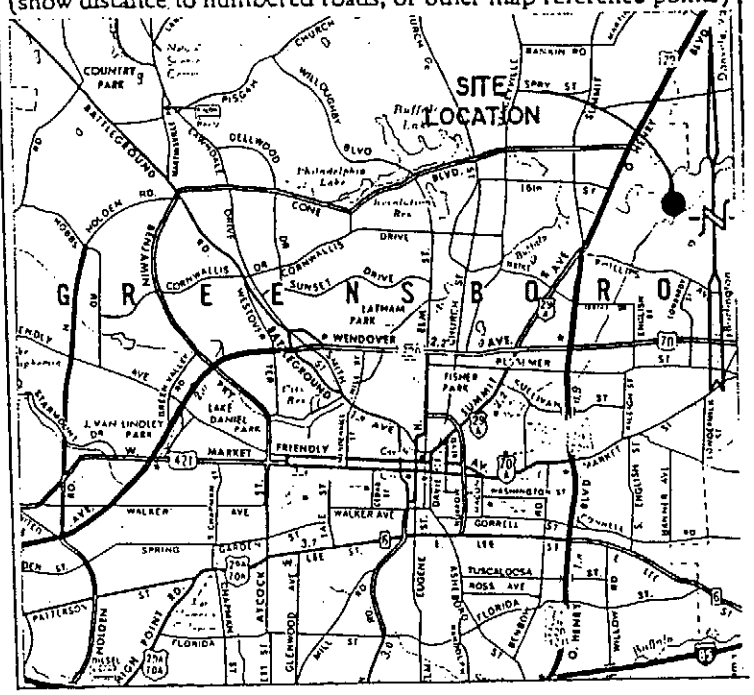
d (gpm): low — Method of Testing: Bail — Casing is 3.83 feet above land surface

DRILLING LOG

DEPTH M	TO	FORMATION DESCRIPTION
		See Attached Boring Log

LOCATION SKETCH

(show distance to numbered roads, or other map reference points)



EMARKS:

ATE: 7-14-89 SIGNATURE:

95 1347 (6-85)

Sheet 1 of 1

OWNER: City of Greensboro	BORING NUMBER: B-8
PROJECT NAME: Greensboro Landfill	ARCHITECT-ENGINEER:
SITE LOCATION: Greensboro, NC	JOB. NO.: 88-387-E

II-3

DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH FROM-TO	DESCRIPTION OF MATERIAL SURFACE ELEVATION	STANDARD PENETRATION BLOWS/FT.
				1.0 ft Topsoil.	
	1	ss	2.5 4.0	CLAYEY SILT, w/little sand, brown, black, gray, tan, white, mottled, soft to firm, (ML). NOTE: Residual Soil/fill? Occasional gravel size quartz frags.	10
5	2	ss	5.0 6.5	CLAYEY SILT, w/trace sand, brown, gray, tan, mottled, hard, (ML-CL). NOTE: Residual Soil/Fill? Large >1.0" mafic rock frag., abundant wood (large root frags.) Trace	
	3	ss	7.5 9.0	CLAY, w/little sand, gray, yellow, tan, firm, (CH). NOTE: Fill/Alluvial abundant organics, (wood/roots)	15
10	4	ss	10.0 11.5	CLAYEY SILT, w/little sand, reddish brown, firm, (ML). NOTE: Fill/Alluvial, trace organics (roots).	12
15	5	ss	15.0 16.5	SANDY GRAVELLY SILT, w/little clay, brown, black, gray, tan, white, mottled, firm, (ML). NOTE: Residual Soil/Saprolite with abundant angular quartz rock fragments.	18
20	6	ss	20.0 21.5	SILT, w/little clay, sand, brown, gray, tan, stiff to v/hard, (ML). NOTE: Residual Soil/Saprolite, trace Sand.	43
25	7	ss	25.0 26.5		31
30	8	ss	30.0 31.5	Boring Terminated at 30'.	

Well Screen Set At 20-30 ft.

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.^{2}: 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENTS % — LIQUID LIMIT %: 10 20 30 40 50

STANDARD PENETRATION BLOWS/FT.: 10 20 30 40 50

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES. IN-STU. THE TRANSITION MAY BE GRADUAL

WATER TABLE DATA — DEPTH BELOW SURFACE: 30' (BAR) @ 0 HRS.; 16.63' @ Below TOC HRS. 7-12-89	BORING STARTED 6-12-89	BORING COMPLETED 6-12-89	
	RIG B-50	FOREMAN R. Barron	APP'D BY ABN	AUGER 6" HSA

ENGINEERING TECTONICS, P. A.

N.C. Department of Human Resources
Division of Health Services

WELL COMPLETION RECORD

TE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C. ARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH, . BOX 2091, RALEIGH, N.C. 27602

ME OF SITE: Greensboro Landfill

PERMIT NO.: Well No. 8

RESS: Off White Street in Greensboro, NC

OWNER (print): City Of Greensboro

LING CONTRACTOR: Engineering Tectonics, P.A.

REGISTRATION NO.: 835

g Type: Sch 40 PVC dia. 2 in.
g Depth: from 0 to 20 ft. - dia. 2 in.
en Type: PVC .010 Slot dia. 2 in.
n Depth: from 20 to 30 ft. - dia. 2 in.

Grout Depth: from 0 to 17 ft. - dia. 6 in.
Bentonite Seal: from 17 to 18 ft. - dia. 6 in.
Sand/Gravel PK: from 18 to 30 ft. - dia. 6 in.
Total Well Depth: from 0 to 30 ft. - dia. 6 in.

Date Measured 7 / 12 / 89

Water Level: 16.63 feet from top of casing

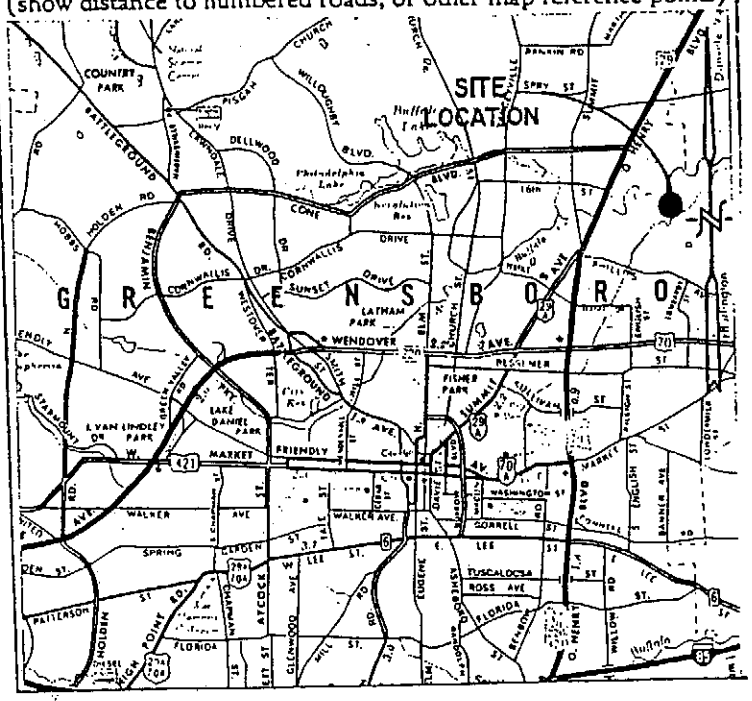
(gpm): flow Method of Testing: Bail Casing is 3.13 feet above land surface

DRILLING LOG

DEPTH TO	FORMATION DESCRIPTION
	See Attached Boring Log

LOCATION SKETCH

(show distance to numbered roads, or other map reference points)

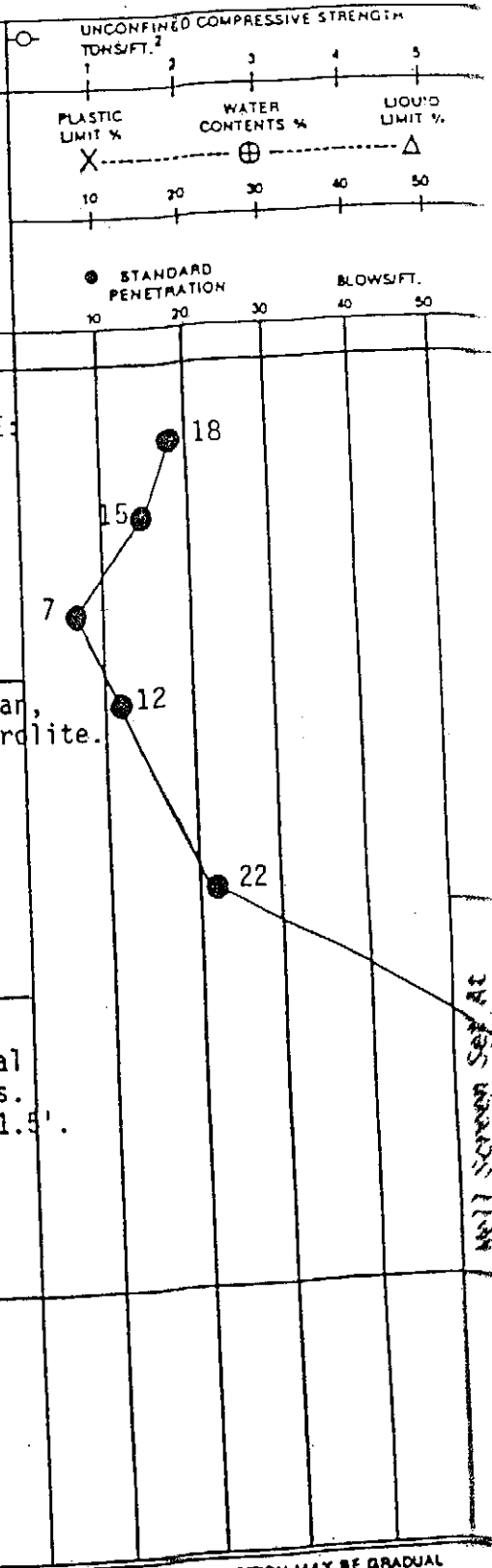


SIGNATURE:

Sheet 1 of 1

OWNER: City of Greensboro	BORING NUMBER: B-9
PROJECT NAME: Greensboro Landfill	ARCHITECT-ENGINEER:
SITE LOCATION: Greensboro, NC	JOB. NO.: 88-387-E

DEPTH IN FEET	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH FROM-TO	DESCRIPTION OF MATERIAL (SURFACE ELEVATION)
				1.0' Topsoil.
	1	ss	2.5 4.0	CLAYEY SILT, w/little sand, gray, tan, white, soft to firm, (ML). NOTE: Residual Soil/Saprolite.
5	2	ss	5.0 6.5	
	3	ss	7.5 9.0	
10	4	ss	10.0 11.5	SILT, w/little clay, brown, gray, tan, firm, (ML). NOTE: Residual Soil/Saprolite.
15	5	ss	15.0 16.5	
20	6	ss	20.0 21.5	CLAYEY GRAVELLY SILT, gray, tan, hard to v/hard, (ML). NOTE: Residual Soil/Saprolite, abundant rock frags. (40%), no sample recovered below 21.5'.
25	7	ss	25.0 26.5	
30	8	ss	30.0 31.5	Auger Refusal at 26.0'.



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES: IN-STU. THE TRANSITION MAY BE GRADUAL

WATER TABLE DATA — DEPTH BELOW SURFACE: Dry (BAR) @ 0 HRS.; 13.16' @ Below TOC HRS. 7-12-89	BORING STARTED 6-12-89	BORING COMPLETED 6-12-89	
	RIG B-50	FOREMAN R. Barron	APP'D BY ABN	AUGER 6"

ENGINEERING TECTONICS, P. A.

N. C. Department of Human Resources
Division of Health Services

WELL COMPLETION RECORD

ETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C. ARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH, . BOX 2091, RALEIGH, N.C. 27602

ME OF SITE: Greensboro Landfill	PERMIT NO.: Well No. 9
RESS: Off White Street in Greensboro, NC	OWNER (print): City Of Greensboro
LING CONTRACTOR: Engineering Tectonics, P.A.	REGISTRATION NO.: 835

g Type:	SCH 40 PVC dia. 2 in.	Grout Depth:	from 0 to 13 ft. - dia. 6 in.
g Depth:	from 0 to 16 ft. - dia. 2 in.	Bentonite Seal:	from 13 to 14 ft. - dia. 6 in.
en Type:	PVC .010 Slot dia. 2 in.	Sand/Gravel PK:	from 14 to 26 ft. - dia. 6 in.
n Depth:	from 16 to 26 ft. - dia. 2 in.	Total Well Depth:	from 0 to 26 ft. - dia. 6 in.

Water Level: 13.16 feet from top of casing — Date Measured 7 / 12 / 89

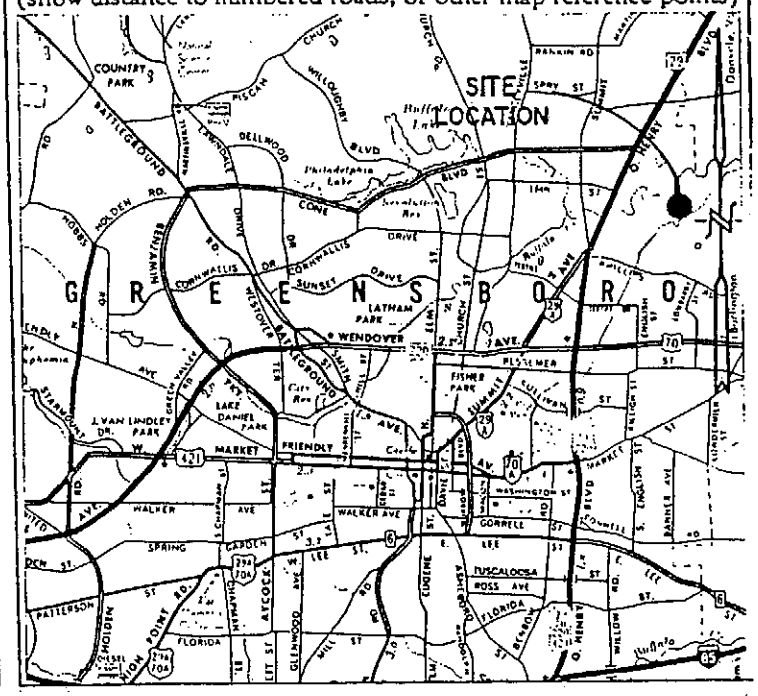
d (gpm): Low — Method of Testing: Bail — Casing is 3.42 feet above land surface

DRILLING LOG

DEPTH FROM	TO	FORMATION DESCRIPTION
		See Attached Boring Log

LOCATION SKETCH

(show distance to numbered roads, or other map reference points)



MARKS:

ATE: 7-14-89 SIGNATURE:

342 (6-85)

MW-II-6

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT-GROUNDWATER SECTION
P.O. BOX 27687-RALEIGH, NC 27611 PHONE (919) 733-5083

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY
Quad No. _____ Serial No. _____
Lat. _____ Long. _____ Pc ____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

DRILLING CONTRACTOR: BADGER DRILLING

DRILLER REGISTRATION NUMBER: 1486

STATE WELL CONSTRUCTION PERMIT NUMBER:

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: GREENSBORO NC
(Road, Community, or Subdivion and Lot No.)
County:

2. OWNER:
ADDRESS:
Street or Route No. City or Town State Zip Code

3. DATE DRILLED: 9-12-94 USE OF WELL: MONITORING

4. TOTAL DEPTH: 17.0 CUTTINGS COLLECTED: ✓ Yes _ No

5. DOES WELL REPLACE EXITING WELL? _ Yes ✓ No

6. STATIC WATER LEVEL: ____ FT. Above Below TOP OF CASING,
TOP OF CASING IS: 2.5 FT. ABOVE LAND SURFACE.

7. YIELD (gpm): N/A METHOD OF TEST: AIR

8. WATER ZONES (depth): N/A

9. CHLORINATION: Type N/A Amount

10. CASING:

	Depth From	Depth To	Diameter	Wall Thickness or Weight/Ft.	Material
	2.5 AG	4.5	2"	SCH 40	PVC

11. GROUT:

	Depth From	Depth To	Material	Method
	0.0	3.0	PORTLAND BENTONITE	

12. SCREEN:

	Depth From	Depth To	Diameter	Slot Size	Material
	4.5	17.0	2"	.010	PVC

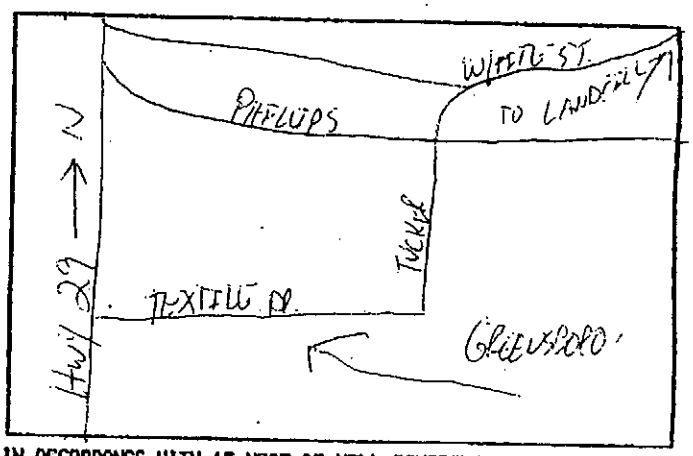
13. GRAVEL PACK:

	Depth From	Depth To	Size	Material
	3.0	17.0	#2	

14. REMARKS: REMOVED SCH 1.0' TO 3.0'

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points).



I DO HEREBY CERIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT: [signature] DATE: 9-12-94

Submit original to Division of Environmental Management and copy to well owner.

MONITORING WELL INSTALLATION DIAGRAM

PEIZOMETER NO.: MW-II-6
BORING NO.: B-II-6
JOB NO.: 6770-00 -018
PREPARED BY: C. LEE
CHECKED BY: C. LEE
DATE:

DEPTH BELOW GROUND SURFACE

PROTECTIVE PIPE HEIGHT _____ FT

STICKUP _____ FT

_____ FT

0

EL. ____ FT. TOP OF GROUND SURFACE

GROUT MIX/THICKNESS:
PORTLAND CEMENT/BENETONITE

PROTECTIVE METAL CASING

BENTONITE SEALS:
3/4 BAG OF BENTONITE CHIPS

RISER PIPE: SCHEDULE 40
ASTM DESIGNATION: _____
ID: 2" OD: _____
COUPLINGS: THREADED FT
PIPE IN 5, 2.5 FT. LENGTHS
PIPE 2- 2.5 FT
PIPE 1-5 FT
SCREEN 12.5 (10+2.5') IN

TOTAL: 20.0 FT

IMPERVIOUS ZONE:
3.0 FT THICK

1.5 FT

3.0 FT

4.5 FT

THICKNESS OF BENTONITE SEAL 1.5 FT

LENGTH OF SCREEN 12.5 FT

PERMEABLE ZONE:
15.0 FT THICK

SAND 15.0 FT

17.0 FT

18.0 FT

BOTTOM OF BORING

REMARKS: ALL MEASUREMENTS TO THE NEAREST 0.1 FT.

HDR

HDR Engineering, Inc.

PROJECT: WHITE STREET LANDFILL

PROJECT NO: 6770-0 -018

LOCATION: GREENSBORO, N.C.

BORING NUMBER: II-6 OFFSET 10' SOUTH

PAGE: 1

BORING LOG

DATE: 9/12/94

NUMBER	DEPTH	SPT	T	WL	SI	DESCRIPTION (USCS)	COMMENTS
	4'					RED ORANGE SL. SANDY CLAYEY SILT	
	8'						
	12'					GREEN-GREY SILT	AMPHIBOLITE WILL MOVE 10' SOUTH/TRY AGAIN
SS-3	16'	50/6"	SS			DK. GREEN/TAN SPECKLED, POORLY FOLIATED SL. SANDY SILT, BLACK STREAKS ON FRACTURES, HARD	
	20'					EOH @ 18.0'	
	24'						
	28'						
	32'						
	36'						
	40'						

BOREHOLE COMPLETION: 18.0' BELOW GROUND

WATER DEPTH: ~ 6.0'

DATE: 9/12/94

DRILLING METHOD: HOLLOW STEM AUGERS

LOGGED BY: HDR ENGINEERING, INC.

KEY:
SI - SCREEN
SS - SPLITSPOON
SPT - SOIL PENETRATION TEST-N NUMBER
ST - SHELBY TUBE
T - TYPE
WL - WATER LEVEL

HDR

PROJECT: WHITE STREET LANDFILL | PROJECT NO: 6770-0 -018

LOCATION: GREENSBORO, N.C. | BORING NUMBER: II-6 | PAGE: 1

BORING LOG

DATE: 9/12/94

NUMBER	DEPTH	SPT	T	WL	SI	DESCRIPTION (USCS)	COMMENTS
	4'					RED, BROWN LAMINATED CLAYEY SILT TO 5.5. THEN LT. GREEN GREY SILT. HARD FINELY LAMINATED	
SS-1		23-23 15-18	SS				
	8'					GREY GREEN, BROWN STREAKED FOLIATED SILT TO DK GREY V. FINE SILT W/WHITE STREAKS. PWR.	
SS-2		8-17 20-26	SS				AMPHIBOLITE
	12'					ROCK @ ~13'-0" AUGER REFUSAL	WILL MOVE 10' SOUTH/TRY AGAIN
	20'						
	24'						
	28'						
	32'						
	36'						
	40'						

BOREHOLE COMPLETION: 13.0' BELOW GROUND

WATER DEPTH: @ 2:30 WL @ 10.5' BELOW GRADE DATE: 9/12/94

DRILLING METHOD: HOLLOW STEM AUGERS

LOGGED BY: HDR ENGINEERING, INC.

KEY:
SI - SCREEN
SS - SPLITSPOON
SPT - SOIL PENETRATION TEST-N NUMBER
ST - SHELBY TUBE
T - TYPE
WL - WATER LEVEL

HDR

PROJECT: WHITE STREET LANDFILL | PROJECT NO: 6770-0 -018

LOCATION: GREENSBORO, N.C. | BORING NUMBER: II-7 | PAGE: 1

BORING LOG

DATE: 9/12/94

NUMBER	DEPTH	SPT	T	WL	SI	DESCRIPTION (USCS)	COMMENTS
	4'						
SS-1		3-3 4-4	SS			RED BROWN SILTY CLAY, W/BLACK WHITE AMPHIBOLITE PEBBLE IN TIP	
	8'						
SS-2	12'	5-5 7-8	SS			BROWN FINELY LAMINATED CLAYEY, SL. SANDY SILT TO GREEN-ORANGE SPOTTED CRUDELY FOL WEATHERED SILT	SCHIST./ AMPHIBOLITE
SS-3	16'	7-8 19-23	SS			DK GREEN/PALE TAN SPECKLED M-C S. SILT W/FEOX FRACTURES AT BASE, 1.0 GREEN/BROWN FINELY LAM. SILT AT TOP OF INTERVAL	SCHIST./ AMPHIBOLITE
SS-4	20'	13-13 26-22	SS			GREEN/BROWN EQRUIGRAN SL. SANDY SILT TO LAMINATED/FOLIATED PURPLISH BRN & GREEN SL. SANDY SILT TO GREEN/TAN EQUIGRAN SL. SANDY SILT	GETTING HARD ALT FOL. SCHIST AMPHIBOLITE
	24'						
						EOH @ 25.0'	
	28'						
	32'						
	36'						
	40'						

BOREHOLE COMPLETION: 25.0'

WATER DEPTH: ~ 12.0' | DATE: 9/12/94

DRILLING METHOD: HOLLOW STEM AUGERS

LOGGED BY: HDR ENGINEERING, INC.

KEY:
SI - SCREEN
SS - SPLITSPOON
SPT - SOIL PENETRATION TEST-N NUMBER
ST - SHELBY TUBE
T - TYPE
WL - WATER LEVEL

HDR

MONITORING WELL INSTALLATION DIAGRAM

PEIZOMETER NO.: MW-II-7
BORING NO.: II-7
JOB NO.: 8770-00 -018
PREPARED BY: C. LEE
CHECKED BY: C. LEE
DATE:

DEPTH BELOW GROUND SURFACE

PROTECTIVE PIPE HEIGHT _____ FT

STICKUP 2.5 FT

2.5 FT

0

EL. 95.7 FT. TOP OF GROUND SURFACE

GROUT MIX

PROTECTIVE METAL CASING

BENTONITE SEALS:

1 GAB BENTONITE CHIPS, 50 LBS

RISER PIPE: SCHEDULE 40
ASTM DESIGNATION:
ID: 2" OD:
COUPLINGS: THREADED FT
PIPE IN 10.5 FT. LENGTHS
PIPE 1-10 FT
PIPE 1-5 (CUT AT 2.5) FT
SCREEN 15 IN

TOTAL: 30 (27.5') FT

IMPERVIOUS ZONE: 7.7 FT THICK

5.0 FT

7.5 FT

10 FT

THICKNESS OF BENTONITE SEAL 2.5 FT

LENGTH OF SCREEN 15 FT

PERMEABLE ZONE: 17.5 FT THICK

SAND 17.5 FT

25 FT

25 FT

BOTTOM OF BORING

REMARKS: ALL MEASUREMENTS TO THE NEAREST 0.1 FT.

HDR

HDR Engineering, Inc.

PROJECT: WHITE STREET LANDFILL | PROJECT NO: 6770-0 -018

LOCATION: GREENSBORO, N.C. | BORING NUMBER: II-8 | PAGE: 1

BORING LOG

DATE: 9/13/94

NUMBER	DEPTH	SPT	T	WL	SI	DESCRIPTION (USCS)	COMMENTS
	4'						
SS-1		10-12 12-12	SS			FILL, BROWN, RED-ORANGE MOTTLED SILTY CLAY, WELL COMPACTED.	
	8'						
SS-2	12'	11-19 27-36	SS			FILL AS ABOVE TO 11.0, THEN REDDISH BRN, GREEN SPOTTED/STREAKED SILTY SAND, CHLORITE IN FRACTURES.	SCHIST./ AMPHIBOLITE
SS-3	16'	39-50 5"	SS			DK. BROWN, BLACK, RED BROWN, LT. GREY SPECKLED SL. SILTY SAND, HARD DRILLING	SCHIST./ AMPHIBOLITE
SS-4	20'	50/6"	SS			AS ABOVE. STILL CUTABLE	GETTING HARD ALT FOL. SCHIST AMPHIBOLITE
	24'						
SS-5		30-50 4"	SS			BLACK, BROWN, LT. GREY SPECKLED EQUIGRANULAR C. GR. SAND, SOFTER DRILLING AFTER WET SOIL - 27.0'	
	28'						
SS-6	32'	45-50 4"	SS			AS ABOVE, WEATHERED BROWN IN TIP.	
	36'					EOH @ 32.5'	
	40'						

BOREHOLE COMPLETION: 32.5'

WATER DEPTH: ~ 12.0' | DATE: 9/13/94

DRILLING METHOD: HOLLOW STEM AUGERS

LOGGED BY: HDR ENGINEERING, INC.

KEY:
SI - SCREEN
SS - SPLITSPOON
SPT - SOIL PENETRATION TEST-N NUMBER
ST - SHELBY TUBE
T - TYPE
WL - WATER LEVEL

HDR

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT-GROUNDWATER SECTION
P.O. BOX 27687-RALEIGH, NC 27611 PHONE (919) 733-5083

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY
Quad No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

DRILLING CONTRACTOR: BADGER DRILLING
DRILLER REGISTRATION NUMBER: 1486
STATE WELL CONSTRUCTION PERMIT NUMBER:

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: GREENSBORO N.C.
(Road, Community, or Subdivion and Lot No.)
County:

2. OWNER:
ADDRESS: WHITE ST LANDFILL
Street or Route No. City or Town State Zip Code

3. DATE DRILLED: 9-13 USE OF WELL: MONITORING

4. TOTAL DEPTH: 32.0 CUTTINGS COLLECTED: ✓ Yes _ No

5. DOES WELL REPLACE EXITING WELL? _ Yes ✓ No

6. STATIC WATER LEVEL: _____ FT. Above Below TOP OF CASING,
TOP OF CASING IS: _____ FT. ABOVE LAND SURFACE.

7. YIELD (gpm): NA METHOD OF TEST: AIR

8. WATER ZONES (depth): NA

9. CHLORINATION: Type NA Amount _____

Depth From	Depth To	Drilling Log Formation Description

10. CASING:

From	To	Diameter	Wall Thickness or Weight/Ft.	Material
2.5 AGL	17.0 ft.	2"	SCH 40	PVC

If additional space is needed use back of form.

11. GROUT:

From	To	Material	Method
0.0	13.0 ft.	PORTLAND BENTONITE	SLURRY

12. SCREEN:

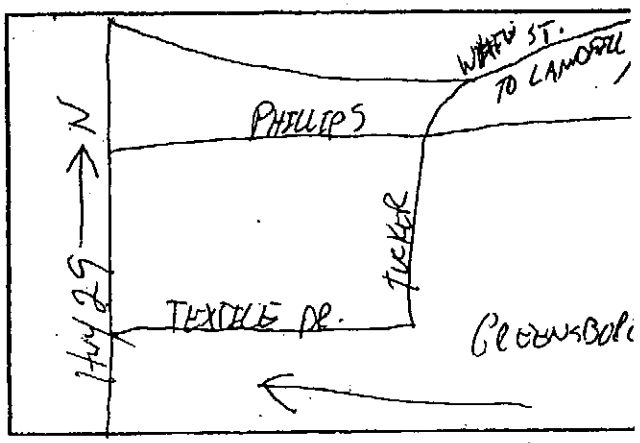
From	To	Diameter	Slot Size	Material
17.0	32.0 ft.	2" in.	.010 in.	PVC
		in.	in.	
		in.	in.	

13. GRAVEL PACK:

From	To	Size	Material
15.0	32.0 ft.	#2	

14. REMARKS: BENTONITE SEAL 13.0'-15.0'

LOCATION SKETCH
(Show direction and distance from at least two State Ro
or other map reference points).



I DO HEREBY CERIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

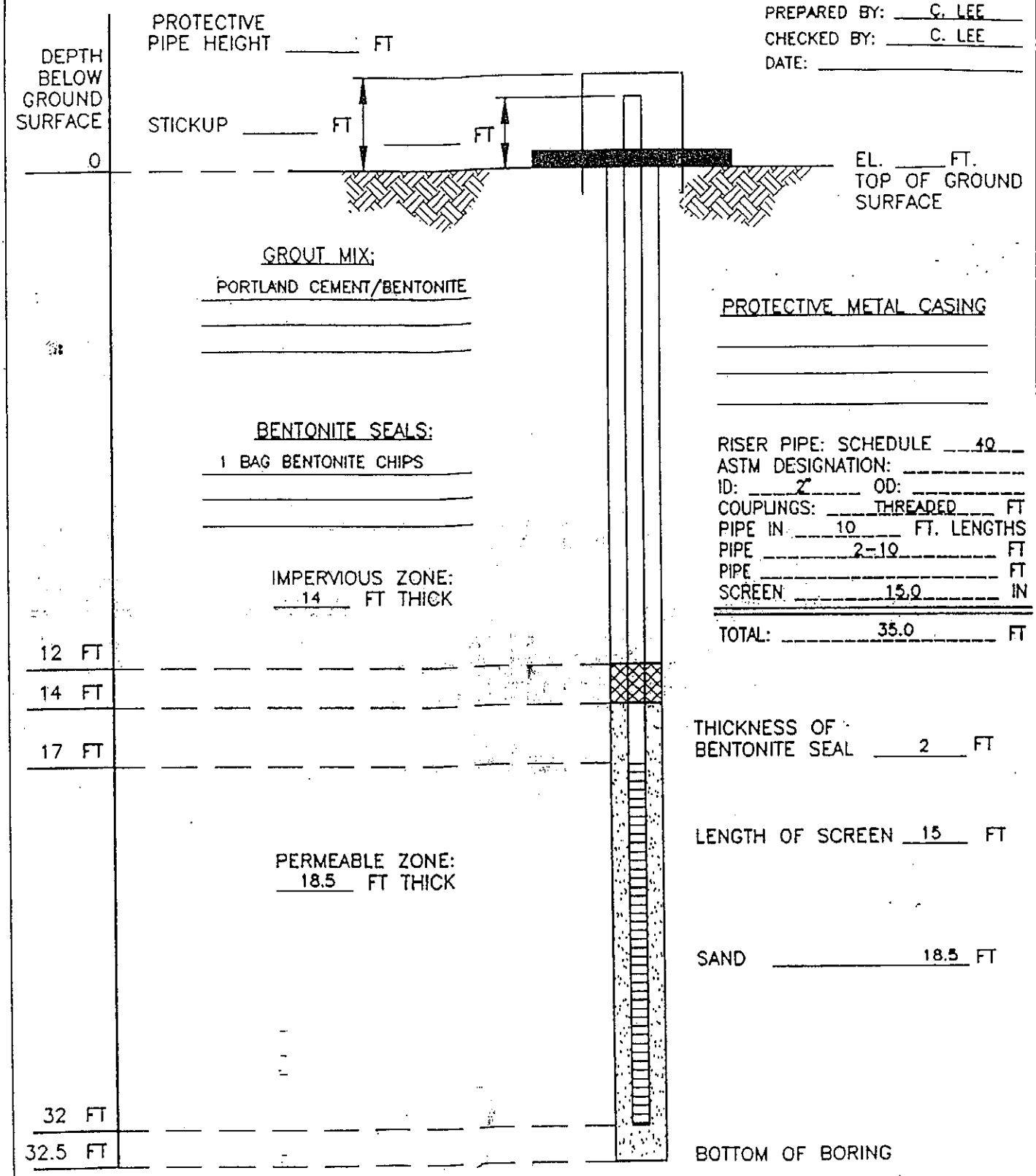
SIGNATURE OF CONTRACTOR OR AGENT _____ DATE 9-13-94

GS-1

Submit original to Division of Environmental Management and copy to well owner.

MONITORING WELL INSTALLATION DIAGRAM

PEIZOMETER NO.: MW-11-8
BORING NO.: 11-8
JOB NO.: 6770-00 -018
PREPARED BY: C. LEE
CHECKED BY: C. LEE
DATE:



REMARKS: ALL MEASUREMENTS TO THE NEAREST 0.1 FT.

HDR

HDR Engineering, Inc.

COMPLETION REPORT OF WELL No. II-12

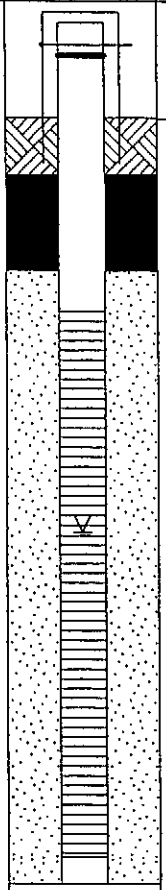
PROJECT: White Street Landfill
PROJECT NO: 1584-98-081
PROJECT LOCATION: Greensboro, North Carolina

WATER LEVEL:

LATITUDE:
LONGITUDE:
TOP OF CASING ELEVATION:
DATUM: MSL
LOGGED BY: L. Butler

DRILLING CONTRACTOR: M. Moseley
DRILLING METHOD: 4 ¼" H.S.A.
DATE DRILLED: 3/22/05

STRATA DESCRIPTION	SYMBOL	DEPTH (ft.)	WELL DETAILS	DEPTH (ft.)	LEGEND	ELEVATION (ft.)
Fill: Asphalt Debris - 2"		0		0.00	GS	
				0.00	CG	
				1.50	BS	
Tan Slightly Clayey Fine Sandy **SILT**				4.10	FP	
Alluvium: Gray Green Very Clayey **SILT** (Moist)		5		5.20	TSC	
Possible Alluvium: Green Coarse Sandy Clayey **SILT** (Saturated)		10				
Residuum: Gray Coarse to Fine Sandy Clayey **SILT**		15				
Partially Weathered Rock: sampled as Gray Coarse to Fine Sandy **SILT**		20		19.70	BSC	
				20.40	TD	



WELL CONSTRUCTION DETAILS

PROTECTIVE CASING
Diameter:
Type:
Interval:

RISER CASING
Diameter: **2"**
Type: **PVC**
Interval: **+2.5-5.2**

GROUT
Type: **Neat Cement Grout**
Interval: **0-1.5**

SEAL
Type: **Bentonite**
Interval: **1.5-4.1**

FILTERPACK
Type: **#2 Sand**
Interval: **4.1-20.4**

SCREEN
Diameter: **2"**
Type: **0.010**
Interval: **5.2-19.7**

LEGEND
- FILTER PACK
- BENTONITE
- CEMENT GROUT
- CUTTINGS / BACKFILL
- STATIC WATER LEVEL

TOC	TOP OF CASING
GS	GROUND SURFACE
BS	BENTONITE SEAL
FP	FILTER PACK
TSC	TOP OF SCREEN
BSC	BOTTOM OF SCREEN
TD	TOTAL DEPTH
CG	CEMENT GROUT

S&ME
ENGINEERING • TESTING
ENVIRONMENTAL SERVICES
3718 Old Battleground Road
Greensboro, NC

COMPLETION REPORT OF WELL No. II-12

MONITORING WELL 1584-98-081 WHITE STREET LANDFILL.GPJ S&ME.GDT 4/18/05

PROJECT: GREENSBORO SOLID WASTE LANDFILL PROJECT NO: 6770-021-018

LOCATION: WHITE STREET, GREENSBORO, N.C. BORING NUMBER: MW-13 PAGE: 1

BORING LOG

DATE: 1/6/93

NUMBER	DEPTH	SPT	T	WL	SI	DESCRIPTION (USCS)	COMMENTS
SS-01 SS-02	4' 8' 12' 16' 20' 24' 28' 32'	53 82+	SS SS			0-1.0' TOPSOIL; 0-0.5' THEN ORANGE SLIGHTLY SANDY SILT 1-2.5' ORANGE CLAYEY, MICACEOUS SANDY SILT; 1.5-2.5' VERY HARD, BROWN AND BLACK SLIGHTLY SANDY, SLIGHTLY CLAYEY SILT, PARTIALLY WEATHERED ROCK 3.5-5.0' BROWN AND BLACK, FINE-GRAINED SLIGHTLY SANDY SILT, VERY HARD PARTIALLY WEATHERED ROCK AUGER REFUSAL AT 5.0' MUD ROTARY DRILLING 5.0-18.5' BG CORE DRILLED FROM 18.5-32.5' OBTAINED 14.0' OF NX CORE	SAPROLITE PARTIALLY WEATHERED ROCK BEDROCK
	36' 40'					TD = 32.5'	

BOREHOLE COMPLETION:

WATER DEPTH: DATE:

DRILLING METHOD: 6 1/4" HOLLOW-STEM AUGER, TRICONE BIT

LOGGED BY: CHARLES G. LEE, PG

KEY:
SI - SCREEN
SS - SPLITSPOON
SPT - SOIL PENETRATION TEST-N NUMBER
ST - SHELBY TUBE
T - TYPE
WL - WATER LEVEL

HDR

SEP 21 1994

HDR
CHARLOTTE, N.C.

WELL COMPLETION LOG

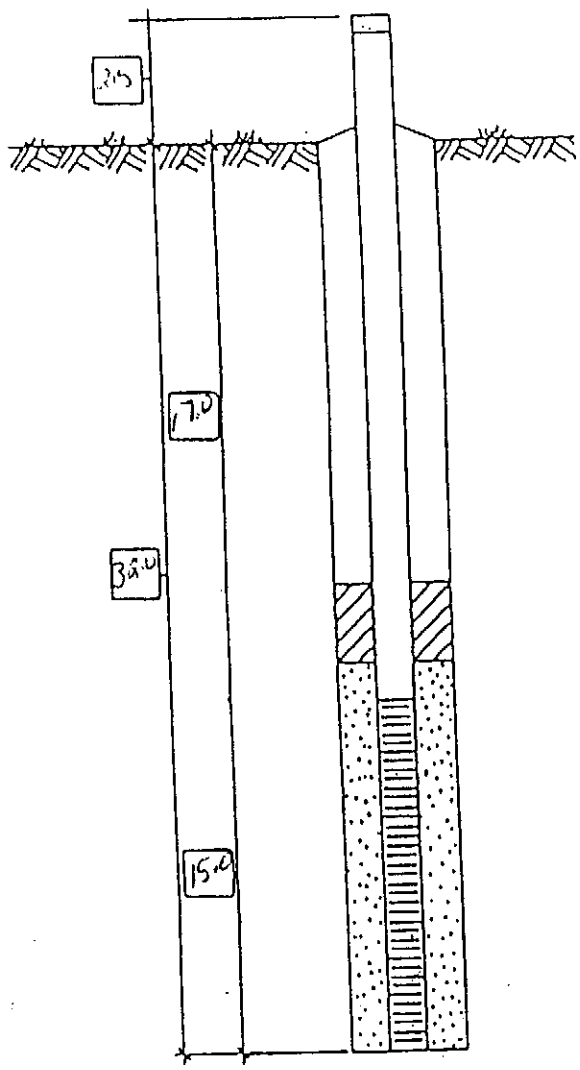
LOCATION: GREENSBORO NC WORK ORDER #
WHITE STREET LANDFILL

CLIENT: HDR DATE 9-12-94

WELL NUMBER: MW-14 CONTACT: CHARLIE LEE

INSTALLED BY: CHRIS AIKEN

OTHER SERVICES PERFORMED:



___FLUSH MANHOLE

✓ABOVE GRADE PROTECTOR

___NONE

CONCRETE 3 BAGS

CEMENT GROUT ___ BAGS

RISER - TYPE SCH 40 PVC

SIZE 2"

BENTONITE 1 by HOLE PLUG

SCREEN - TYPE SCH 40 PVC

SIZE 2" .010 SLT

FILTER TYPE #2

DEVELOPMENT: BAILED___, PUMPED___, AIR LIFT___, SURGE___, SWAB___, NONE___

TOTAL TIME: ___ TOTAL GALLONS: ___

WATER APPEARANCE: START ___ FINISH ___

MW-14

NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
DIVISION OF ENVIRONMENTAL MANAGEMENT-GROUNDWATER SECTION
P.O. BOX 27687-RALEIGH, NC 27611 PHONE (919) 733-5083

WELL CONSTRUCTION RECORD

FOR OFFICE USE ONLY
Quad No. _____ Serial No. _____
Lat. _____ Long. _____ Pc ____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

DRILLING CONTRACTOR: BADGER DRILLING

DRILLER REGISTRATION NUMBER: 1486

STATE WELL CONSTRUCTION PERMIT NUMBER:

1. WELL LOCATION: (Show sketch of the location below)
Nearest Town: GREENSBORO N.C.
(Road, Community, or Subdivion and Lot No.)

County:

2. OWNER:
ADDRESS:
Street or Route No. City or Town State Zip Code

3. DATE DRILLED: 9-12-94 USE OF WELL: MONITORING

4. TOTAL DEPTH: 32.0 CUTTINGS COLLECTED: ✓ Yes _ No

5. DOES WELL REPLACE EXITING WELL? _ Yes ✓ No

6. STATIC WATER LEVEL: ____ FT. Above Below TOP OF CASING,
TOP OF CASING IS: 2.5 FT. ABOVE LAND SURFACE.

7. YIELD (gpm): N/A METHOD OF TEST: AIR

8. WATER ZONES (depth): N/A

9. CHLORINATION: Type N/A Amount

Depth From	Depth To	Drilling Log Formation Description

10. CASING:

	Depth		Diameter	Wall Thickness or Weight/Ft.	Material
From 2.5 ABV	To 17.0	Ft.	2"	Sch 40	PVC
From ____	To ____	Ft.			
From ____	To ____	Ft.			

11. GROUT:

	Depth		Material	Method
From 0.0	To 13.0	Ft.	PORTLAND - BENTONITE	SLURRY
From ____	To ____	Ft.		

12. SCREEN:

	Depth		Diameter	Slot Size	Material
From 17.0	To 32.0	Ft.	2" in.	.010 in.	PVC
From ____	To ____	Ft.	in.	in.	
From ____	To ____	Ft.	in.	in.	

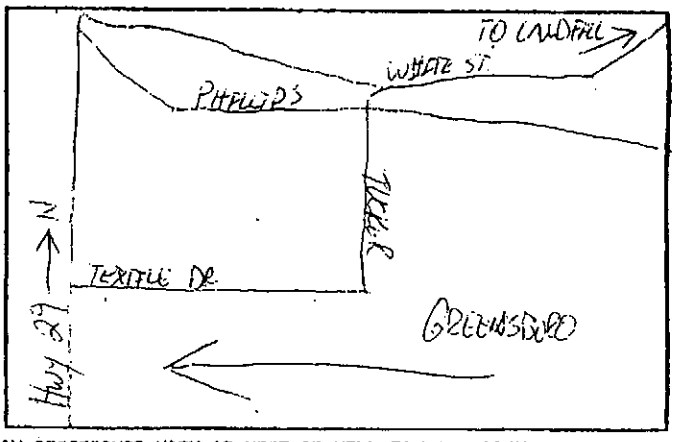
13. GRAVEL PACK:

	Depth		Size	Material
From 15.0	To 32.0	Ft.	#2	
From ____	To ____	Ft.		

14. REMARKS: BENTONITE SEAL 13.0' TO 15.0'

If additional space is needed use back of form.

LOCATION SKETCH
(Show direction and distance from at least two State Roads, or other map reference points).



I DO HEREBY CERIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT 9-12-94 DATE

GS-1

Submit original to Division of Environmental Management and copy to well owner.

PROJECT: WHITE STREET LANDFILL | PROJECT NO: 6770-0 -018

LOCATION: GREENSBORO, N.C. | BORING NUMBER: B-14 MW-14 | PAGE: 1

BORING LOG

DATE: 9/12/94

NUMBER	DEPTH	SPT	T	WL	SI	DESCRIPTION (USCS)	COMMENTS
	4'						
SS-1		7-7 9-12	SS			RED ORANGE SL. SANDY, CLAYEY SILT, EQUIGRANULAR.	GRANITIOD
	8'					DK. RED COARSE SANDY CLAYEY SILT EQUIGRANULAR TO 10.5, THEN RED ORANGE-TAN, SL. MIC. SILT, TR. SAND WEAKLY FOLIATED GRANTIOD QNEISS, ~10% QZ, OCC BLACK VEIN.	GRANITIOD GNEISS
SS-2		4-5 5-4	SS				
	12'						
SS-3	16'	4-6 6-8	SS			RED ORANGE MIC. CLAYEY SILT TO FOLIATED TAN ORANGE SL. MIC. SANDY SILT TO FG YELLOW BRN SILT W/BLACK Mnox FRACT.	
	20'						
SS-4		6-6 5-6	SS			YELLOW BRN FINELY FOLIATED CLAYEY SILT, LIL Fe Ox, Mnox FRACT.	INITIAL WL @ 20.0' SCHIST.
	24'					FOLIATED YELLOW BROWN FOL. SILT AS ABOVE TO 25.4 THEN WHITE AND BRN SPOTTED SL. SANDY EQUIGRANULAR SILT, T. MICA	
SS-5		2-5 5-6	SS				GRANITE
	28'						
SS-6		5-10 12-15	SS			AS ABOVE, GRANITE	GRANITE
	32'					EOH @ 32.0'	
	36'						
	40'						

BOREHOLE COMPLETION: 32.0' BELOW GRADE

WATER DEPTH: ~ 20.0' DATE: 9/12/94

DRILLING METHOD: HOLLOW STEM AUGERS

LOGGED BY: HDR ENGINEERING, INC.

KEY:
SI - SCREEN
SS - SPLITSPOON
SPT - SOIL PENETRATION TEST-N NUMBER
ST - SHELBY TUBE
T - TYPE
WL - WATER LEVEL

HDR

MONITORING WELL INSTALLATION DIAGRAM

PEIZOMETER NO.: MW-14
BORING NO.: B-14
JOB NO.: 6770-00 -018
PREPARED BY: C. LEE
CHECKED BY: C. LEE
DATE: _____

DEPTH BELOW GROUND SURFACE

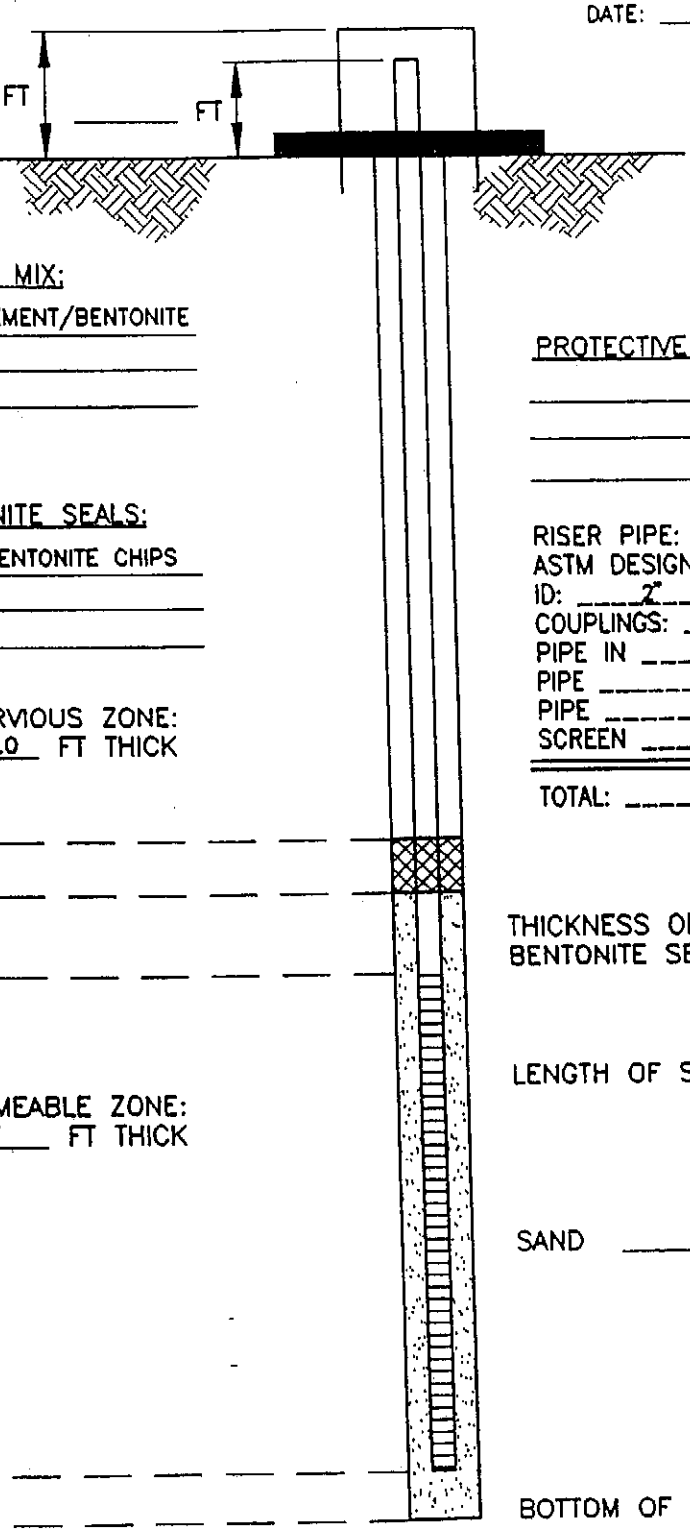
PROTECTIVE PIPE HEIGHT _____ FT

STICKUP _____ FT

_____ FT

0

EL. ____ FT.
TOP OF GROUND SURFACE



GROUT MIX:
PORTLAND CEMENT/BENTONITE

PROTECTIVE METAL CASING

BENTONITE SEALS:
1 BAG OF BENTONITE CHIPS

RISER PIPE: SCHEDULE 40
ASTM DESIGNATION: _____
ID: 2" OD: _____
COUPLINGS: THREADED FT
PIPE IN 10 FT. LENGTHS
PIPE 2-10 FT
PIPE _____ FT
SCREEN 15.00 IN

TOTAL: 35 FT

IMPERVIOUS ZONE:
13.0 FT THICK

13.0 FT

15.0 FT

17.0 FT

THICKNESS OF BENTONITE SEAL _____ FT

LENGTH OF SCREEN 15 FT

PERMEABLE ZONE:
17 FT THICK

SAND 17 FT

32 FT

32 FT

BOTTOM OF BORING

REMARKS: ALL MEASUREMENTS TO THE NEAREST 0.1 FT.

HDR

HDR Engineering, Inc.

LANDFILL POST-CLOSURE CARE
SITE VISIT CHECKLIST

Security Issues:

How is access limited to the site at the entrance?

How is access limited to the site along the site boundaries?

Is there evidence of illegal entry or dumping?

Are there areas remaining restricted access (e.g. LFG flower/flare station, pump stations)?

What is the condition of access roads?

What improvements need to be made?

Landfill Surface Issues:

Are there cracks in the surface?

Is much of the waste exposed? Walk on the surface looking for cracks.

Is the geomembrane exposed?

Is the cover soil insufficient to cover the waste or is waste material [illegible]?

Describe the location and extent of differential settlement.

Vegetative Cover Issues:

Are there areas where vegetative cover is insufficient?

Are there areas where vegetative cover is dominated by undesirable species (e.g. [illegible] or other undesirable species)?

Is the vegetative cover of a type that it should be mowed?

How much [illegible] is needed [illegible]?

Surface Water Run-off:

How much erosion exists and where?

Describe the run-off control.

Does it appear that additional run-off controls are needed?

Is there evidence of sediment build-up?

Is sediment clean-out needed?

Stormwater Management Issues:

Is there sedimentation build-up in the stormwater system (swales, channels, benches, sediment basins)?

Are there areas [illegible] or washout?

Is there noticeable deformation or other damage to stormwater system components (check alignment, erosion under gabions, downchutes, pipes, overspilling)?

Leachate Collection and Disposal Issues:

Is there evidence of leachate seeps?

Are there [illegible] or other distress?

Are leachate collection, storage, treatment, and/or disposal system components operating properly? Do they require servicing/repair/replacement?

Landfill Gas Issues:

Are the extraction wells and other LFG collection/venting and control system components properly withdrawing LFG?

Are the LFG monitoring and control system [illegible]?

Is there noticeable physical damage to the LFG monitoring wells or other LFG system components?

Groundwater Monitoring Issues:

Are the security locks on the wells locked and in working order?

Is there noticeable physical damage to the wells?

Is there standing water around the well casing?

Are there other [illegible] on the site?

How many wells are there at the site? Describe the location.

Miscellaneous Issues:

Are there uses for the closed areas?

Are there scheduled inspections of the site by landfill personnel?

Are Landfill personnel trained to perform inspections?

Corrective Action Plan

Phase II Groundwater Corrective Actions Selection of Remedies Approval

NCDENR
North Carolina Department of Environment and Natural Resources

Dexter R. Matthews, Director | Division of Waste Management | Michael F. Easley, Governor
William G. Ross Jr., Secretary

June 24, 2008

Ms. Jeryl Covington
City of Greensboro
Environmental Services Department
P.O. Box 3136
Greensboro, NC 27402

Re: Approval of Selected Remedy
White Street Landfill, Phase II, Permit #41-03

Dear Ms. Covington:

The North Carolina Solid Waste Section recently completed a review of the Assessment of Corrective Measures report, the North Carolina Solid Waste Groundwater Corrective Action Permit Modification Application, and a June 10, 2008 correspondence regarding selection of remedy for the White Street Phase II Landfill, Permit Number 41-03, located in Greensboro, Guilford County. Pursuant to 15A NCAC 13B .1635, a public meeting was conducted on December 20, 2007 and June 9, 2008 to discuss the Assessment of Corrective Measures. Pursuant to 15A NCAC 13B .1636, the owner or operator shall select a remedy, and the Solid Waste Section will evaluate and approve the selected remedy. The City of Greensboro has selected Monitored Natural Attenuation (MNA), Phytoremediation, and maintaining a consistent contour within Phase II as the remedy to restore groundwater quality and effectively reduce the contamination at the facility. Groundwater pumping and discharge to the public owned treatment works has been selected as the contingency plan. As a result, the Solid Waste Section hereby approves the selected remedy for the White Street Landfill, Phase II. Please submit a Corrective Action Plan (CAP) to the Solid Waste Section by July 1, 2008 pursuant to 15A NCAC 13B .0547. If you have any questions or concerns regarding this letter, please contact me at 919-508-8500. Thank you for your continued cooperation in this matter.

Sincerely,

Jaclynne Drummond
Hydrogeologist
Environmental Compliance
Solid Waste Section

cc: Connel Ware, S&ME, Inc.
Mark Poindexter, Field Operations Supervisor
Jason Watkins, Central District Supervisor
Hugh Jernigan, Environmental Specialist
Solid Waste Section Central Files

1646 Mail Service Center, Raleigh, North Carolina 27699-1646
Phone 919-508-8400 \ FAX 919-733-4810 \ Internet http://wastenotnc.org

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Phase II Corrective Action Plan

Prepared By

S&ME, Inc.

TEXT ONLY

WHITE STREET LANDFILL
PHASE II CORRECTIVE ACTION PLAN
GREENSBORO, NORTH CAROLINA
S&ME Project No. 1584-98-081

Prepared For:

The City of Greensboro

Prepared By:

S&ME, Inc.
3718 Old Battleground Road
Greensboro, North Carolina 27410

June 2008

I hereby certify this 9th day of June, 2008, that this report was prepared by me or under my direct supervision.

Edmund Q.B. Henriques, L.G.
Environmental Department Manager

Report preparation performed by:

Connel D. Ware
Senior Project Manager

SR: WHW

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EXECUTIVE SUMMARY

As per 15A NCAC 13B.1635 of the North Carolina Department of Environment and Natural Resources, Division of Waste Management (NCDENR-DWM) whenever it is demonstrated that one or more constituents listed in Appendix II has been detected at a statistically significant level exceeding the 15A NCAC 2L Groundwater Quality Standards (2L standards) and/or NCDENR GPS, the owner or operator shall initiate Assessment of Corrective Action Measures. Under the Assessment Groundwater Monitoring Program, a statistically significant level is determined by a point comparison of the compliance data directly to the 2L standard or NCDENR GPS.

Several organic compounds including the volatile organic compounds benzene, trichloroethene, tetrachloroethene, vinyl chloride, and 1,4-dichlorobenzene as well as the inorganic constituent thallium have exceeded the 2L standards and/or the North Carolina Department of Environment and Natural Resources (NCDENR) Groundwater Protection Standards (GPS) within the Phase II portion of the White Street Landfill compliance monitoring well network.

These exceedances above the 2L Standard at Phase II of the White Street Landfill Facility triggered the Assessment of Corrective Action Measures. This process requires Facilities to characterize the nature and extent of the plume as well as assess possible remedies to restore groundwater quality at the Facility to levels below the 2L standards, and ultimately prepare a Corrective Action Plan (CAP) to implement the appropriate remedy(s) to achieve compliance with the standards.

Based on the results of a Nature and Extent Study and Assessment of Corrective Measures Report completed by S&ME, Inc. on behalf of the City of Greensboro (City), the City has selected Phytoremediation coupled with Monitored Natural Attenuation (MNA) to restore groundwater quality to the 2L standards in the Phase II portion of the White Street Landfill.

In accordance with 15A NCAC 13B .1636 S&ME, Inc. has prepared this Corrective Action Plan on behalf of the City of Greensboro to implement the City's selected combined remedies of Monitored Natural Attenuation (MNA) coupled with Phytoremediation at Phase II of the White Street Landfill (Facility).

1.0 INTRODUCTION

1.1 Site Background

The White Street Landfill is located at the end of White Street in the City of Greensboro, North Carolina (reference **Figure 1**). The subject landfill contains three distinct phases, I, II, and III, which operated under Permit Nos. 41-03 (Phase I & II) and 41-12 (Phase III). Phase II of the landfill is an active construction, demolition, and debris landfill on top of a closed municipal solid waste (MSW) cell. The Phase II portion of the landfill was included under Permit No. 41-03. A detailed site map is included as **Figure 2**. The NCAC 2L Groundwater Quality Standards (2L standards) for several target constituents have been exceeded in Phase II of the facility at points along the north-northwestern

property boundary. The nearest downgradient receptor north-northwest of the facility is North Buffalo Creek.

A Nature and Extent Study Report has been completed by S&ME describing the nature of the primary constituents of concern within Phase II exceeding their respective 2L standards, where the exceedances occurred within the compliance network, and to what extent the 2L standards were exceeded. The results of the Nature and Extent Study indicated that organic constituents tetrachloroethene (PCE), trichloroethene, benzene, 1,4 dichlorobenzene, and vinyl chloride, as well as inorganic constituents thallium and vanadium, exceeded the 2L standards and/or NCDENR GPS values within the Nature and Extent Study (NES) wells at the north-northwestern property boundary near North Buffalo Creek.

Subsequent to the completion of the Nature and Extent Study, S&ME completed an Assessment of Corrective Measures Report (ACM) which documented the potential corrective measure options and recommended, with public input, measures that are appropriate for the facility based on the magnitude of the constituents of concern. The ACM evaluated "The performance, reliability, ease of implementation, and potential impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination; the time required to begin and complete the remedy; the costs of remedy implementation; and the institutional requirements such as State and Local permit requirements or other environmental or public health requirements that may substantially affect implementation of the remedy(s)," as per 15A NCAC 13B.1635 of the NCDENR DWM.

In order to incorporate comments from the general public regarding the selection of the remedy for the Phase II portion of the White Street Landfill, the City of Greensboro held a public meeting on December 20, 2007 at 6:30PM at the Peeler Recreational Facility in Greensboro. An announcement of the public meeting was run in the local newspaper for two consecutive weeks prior to holding the public meeting. The above mentioned NES and ACM Reports were displayed for public review at two local libraries. Both of these Reports were approved by NCDENR.

Subsequent to the original submittal of the NES and ACM Reports, it was decided between S&ME and the City of Greensboro to include Phytoremediation as an integral part of the Facility's selected remedies to restore groundwater quality and attain the approved Groundwater Protection Standards (GPS). In order to recommend Phytoremediation as part of the selected remedy the Facility's ACM had to be amended to include Phytoremediation as a possible remedy. The ACM was amended to include Phytoremediation, and in order to satisfy the requirements of 15A NCAC 13B.1635 (d), the amended ACM was made available for public review at two public libraries for a 30-day public comment period followed by a subsequent public meeting with interested and affected parties. The second public meeting was held on June 19, 2008 at the Peeler Recreational Facility in Greensboro.

The final step in the Assessment of Corrective Measures process is to prepare a Corrective Action Plan to implement the selected remedy(s) outlined in the ACM Report. In accordance with the guidelines set forth in 15A NCAC 13B.1636, S&ME has prepared

this Corrective Action Plan (CAP) for the White Street Landfill Facility. This CAP will be protective of human health and the environment, outline the necessary course of actions to implement the selected remedies of MNA and Phytoremediation at the Facility, describe the required revisions to the Facility's Water Quality Monitoring Plan (WQMP), discuss the implementation schedule, and include an estimated projected schedule to meet the requirements of 15A NCAC 13B.1636 (b) (2) to "attain the approved Groundwater Protection Standards (GPS)".

1.2 Regional Geology

The Greensboro area of North Carolina lies in the center of the Piedmont Physiographic province of the Appalachian Highlands. The Piedmont is comprised of five northeast southwest trending rock belts of various metamorphic grades. Greensboro lies within the Carolina Slate Belt, a group of low rank meta sedimentary rocks that were originally deposited in an off-shore island arc system. Various volcanic rocks including tuffs, basalts, argillites, and others were deposited in a shallow marine environment. The age of these rocks are believed to be Pre-Cambrian to Paleozoic.

Numerous tectonic events have greatly deformed these rocks and a general metamorphic imprint has taken place. Additionally, several intrusive events have occurred which have resulted in the emplacement of granitic plutons of Paleozoic age throughout the belt.

1.3 Site Geology

Locally, the landfill area is underlain by granitic plutonic rocks. The depth of these rocks varies with topography, but is generally less than 30 feet. As the rocks weather, the individual mineral grains tend to disintegrate into small rocks and pebbles within a sandy matrix. This soil is commonly referred to as "sandrock" in reference to its weathering characteristics.

1.4 Site Soil Classification

According to the Soil Survey of Guilford County, the soil in the landfill area has been classified as Pits (Pt). Pits are miscellaneous land types made up of areas where the original soil has been removed or altered beyond recognition. In landfill areas the original soil has been removed and solid waste material has been placed in alternating layers with original soils and other materials.

The soils around the landfill include Wehadkee silt loams (Wh), Chewacla sandy loams (Ch), Wilkes sandy loams (Wke), Madison sandy loams (MaE and MaD), Enon fine sandy loams (EnC and EnB), Mecklenburg sandy clay loam (McC2), Mecklenburg-Urban land complex (MuB), and Cecil-Urban land complex (CfB).

1.5 Aquifer Characteristics

The uppermost aquifer was characterized during a subsurface exploration program executed by BPA Environmental and Engineering Inc. (BPA). This program was initiated during installation of the initial groundwater monitoring network during February, 1996. In situ hydraulic conductivity tests were performed by BPA on wells I-5, II-1, II-2, II-3, II-4, II-5, and MW-13. The data from these tests yielded hydraulic conductivity values ranging from 0.042 feet/day in II-5 to 0.380 feet/day in II-3. A

complete discussion of the test methods and calculations is presented in BPA's February 1996 report "In-situ Hydraulic conductivity Testing, White Street Landfill, Greensboro, North Carolina". In-situ hydraulic conductivity tests were performed by HDR Engineering, Inc. on monitoring wells II-6, II-7, II-8, and MW-14 in the fall of 1995. The hydraulic conductivities determined by HDR ranged from 0.221 feet/day in II-6 to 2.353 feet/day in II-8. These data were used to calculate groundwater flow velocities across the site.

The static water levels in the Phase II monitoring wells were measured on September 27, 2007. The depth to the water table ranged from 9.50 feet to 29.38 feet below the top of well casing on these dates. A groundwater contour map constructed using the data collected during September 2007 is presented as **Figure 3**. The groundwater gradient at each well was calculated assuming a constant groundwater gradient along the flow line between adjacent groundwater elevation contours or between the well and the nearest contour. Groundwater flow lines were drawn through each well based upon the groundwater elevation data collected during this monitoring event. The groundwater elevation data collected during this monitoring event indicates that the groundwater beneath Phase II generally flows toward the northwest, toward North Buffalo Creek.

Calculated hydraulic conductivity and gradient values and estimated effective porosity values for each well were used in the velocity calculations. The 20 percent effective porosity value is based on porosity and specific yield versus grain size distribution relationships presented in Fetter (1988), and is typical of the types of soils (predominantly silts and sandy silts with some clays) comprising the regolith at the landfill. The calculated groundwater velocities ranged from 0.007 feet/day to 0.136 feet/day.

The September 2007 groundwater velocity calculations can be found in **Appendix I** of this report. The potentiometric map on which the gradient calculations were based is Figure 3 of this report. Calculation methodology is described in the following sections.

1.5.1 Darcy's Velocity

In 1856, Darcy first characterized flow through a porous media. Darcy's Law states that;
$Q = kiA$
where;
Q = Rate of flow, [cm3/sec]
k = Hydraulic Conductivity, [cm/sec]
I = Hydraulic gradient = dh/dl
A = Cross sectional area, perpendicular to direction of flow [cm2]

Therefore, flow is equal to the velocity of the fluid multiplied by the cross-sectional area where flow is occurring. This yields Darcy's velocity.

1.5.2 Seepage Velocity

The seepage velocity (vs) of a fluid flowing through a porous media is derived from Darcy's velocity. Darcy's velocity does not, however, literally describe the movement of fluid through the porous media. It is simply a statistically convenient product. This is due to one of Darcy's original assumptions that flow occurs over the entire cross-

sectional area, thus ignoring the soil particles themselves. To determine the actual speed a fluid flows through a porous media, such as soil, a more accurate representation of the area of flow must be realized. Soil mechanics commonly makes use of a void space to soil solids space ratio. Porosity is defined as the volume of voids per volume of total space;

$n = Vv / Vt$

Therefore, the seepage velocity of a fluid moving through soil may be expressed as;

$vs = vd / n$

1.6 Contaminant Transport Conceptual Model

1.6.1 Surface Water Model

The natural topography surrounding the waste management units at the Facility is best characterized as gradual to moderately sloping with small drains and small hollows truncating the slopes and feeding the unnamed tributaries of North Buffalo Creek. Surface runoff in the undisturbed areas of the landfill will generally mimic the slope gradients and follow the drains and small hollows to the creek. Infiltration and percolation into the upper soil horizon is expected to be moderate due to the sandy loam content within this stratum. Percolation within the waste management units is expected to be minimal since the landfill has been capped with a compacted low permeability clay layer. However, in areas where weathering and erosion have thinned or removed the upper soil horizon such that it is exposed at the surface, vertical percolation rates will be higher as this soil horizon has a greater sand and gravel content. The nearest surface water body to the waste management units is North Buffalo Creek. The shortest distance between any of the waste management units and North Buffalo Creek is between the stream and the northeast corner of the Phase II disposal area located adjacent to the stream at the northeast property boundary. The distance from the stream to the northern edge of the waste management units of the landfill varies along the waste boundary. This stream will be the primary receptor of surface water runoff from the landfill

1.6.2 Groundwater Model

The uppermost pervasive aquifer at the site is the soil to bedrock interface. The aquifer is contained within the weathered and metamorphosed granitic gneiss. The principal flow vectors within the bedrock aquifer will be along current or relic fracture planes and joints and as porous media flow in saprolitic intervals.

In the Piedmont region, groundwater generally occurs in two hydraulically interconnected zones. The upper zone, or regolith, consists of an unconsolidated or semi-consolidated mixture of clay fragmental material ranging in size from silt to sand boulders. The porosity of the regolith is generally on the order of 20 to 30 percent (Heath, 1984). Because of its high porosity, the regolith functions as a reservoir which slowly feeds water downward into the bedrock. Water is introduced to the regolith by precipitation and stream flow. Once in the regolith, groundwater moves between intergranular pore spaces.

This "water table" zone is controlled by climactic factors. Groundwater levels vary seasonally, declining during the summer when atmospheric conditions favor evaporation

and plants transpire large amounts of water, and rising during the winter when plants are dormant. Annual groundwater storage in the vicinity of the Landfill Facility is thought to be relatively stable.

Groundwater also occurs below the regolith, in the bedrock zone where it moves through sheet like openings formed along fractures. Fractures in bedrock are of two types: joints, which are fractures along which there has been no differential movement, and faults, which are fractures along which the adjacent rocks have undergone measurable differential movement. Groundwater in the bedrock zone is fairly stable and not easily influenced by climactic conditions. The regolith and bedrock zones are connected hydraulically.

Reference Figure 1 for the White Street Landfill Overall Base Map.

1.7 Regulatory Status

Groundwater exceedances above the 2L Standard in Phase II of the White Street Landfill triggered the Assessment of Corrective Measures process. This process requires Facilities to characterize the nature and extent of the release as well as assess possible remedies to restore groundwater quality at the Facility to levels below the 2L standards, and ultimately prepare a Corrective Action Plan (CAP) to implement the appropriate remedy(s) to achieve compliance with the standards.

A Nature and Extent Study and Assessment of Corrective Measures Report were completed by S&ME, Inc. on behalf of the City of Greensboro (City) for the White Street Landfill. The Facility is currently in the final stage of the Corrective Measures process, which is to prepare and ultimately implement a CAP to restore groundwater quality at the Facility. This CAP has been prepared in accordance with 15A NCAC 13B .1636 to implement the City's selected combined remedies of Monitored Natural Attenuation (MNA) coupled with Phytoremediation to restore groundwater quality at Phase II of the White Street Landfill (Facility).

2.0 CONTAMINANT CHARACTERIZATION

2.1 Constituents of Concern

After entering the Assessment Monitoring Program in 1997, several target constituent concentrations exceeded the approved 15A NCAC 2L groundwater quality standards (2L standard) and/or the North Carolina Groundwater Protection Standards (GPS) (for constituents without a 2L standard) in several downgradient compliance groundwater monitoring wells. However, since 1997, most of these constituents have shown decreasing trends in reported concentrations during subsequent monitoring events, and many have not exceeded their respective 2L or GPS standards for several years. The Nature and Extent Study Report prepared by S&ME for the Facility addressed the constituents which had been detected above the respective 2L or GPS throughout the monitoring history of the Facility. For the purpose of determining the constituents of concern which require remedial action under this Corrective Action Plan, constituents which have not been detected at concentrations above their respective 2L or GPS for two consecutive years (four monitoring events) or more are no longer considered constituents

of concern (COCs). Constituents not listed as a concern under this CAP have not exceeded the 2L or GPS within the last two years. Many of the historically detected constituents which triggered Assessment Monitoring at the Facility have either not been detected or have not exceeded the 2L or GPS within the last seven years.

Additionally, S&ME completed an Alternate Source Demonstration (ASD) for metals (White Street Landfill Phase II – Alternate Source Demonstration Amendment, S&ME Inc., August 2007). The purpose of the ASD was to determine if the presence of naturally-occurring metals in the onsite in-situ soils were affecting groundwater quality through vertical percolation into the uppermost pervasive aquifer beneath the White Street Landfill. The results of the ASD successfully demonstrated that the metals cadmium, chromium, and vanadium which have historically, as well as currently (in the cases of cadmium and vanadium) exceeded their respective 2L standard or GPS value are naturally-occurring in the in-situ soils at the Facility. The ASD also successfully demonstrated that the concentrations of the naturally-occurring metals cadmium, chromium, and vanadium within the in-situ soil at the Facility are sufficient to influence the concentrations of these metals in groundwater samples collected from the downgradient groundwater monitoring wells and the exceedance of cadmium, chromium, and vanadium above their respective 2L Standards is not due to a release by the Facility, but instead may be the result of the natural occurrence of these metals in the native, residual soil. Based on the results of the ASD, the metals cadmium, chromium, and vanadium are not considered COCs.

Therefore, the constituents considered the primary constituents of concern for which remedial action is required include the volatile organic compounds benzene, trichloroethene, tetrachloroethene, vinyl chloride, and 1,4 dichlorobenzene, as well as the inorganic constituent thallium. The historical groundwater quality monitoring results for all of these COCs are included in **Table 1** thru **Table 9**.

2.2 Contaminant Distribution

The Nature and Extent Report submitted to the NCDENR in August of 2007 documented the exceedance of the 2L standards and/or NCDENR GPS at Phase II of the White Street Landfill.

As a result of several network compliance monitoring wells containing target constituent concentrations exceeding the established NCAC 2L groundwater standard and/or NCDENR GPS, Phase II of the White Street Landfill as defined under NCDENR Permit #41-03 installed seven non-network shallow monitoring wells, with one deep monitor well. The wells are designated II-2B, II-7B (deep monitor well), II-9, II-10, II-11, II-12, and II-13.

The nature of impacts to the hydrogeologic regime at the White Street Landfill Facility is primarily from low level organic constituents. However, the metal thallium also exceeds the recently promulgated NCDENR GPS of 0.28 μg/L set by NCDENR for thallium.

The lateral extent of contaminant migration away from the landfill is limited by North Buffalo Creek, which truncates the primary component of groundwater flow in the uppermost prevalent aquifer along the northern Facility boundary. This creek also

represents the primary receptor of impact from constituents migrating away from the landfill and is expected to be the primary local discharge point for the uppermost prevalent aquifer. The vertical extent of contaminant migration has been observed to be limited to periodic low level impacts from tetrachloroethene at a concentration close to the NCAC 2L standard in NES well II-7B.

For the last two years the occurrences of the organic constituents of concern are limited to monitoring wells II-1, II-2, II-2B, II-7, II-7B, and II-9. The organic constituents of concern detected in monitoring well II-1 include vinyl chloride and 1,4 dichlorobenzene. The organic constituents benzene, trichloroethene, tetrachloroethene, and vinyl chloride have all been detected at monitoring well II-2 with tetrachloroethene and vinyl chloride also being detected at monitoring well II-2B. Monitoring well II-7 has shown recent detections of vinyl chloride above its respective 2L standard, and groundwater samples from both wells II-7 and II-7B(deep well) have shown detections of tetrachloroethene above its respective 2L standard. Finally, vinyl chloride has been detected in monitoring well II-9 at reported concentrations above its respective 2L standard.

The occurrences of these organic constituents of concern are defined by the location and vicinity of the above listed monitoring wells as illustrated on **Figure 4**. For illustrative purposes the lateral extent of these organic constituents of concern shown on Figure 4 was interpreted to extend half the distance between the monitoring well in which volatile organic compounds (VOCs) have occurred above the 2L standard or GPS and the next neighboring monitoring well in which no VOCs were detected at concentrations above the applicable standard. The downgradient extent of the organic constituents of concern is limited by North Buffalo Creek, which is the primary receptor of groundwater influenced by the landfill.

The occurrences of the metal thallium are limited to monitoring wells II-1, II-2, II-6, NES Well II-11, and II-12 and is also defined by the location and vicinity of these wells as illustrated on **Figure 5**. As with the VOCs, the lateral extent of the metal thallium shown on Figure 5 was approximated to half the distance between the monitoring well in which thallium occurred above its GPS and the next neighboring monitoring well in which thallium was not detected. The downgradient extent of thallium is defined by North Buffalo Creek which is the primary receptor of groundwater influenced by the landfill. It is important to note that thallium has not been detected above its respective GPS of 0.28μg/L in any compliance monitoring well for three consecutive groundwater monitoring events. If thallium is not detected above its GPS in the compliance monitoring wells during subsequent groundwater monitoring events, the need to address thallium through the corrective measures later discussed in this report may be modified (e.g. only detected in one or more wells) or nullified (e.g. non-detect in all compliance monitoring wells).

It is S&ME's opinion that the presences and distribution of trichloroethene (TCE) and vinyl chloride (VC) are likely related to anaerobic degradation of tetrachloroethene in the decomposing waste. As such, TCE and VC in certain downgradient compliance wells, likely represents the leading edge of the chlorinated solvent plume within this hydrogeologic regime.

2.3 Contaminant Source Confirmation

The source of the constituents of concern which have affected groundwater quality in the downgradient region of the White Street Landfill Facility is the Phase II waste management unit.

With the exception of benzene, the organic constituents of concern at the White Street Landfill are classified as chlorinated hydrocarbons. The hydrocarbon benzene has been detected sporadically in the monitoring history of the landfill primarily in compliance monitoring well II-7 but more recently in compliance well II-2. This compound had not been detected in compliance monitoring wells since the October 1998 monitoring event until it was detected in monitoring well II-2 during the April 2007 groundwater monitoring event. Specifically tetrachloroethene (PCE) and trichloroethene (TCE) and their degradation products are the most commonly detected chlorinated hydrocarbons in groundwater samples from the site. The most frequently detected degradation products include TCE and vinyl chloride. These daughter compounds may be present at the site solely due to biodegradation of PCE, or they may be present due to direct transport from a source within the Phase II waste management unit.

The metal thallium enters the environment primarily from coal-burning and smelting, in which it is a trace contaminant of the raw materials. It stays in the air, water, and soil for a long time and is not broken down. Some thallium compounds are removed from the atmosphere in rain and snow. It's absorbed by plants and enters the food chain. It builds up in fish and shellfish. The occurrences of thallium at the Facility are at low concentrations close to the NCDENR DWM groundwater protection standard for thallium and have been limited to monitoring wells II-1, II-2, II-6, II-11, and II-12 at the White Street Landfill.

2.4 Source Control Measures

In order to control and reduce the release of the constituents of concern from the Phase II waste management unit at the Facility, a low permeability clay cap was added to the top of the waste management unit in 1998. Low permeability caps reduce landfill mass by reducing vertical percolation of rain water into the waste mass through leaching.

In addition to the low permeability clay cap, the Facility installed an active decomposition methane gas extraction system in 1998. Decomposition gases can directly affect groundwater quality through interaction of the decomposition gas with the upper most prevalent aquifer. Contaminants contained within the decomposition gas can transfer to the monitored aquifer via phase transfer during interaction of gases and liquids. It appears that controlling decomposition gas levels at the Facility has reduced reported concentrations of the COCs in groundwater monitoring events post installation and activation of the active gas extraction system.

2.5 Groundwater End Use

Based on static water level measurements taken during each groundwater monitoring event at the Facility, the groundwater beneath Phase II generally flows toward the northwest, toward North Buffalo Creek which is predicted to be the primary discharge point for groundwater which has interacted with the Phase II portion of the White Street

Landfill. There are no uses of the groundwater which has been influenced by the Facility before it discharges to North Buffalo Creek.

2.6 Sensitive Receptor and Exposure Pathway Risks

As part of the previously submitted Nature and Extent Study, S&ME completed a drinking water receptor survey to visually look for evidence of drinking water wells within a quarter mile radius of the compliance monitoring wells in which groundwater impact has been detected. This visual survey was completed from a vehicle traveling along public roads and right-of-ways within the quarter mile radius.

The results of our survey show that there are five (5) drinking water wells within a quarter mile radius of the impacted compliance monitoring wells II-2 and II-7. The drinking water wells were identified on the opposite side of North Buffalo Creek from the landfill and are at a topographically higher elevation than the landfill. North Buffalo Creek is a local hydraulic divide for the uppermost prevalent aquifer

Based on these findings and the distance of the wells from the compliance wells showing impacts, the risk to these drinking water wells from the constituents of concern from the landfill is expected to be low. A map showing the locations of the identified drinking water wells within a quarter mile radius of compliance wells II-2 and II-7 is included as **Figure 6** of this Report.

North Buffalo Creek is the primary receptor of groundwater influenced by the Facility. North Buffalo Creek is classified as a Class C stream by NC DENR. There are no known public water outtakes from North Buffalo Creek within a 1 mile radius of the White Street Landfill. There is, however, as waste water treatment plant located immediately upstream of the Facility.

While a formal benthic study of the section of North Buffalo Creek influenced by the White Street Landfill has not been completed, the risk, if any, associated with the release of the primary constituents of concern (COCs) from the Facility will be to the aquatic life in North Buffalo Creek. However, as will be discussed in Section 2.8 below, the Facility has historically, and currently does, monitored surface water quality upstream as well as downstream of the landfill. Based upon the surface water quality monitoring results, there have been no exceedances of the 15A NCAC 2B surface water standards for any of the COCs in the portion of North Buffalo Creek influenced by the Facility. Therefore, the risk to aquatic life in North Buffalo Creek from discharging groundwater influenced by the Facility is expected to be low.

Additionally, the risks to onsite workers during installation and future maintenance of the selected remedies of phytoremediation coupled with monitored natural attenuation for the Facility will be low since it is unlikely that an exposure pathway will exist for workers to come in direct contact with groundwater containing the COCs.

2.7 Exceedances of Groundwater Quality Standards

The constituents considered the primary constituents of concern (COCs) which have exceeded the 15A NCAC 2L groundwater quality standards for which remedial action is required include volatile organic compounds benzene, trichloroethene, tetrachloroethene,

vinyl chloride, and 1,4 dichlorobenzene as well as the inorganic constituent thallium. The criteria for selecting this list of constituents as the COCs was discussed above in Section 2.1.

2.8 Exceedances of Surface Water Quality Standards

As part of the routine semi-annual sampling events conducted at the Facility each year, the surface water quality in the vicinity of the landfill has also been monitored. Five stream samples (SW-1, SW-2, SW-3, SW-4, and SW-5) have historically been collected. The locations of the stream samples are shown in **Figure 1** and **Figure 3** of this Report.

SW-1 was historically collected upstream from the landfill near the US Highway 29 bridge. SW-2 was collected from a southern tributary of North Buffalo Creek just before it joins the main creek west of the landfill entrance. SW-3 was collected downstream of the North Buffalo Wastewater Treatment Plant outfall and upstream of the landfill. SW-4 was collected downstream of the landfill at a USGS gauging station located on North Buffalo Creek about three-quarters of a mile north of the landfill. SW-5 was collected from North Buffalo Creek immediately downstream of the Phase II landfill disposal area. Due to past detections of select parameters exceeding the NCAC 2L groundwater quality standards at compliance well II-7, three stream samples were collected from North Buffalo Creek in the vicinity of compliance well II-7 (SWII-7, SWII-7up, and SWII-7down). SW-7 was collected from North Buffalo Creek immediately downstream of compliance well II-7. SW-7-up was collected from North Buffalo Creek approximately 100 feet upstream of sample SW-7. SW-7-down was collected from North Buffalo Creek approximately 100 feet downstream of sample SW-7.

Based upon the surface water quality monitoring results, there have been no exceedances of the 15A NCAC 2B surface water standards for any of the COCs in the portion of North Buffalo Creek influenced by the Facility.

2.9 Media of Concern

The active decomposition gas extraction system is in place to prevent migration of methane gas beyond the Facility boundary and to prevent methane gas from presenting an explosion hazard. It is expected that vapors being released by the COCs in groundwater will also be collected in the regions where active gas extraction wells are present. For vapors not collected by the active gas extraction system, the threat of vapor intrusion from the COCs is not expected to be a concern because the levels of the COCs are considered low and are close to their respective 2L standard and/or GPS value, and because there are no enclosed structures in the downgradient region of the Phase II portion of the landfill.

Contamination of the onsite soils is also not expected to be a concern because of the nature of the leachate's movement within the subsurface. Leachate from the waste management unit will percolate at a steep to near vertical angle until it reaches the uppermost prevalent aquifer. Once the COCs have entered the uppermost aquifer, the characteristics of their further migration toward North Buffalo Creek will be governed by the flow paths of groundwater within the aquifer. The only additional contact with onsite soils will be along the vadose zone or capillary fringe which should only change with seasonal fluctuations in static water level.

The media of concern is groundwater, which has been influenced by the Facility.

3.0 SELECTED REMEDY

3.1 Remedy Description

The City of Greensboro, North Carolina has chosen phytoremediation coupled with monitored natural attenuation (MNA) to restore groundwater quality at the White Street Landfill.

3.1.1 Phytoremediation

Method Description

Phytoremediation uses plants to cleanup contaminated soil and groundwater, taking advantage of plants' natural abilities to take up, accumulate, and for select constituents, even degrade soil and groundwater contaminants. Research indicates that phytoremediation is applicable to a broad range of contaminants including numerous metals, radionuclides, volatile organic compounds (such as chlorinated solvents), BTEX, PCBs, PAHs, pesticides/insecticides, explosives, nutrients, and surfactants. According to the information reviewed, general site conditions best suited for potential use of phytoremediation include large areas with moderate levels of contaminants in shallow soil or large volumes of water with low level contamination subject to low treatment standards. Depth to groundwater for in-situ treatment is generally limited to about 20 feet, but ex-situ treatment in constructed troughs or wetlands has also been investigated.

Research suggest that there are five basic types of phytoremediation techniques: 1) rhizofiltration, a water remediation technique involving the uptake of contaminants by plant roots; 2) phytoextraction, a soil technique involving uptake from soil, 3) phytotransformation, applicable to both soil and groundwater, involving the degradation of contaminants through plant metabolism, 4) phyto-stimulation or plant-assisted bioremediation, also used for both soil and water, which involves the stimulation of microbial biodegradation through the activities of plants in the root zone, and 5) phytostabilization, using plants to reduce the mobility and migration potential of contaminants in soil.

Major advantages reported for phytoremediation as compared to traditional remediation technologies include the possibility of generating less secondary wastes, minimal associated environmental disturbance, and the ability to leave soils in place and in a usable condition following treatment. Cited disadvantages include the long lengths of time required (usually several growing seasons), depth limitations, and seasonal effectiveness.

Performance and Reliability

Phytoremediation is an emerging technology that has the potential to treat a wide range of contaminants for a lower cost than traditional technologies. Phytoremediation techniques are almost by definition innovative. Several have been proven to be effective if appropriate site conditions exist. However, many have not been applied very often. In spite of the large body of information concerning applications of phytoremediation to

contaminated soils, groundwater, and surface waters, there is still a need to determine the specific plant(s) and treatment procedures for cleanup at a specific site that will work to remediate the contaminant(s) in the soil or water at the specific site. Many factors will influence the success of phytoremediation at a given site, including contaminant concentration, availability of nutrients, daily maximum and minimum temperature, rainfall or possibility of irrigation, grade on site, aesthetic considerations, daily illumination level, relative humidity, wind patterns, and/or the presence of growth-suppressing contaminants. The desired level of cleanup and the desired rate of decontamination also need to be considered. All of these factors need to be evaluated prior to a substantial expenditure of time and money on a large-scale phytoremediation effort.

Treatability studies could also provide information relating to disposal of contaminated biomass. Such disposal is a major consideration in the cleanup of metal-containing soils. Depending on regulations and plant concentrations of metals, plants may need to be landfilled, or the metals reclaimed through smelting, pyrolysis of biomass, or extraction.

In a discussion of the reclamation of metal-contaminated plant tissue by smelters, Dibakar (1997) stated that plant tissue with a dry-weight concentration of over one percent metal was amenable to reclamation. Ongoing progress of phytoremediation can be measured post implementation of this remedy. Tree sap flow rates can be monitored in order to determine the pumping rates of the trees. A noninvasive technique can be used to measure sap flow on certain trees during the various sampling seasons. Groundwater monitoring data from some successful projects indicate that the trees are capable of pumping large amounts of groundwater to the point that the water table has been lowered by tenths of feet in the planting area at the end of the growing season, indicating possible groundwater withdrawal by the trees for containment of the contaminated groundwater in future growing seasons. Some studies show that trees are utilizing the groundwater at rates of 2 to 10 gallon per day/tree.

Phytoremediation using trees to clean up groundwater contaminated with volatile organic compounds and metals may be an ideal choice for this site and others due to the lower cost, lower maintenance, and lower impact associated with the technology, especially if this technology is applied in conjunction with other technoligies.

Remediation Timeframe

Remediation time frames for phytoremediation can vary widely as with other technologies due to site specific conditions and varying end point remedial goals. Many case studies utilizing phytoremediation technology are on-going. Many of these cases are predicting multiple years until targeted remediation end points will be achieved. However, over time phytoremediation, under proper site conditions, can be effective at remediating volatile organic compounds and metals from groundwater.

Implementation Requirements

Specific methodologies for the application of phytoremediation to contaminated sites have been standardized, and general principals have been established. The general steps followed in the design and implementation of a phytoremediation project, for any of the

specific techniques under this technology discussed in the *Method Description* above include:

- Site characterization, including determination of soil and water chemistry/conditions, climate, and contaminate distribution;
- Treatability studies to determine rates of remediation and appropriate plant species, density of planting, location, etc.;
- Preliminary field testing at the site to monitor results and refine design parameters;
- Full-scale remediation;
- Disposition of resulting affected plant material

Institutional Controls and Requirements

The operating permit for the landfill would require modification by the NCDENR DWM to adopt and accept the revised Groundwater and Surface Water Monitoring Plan outlined in this CAP in Section 4.0 once it has received the approval of the NCDENR DWM.

3.1.2 Monitored Natural Attenuation

Method Description

Natural Attenuation is the reduction in mass or concentration of a chemical in groundwater over time or distance from the source of contamination due to naturally occurring physical, chemical, and biological processes. These naturally occurring physical, chemical, and biological processes include: dispersion, dilution, sorption, volatilization, biodegradation/biotransformation, and abiotic degredation/transformation. There are two types of mechanisms of natural attenuation; non-destructive and destructive mechanisms. Non-destructive mechanisms result in reduction in groundwater concentrations with no mass loss of contaminants from the system. Non-destructive mechanisms include dispersion, dilution from recharge, sorption, and volatilization. In the sorption process contaminant mass is transferred to aquifer solids. During volatilization contaminant mass is transferred to the surrounding atmosphere. Destructive mechanisms of natural attenuation results in mass loss of contaminants from the system. Destructive mechanisms include aerobic biodegradation, anaerobic biodegradation, cometabolism, abiotic oxidation/reduction reactions, and hydrolysis. The affects of the natural attenuation process can be seen over increased distance from a continuous contaminant source in a tapered linear relationship when compared with source concentrations. With increasing distance from a slug release contaminant source, the relationship between attenuation and contaminant concentrations will be represented by a bell curve plot of groundwater quality data over time throughout the natural attenuation process. For the White Street Landfill Phase II, it appears that the contaminant plume is at least stable, if not shrinking based on the decreasing trends of the primary constituents of concern observed at well II-7. Monitoring well II-7 was formerly the most impacted downgradient monitoring well within the Phase II compliance monitoring network at the Facility. Additional plume behavior at the Facility will be determined during the MNA process.

Monitored Natural Attenuation is considered as an appropriated remedy for corrective measures at a Facility if the site meets the following criteria:

1. The groundwater flow is not in a direction of a public or private drinking water supply
2. The groundwater flow velocity, based on monitoring well conductivity tests, does not suggest the contaminated groundwater flow as quickly leaving the property boundary, as further suggested by:
   a) The site has a relatively high clay content and low sand content.
   b) The site does not have a steep upgradient hydraulic head.
   c) The site has well drained soil, without many preferred groundwater flow pathways.
   d) The constituents exceeding 2L standard do not dramatically change over short periods of time.

Biodegradation is often the primary reduction process of landfill mass during the natural attenuation process. Biodegradation involves biologically mediated oxidation/reduction reactions and is fundamentally an electron transfer process. Electrons are transferred from more reduced compounds to more oxidized compounds. Energy released is used by microbes to sustain metabolism and growth. Redox chemistry is a good analogy of this process in that electron donors are what microbes "eat" and electron acceptors are what microbes "breath" (Barden & Wiedemeier 1997). Electron donors include natural organic carbon, fuel hydrocarbons, and most importantly for this case, landfill leachate constituents.

The constituents of concern at the Phase II Landfill include the organic parameters benzene, Tetrachloroethene, Trichloroethene, 1,4 dichlorobenzene, and Vinyl Chloride as well as the hydrocarbon benzene. Research has shown that chlorinated solvents which include Tetrachloroethene and Trichloroethene, all biodegrade via halorespiration (Barden & Wiedemeier 1997). Tetrachloroethene and Trichloroethene have also been shown to degrade through cometabolism. Benzene and 1,4-dichlorobenzene will biodegrade via aerobic microbial consortium. Finally, Vinyl Chloride, an anthropogenic Cl-ethene, will biodegrade through aerobic respiration and iron (III) reduction. Based on the years of groundwater monitoring analytical data coupled with the various studies throughout the groundwater monitoring history of the Facility including the previously discussed Nature and Extent Study, the primary substrate at the Facility should contain a sufficient quantity of anthropogenic organic carbon to support biodegradation of the chlorinated solvents of concern. In addition, there is likely native organic carbon in trace amounts which will further enhance biodegradation rates of these constituents. However, exact analysis of existing native organic carbon has not been studied to date. The dominant thermal electron-accepting process through which biodegradation takes place is:

Aerobic Respiration	Dentrification	Iron (III) Reduction	Sulfate Reduction	Methanogenesis

Time ----------►

◄---------- **Distance From Source**

(After: Bouwer and McCarty, 1984)

The geochemical content of the uppermost monitored aquifer will evolve over time due to the biodegradation process. Based on the above equation, with increased time, a decrease in electron acceptors such as dissolved oxygen, nitrate, FE(III), SO^{2-}_4 and CO_2 will occur close to the source as a result of the metabolic processes intrinsic to the hydrogeologic regime at the site. Conversely there will be an increase in degradation/transformation products including dissolved iron, methane, ethane, ethane, and chloride. If additional lines of evidence for natural attenuation are needed, microbiological indicators can be analyzed and included in the study if warranted. The effectiveness and magnitude of the natural attenuation process can be demonstrated through inclusion of these constituents during the routine groundwater sampling and subsequent analytical analysis. Monitoring these indicators as well as noting reductions in the concentrations of the landfill constituents of concern over time will be essential for mapping and gauging a successful natural attenuation process over time.

MNA can result in complete mineralization of contaminants to innocuous products. Although considered a "passive" technique, it allows for continuing use of infrastructure and can be very cost effective.

An evaluation of the risks posed to human health and the environment at the landfill is included in this report. Based on the risk evaluation it may be concluded that MNA would be an appropriate remedial measure for the landfill coupled with phytoremediation.

This process would involve sampling the appropriate property boundary groundwater monitoring wells for the constituents found over the 2L standard. After an appropriate amount of samples have been taken, assumptions may be drawn concerning the constituent magnitude concentration trend (increasing, decreasing, or static) in order to reevaluate the Dispersion and Natural Attenuation process effectiveness. The objectives for a monitored natural attenuation groundwater remediation program include the following:

- Demonstrate that natural attenuation is occurring
- Be protective of human health and the environment
- Monitor natural attenuation and environmental impact; and
- Restore COC concentrations in groundwater at the compliance boundary to below the 2L standard and GPS

Performance and Reliability

MNA is a proven remedial alternative and can successfully restore groundwater quality and return monitored constituents to within 2L standard levels. MNA has been used at many different types of sites to treat both impacted groundwater and soils. MNA is an adequate stand alone remedy in cases where there is no identified risk to human health or the environment, and/or when proactive remediation is not likely to be more effective than MNA at restoring groundwater quality.

MNA performance differs at every site and is dependant on the individual site conditions. Therefore, performance of MNA is typically determined by long term monitoring for the monitored contaminant parameters, daughter products if any, and other indicators of

attenuation such as electron acceptors (oxygen, sulfate, nitrate, and ferrous iron) and waste products (ethane, ethane, methane, chloride, carbon dioxide, etc.).

Associated Receptor Impacts

There are no major remediation-related impacts associated with MNA, since MNA results in the reduction in mass of COCs. Minor impacts would include the generation of contaminated purge water, which would have to be disposed of in accordance with applicable regulations.

Remediation Timeframe

The timeframe for achieving objectives should be reasonable compared to other alternatives. The existing and historical data can be used as a predictor of future results. Based on the historical groundwater data, it is reasonable to believe that the GPS can reasonably be obtained in 15+ years based on case study literature. It is believed that MNA has already been occurring and is evidenced by the daughter products such as vinyl chloride already present in the compliance and NES groundwater monitoring wells.

Implementation Requirements

In order to implement MNA at the Facility a performance monitoring PM program designed to address the higher level of uncertainty regarding the mass contaminants and predictive analyses will be required. Per the EPA Office of Solid Waste and Emergency Response (OSWER) Directive (1999), performance monitoring to evaluate the remedy effectiveness and to ensure protection of human health and the environment is a critical element of all response actions. The monitoring program will have to be designed to incorporate the following:

Demonstrate that natural attenuation is occurring according to expectations;

- Detect changes in environmental conditions that may reduce the efficacy of any of the natural attenuation processes;
- Identify any potentially toxic and/or mobile transformation products;
- Verify that the plume(s) is not expanding
- Verify no unacceptable impact to downgradient receptors
- Detect new releases of contaminants to the environment that could impact the effectiveness of the natural attenuation remedy;
- Demonstrate the efficacy of institutional controls that were put in place to protect potential receptors; and
- Verify attainment of remediation objectives.

Institutional Requirements

The NCDENR-DWM will require modification to the operating permit for the landfill.

3.2 Justification of Selected Remedy

Phytoremediation

Prior to final selection, S&ME researched phytoremediation as a possible remedy to reduce the concentrations of the COCs at the White Street Landfill to levels within the acceptable compliance limits. S&ME's research included case studies completed by others involving either similar site characteristics and/or similar COCs compared to the White Street Landfill, as well as testimonials by, and research from, outside professionals considered as experts in phytoremediation by their peers and the environmental industry itself. Consideration was also given to the existing site characteristics in the areas where the proposed phytoremediation beds will be installed such as; depth to groundwater, topography, availablility of acreage for installation of the phytoremediation system, and soil type. The following findings provide justification for the selection of Phytoremediation.

Phytoremediation has been successfully employed as the principal remedy to restore groundwater quality at similar sites to the White Street Landfill, including other landfills in North Carolina. The results of the selected case studies which S&ME examined showed favorable results including the reduction in reportable concentrations of similar constituents of concern.

According to information obtained by S&ME through interviews with Phytoremediation experts, the optimal depth to the uppermost aquifer for favorable results from a phytoremediation system should be approximately 20 to 25 feet below ground surface. The maximum depth to water observed in any Phase II downgradient compliance monitoring well during the September 2007 groundwater monitoring event was 21.77 feet in monitoring well II-2. The average depth to groundwater was 15.6 feet below ground surface. Additionally, these static water elevations were taken during the drought of 2007. Water levels under normal conditions are expected to be more shallow.

Additionally, the proposed phytoremediation planting zone is located in or along the alluvial deposit of North Buffalo Creek. Alluvial deposits, according to the experts interviewed by S&ME, are typically favorable to hybrid poplar tree growth. Also, the alluvial bench where the phytoremediation beds will be installed is relatively flat topographically, which is also favorable to phytoremediation success. A summary of selected research documents and interviews with phytoremediation experts is included in **Appendix II** of this Report.

Monitored Natural Attenuation (MNA)

As described in Section 3.1.2 above, monitored natural attenuation (MNA) is widely accepted as a long term "passive" remedy to remediate volatile organic compounds in groundwater. If the proper geochemical conditions exist in the subsurface environment at the facility, MNA is a proven remedial alternative and can successfully restore groundwater quality and return monitored constituents to within 2L standard levels. MNA has been used at many different types of sites to treat both impacted groundwater and soils. MNA has been shown to be an adequate stand alone remedy in cases where

there is no identified risk to human health or the environment as in the case of the White Street Landfill.

As illustrated in Figure 4 of this report, the volatile organic plume in the downgradient region of Phase II is naturally divided into 3 distinct zones. The first zone includes compliance monitoring well II-1, the second zone includes compliance monitoring wells II-7, II-7B, and NES well II-9, and the third zone contains compliance well II-2 and NES well II-2B. In order to evaluate the degradation potential of the chlorinated solvents, 1,4-dichlorobenzene and benzene within the subsurface geochemical environment in each of these zones, S&ME collected groundwater samples from each of these wells and had them analyzed for parameters indicative of a suitable environment for anaerobic biodegradation processes. This screening process is designed to recognize geochemical environments where anerobic biodegradation is plausible. The select list of parameters includes: oxygen, nitrate, Iron (Fe+2), sulfate, sulfide, methane, oxidation reduction potential, pH, total organic carbon, temperature, chloride, BTEX, trichloroethene, dichloroethene, vinyl chloride, 1,1,1 trichloroethane, and chloroethane. The parameter values obtained from field and laboratory analyses of the groundwater samples are compared to criteria indicative of a suitable geochemical environment for anaerobic biodegradation processes. Each result is assigned a point value which is based on a comparison of the obtained result to a range of predetermined values indicative of a suitable environment for anaerobic biodegradation. The points are totaled and if the score for an individual sampling location is 15 or more points, it is likely that anaerobic biodegradation (i.e. reductive dechlorination) is occurring at that location. The interpretations given in the following table are from the NCDENR DWM Guidance on Developing a Monitored Natural Attenuation Remedial Proposal for Chlorinated Organics in Groundwater, Hazardous Waste Section, October 2000:

Total Points	**Interpretation**
0 to 5 points	Inadequate evidence for anaerobic biodegradation of chlorinated organics.
6 to 14 points	Limited evidence for anaerobic biodegradation of chlorinated organics.
15 to 20 points	Adequate evidence for anaerobic biodegradation of chlorinated organics.
>20 points	Strong evidence for anaerobic biodegradation of chlorinated organics.

On May 5, 2008, S&ME collected groundwater samples from compliance monitoring wells II-1, II-2, II-7, and NES wells II-2B, II-7B, and II-9 for the purpose of screening the samples for evidence of a suitable geochemical environment for the anaerobic biodegradation processes. The analytical results from each well along with the point value assigned to each result is illustrated in **Table 10** of this Report. The full laboratory report of the analytical results is included in **Appendix III**. The results indicate that the geochemical environment within the zone including compliance well II-1 as well as the zone containing compliance well II-2 and NES well II-2B is adequate for anaerobic biodegradation of chlorinated organics. However, the zone of the VOC plume containing compliance well II-7 and NES wells II-7B and II-9 shows limited evidence for anerobic biodegradation of chlorinated organics. The historical analytical results from compliance

well II-7 show a decreasing trend in the concentrations of PCE and TCE. Additionally, vinyl chloride, a daughter isotope of PCE, was first detected in well II-7 during the September 27, 2007 groundwater monitoring event. These trends are indicative of reductive dechlorination at or upgradient of well II-7. It is possible that adequate anaerobic biodegradation conditions exist upgradiant of well II-7 and they are responsible for the observed trend of decreasing PCE and TCE concentrations. Additionally, phytoremediation beds will be planted in the VOC plume zone containing compliance well II-7 and NES wells II-7B, and II-9 as illustrated on **Figure 7** to combine with the anaerobic biodegradation process to restore groundwater quality below the 2L standards.

In order to fulfill the requirements set forth in 15A NCAC 13B.1635, the City of Greensboro held a public meeting on Monday, June 19, 2008 for the purpose of inviting comments and input from the general public, especially those living near the landfill, regarding phytoremediation as the Facility's selected remedy. A copy of the ACM Amendment was made available to the public by posting it at the City's public library. Overall the general public was accepting of, and generally agreed with, implementing phytoremediation as the Facility's selected remedy to restore groundwater quality at the Facility. Comments received during the public meeting and questions asked from the public meeting are included in **Appendix IV** of this Report.

In summary, our research supports the theory that phytoremediation coupled with MNA is likely to be a viable option to remediate the COCs from the uppermost aquifer at the White Street Landfill.

As part of this CAP, the City of Greensboro requests the right to delay the implementation of Phytoremediation in the vicinity of compliance wells II-6 and II-12 since the historic detections of Thallium is the sole reason for their inclusion in this CAP. As noted in Table 6, Thallium has not been detected at these compliance wells during the last three monitoring events. It is S&ME's opinion that if the current trend on non-detection of thallium in these wells continues, it would not be practical or reasonable to implement Phytoremediation in the vicinity of these wells, given the current lack of repeated exceedances of the groundwater protection standard, the trigger for corrective measures at these wells.

3.3 Technical Approach, Design, and Specifications

According to S&ME's research, hybrid poplar trees and willows are the desired species for phytoremediation systems targeting chlorinated solvents and metals which make up the COCs at the White Street Landfill. The trees are planted in beds either directly above the impacted groundwater plume or downgradient of the source area. The beds are planted perpendicular to the primary direction of groundwater flow. For this CAP, S&ME has chosen a technical approach that is based on and consistent with the work of Dr. Licht.

According to Dr. Licht, the phytoremediation bed acts as a bioreactor. The target is 8 days storage/interaction time in the root system "bioreactor" to successfully remediate the COCs. Based on research and field trials completed by Ecolotree®, trees planted in 4 rows with 11 feet of spacing between each row such that the minimum span of the phytoremediation bed is 33 feet wide typically achieves this targeted 8 day

storage/interaction time within the root system. The average groundwater velocity in the downgradient region of the Phase II portion of the White Street Landfill was 0.061 feet per day based on the September 2007 gradient calculations (reference Appendix I). Based on this average groundwater velocity, groundwater storage/interaction time in the root system "bioreactor" will be approximately 541 days, easily surpassing the minimum 8 day requirement. As a result, the phytoremediation beds installed at the facility may only require 2 rows of poplar trees. The actual number will be determined in the design phase of the phytoremediation system.

Prior to planting the hybrid poplar tress, each row is excavated to a depth of up to 6 feet to enhance entrapment of rain water to naturally irrigate the trees. According to Dr. Licht the phytoremediation beds may need additional irrigation. The hybrid poplar trees are planted along each row and are spaced a distance of 7 feet apart. The distance between the hybrid poplar trees along each row can be changed. Spacing of the trees is usually determined by the number of years projected until they are harvested. The shorter the cutting cycle/time to harvest, the closer the spacing of the trees. For poplars a cutting cycle of one to three years can have spacing as short as 2 to 4 feet. For a harvest time of 15 to 20 years spacing can be much wider, sometimes as much as 15 feet between trees. Closely spaced, genetically identical trees, such as hybrid poplars, are prone to insect infestations and fungal diseases. Additionally, trees that are too widely spaced apart may take longer to root to the water table. According to Dr. Licht, the spacing of 7 feet between trees is usually ideal for overlap of the subsurface zone of influence between the poplar tree root balls, and also for timing the harvest and subsequent replanting of the hybrid poplar trees. A successful tree spacing design in phytoremediation achieves a balance where tree spacing promotes deep rooting without fostering conditions that encourage plant pathology problems. A proposed phytoremediation bed design is illustrated in **Figure 8**.

Trenches can be excavated by conventional methods, but often a specialized trenching machine works best. Trenches installed for in-situ phytoremediation work best on flat terrain, however, phytoremediation beds can be effective installed on up to 3:1 slopes. Some systems have been installed on 4:1 slopes, but 3:1 is the maximum recommended slope.

S&ME completed a walk through of the entire area in the downgradient region of the Phase II waste management unit where the proposed phytoremediation beds will be installed. Much of the targeted areas are mostly flat alluvial depositions of North Buffalo Creek and should be ideal for planting phytoremediation beds. Photos of the proposed planting areas are included in **Appendix V** of this Report. At the time of our reconnaissance, this area was covered in lush grasses with a mixture of immature and mature hardwoods. The existing species observed through out this area included immature cedar, sweet gum, and cucumber trees. The only area containing existing yellow poplar trees was southwest of II-1. Consequently, the areas where the phytoremediation beds are to be installed at the White Street Landfill will have to be cleared before planting the hybrid poplar trees.

The proposed areas to install phytoremediation beds at the White Street Landfill were chosen based on the distribution of the COCs which are illustrated on Figures 4 and 5 of

this Report. We are proposing to install a continuous phytoremediation bed beginning at the mid-point between monitoring wells II-2B and II-13 and continuing west and south to the midpoint between compliance wells II-7B and II-10 as illustrated on Figure 7 of this Report. Additionally, we are proposing to install a second continuous phytoremediation bed beginning just northeast of compliance well II-1 and continuing to a point southwest of compliance well II-12 as illustrated on Figure 7. As illustrated on Figure 7, these beds will be installed between the affected compliance wells and North Buffalo Creek with the exception of compliance wells II-7B and II-1. The available space between each of these wells and the creek is insufficiently wide to accommodate the typical 33 feet wide phytoremediation beds. Therefore, in these locations, the phytoremediation bed will be installed between these wells and the Phase II waste management unit as illustrated on Figure 7.

In a telephone conversation between Ms. Jackie Drummond of the NCDENR DWM and Connel Ware of S&ME, Inc. on May 15, 2008, S&ME understands that the NCDENR-DWM would permit the City of Greensboro to move the compliance boundary from it's present location within 250 feet of the Phase II waste management unit, as illustrated on Figure 7, to the edge of North Buffalo Creek. It is the City's desire to officially shift the compliance boundary to the edge of North Buffalo Creek as illustrated on Figure 7. This shift in the official compliance boundary will be included in the permit amendment to implement this Corrective Action Plan as well as the revise the Water Quality Monitoring Plan for the Facility. According to the NCDENR DWM, shifting the official facility compliance boundary to the edge of North Buffalo Creek will not require additional permit amendment fees beyond the fee incurred to implement this Corrective Action Plan. Additionally, according to NCDENR DWM, the phytoremediation beds can be planted within the 50 foot buffer offset from the Facility property boundary which is the center line of North Buffalo Creek.

It is possible to plant hybrid poplar cuttings by hand or by machine. The best time to plant cuttings is when soil temperature reaches 50 degrees Fahrenheit. In the Central United States, planting usually occurs between mid April and early June. Proper soil moisture and control of weeds are critical for a successful first year. The soil should be moist and the cuttings kept wet and protected from the sun while planting. The fatal flaw characteristics for a site to impede the success of a phytoremediation system include; wildlife, salinity, over hydration, lack of management, and agronomy (weed control). According to S&ME's research, phytoremediation beds, particularly in the seedling stage, must be protected from beavers and deer which cut or browse on these plants. If onsite soils are too saline or overly hydrated, hybrid poplars will not survive. It is critical to maintain proper moisture while avoiding over hydration of the tree beds. Since the proposed planting area for the phytoremediation beds at the Facility is an alluvial deposit S&ME considered the potential impacts of clay layers between the sand layers of the alluvium. According to Dr. Licht, clay layers can actually enhance the performance or an in-situ phytoremediation bed by keeping vertical percolation rates from being too rapid. Once planted, the phytoremediation beds must be maintained and weeds kept mowed in order to prevent weeds and other vegetation from overtaking and choking out the hybrid poplar seedlings.

Static water elevations were collected during late April of 2008 in each of the downgradient compliance monitoring wells of the Phase II portion of the White Street Landfill. The depths to groundwater ranged from a maximum depth of 21.77 feet below ground surface (bgs) in compliance well II-2 to a minimum depth of 10.66 feet bgs in II-12. At this range, the depth to groundwater is shallow enough for hybrid poplar trees to effectively uptake the COCs through rhizofiltration. According to Dr. Licht, we should assume an average of 12 gallons of uptake per 7 to 8 linear feet of row, or 12 gallons/day per tree. However, mature hybrid poplar trees that have reached canopy height (40 feet and up) can uptake 30 to 40 gallons per day.

While there is no design involved with MNA, there is evidence that MNA is already occurring at the Facility and the progress of MNA will be monitored as described below in Section 4.0.

4.0 GROUNDWATER AND SURFACE WATER MONITORING

4.1 Revised Water Quality Monitoring Plan

This portion of the Corrective Action Plan is a summary of the monitoring system, frequency, and analytical parameter list the Facility will use to monitor groundwater quality under the corrective action phase of monitoring in the Phase II portion of the White Street Landfill. The Facility's current Phase II Water Quality Monitoring Plan (WQMP) will be revised to reflect the changes to the groundwater monitoring system at the Facility under this Corrective Action Plan. The revised Water Quality Monitoring Plan will be titled the Corrective Action Monitoring Program (CAMP). The CAMP will be a complete, stand alone document which will be completed and submitted under a separate cover after receiving NCDENR approval of this Corrective Action Plan. The CAMP will be inserted in the Facility's permit prior to the actual initiation of the remedial actions discussed in this report as outlined under 15A NCAC 13B .1636. A copy of the final NCDENR approved CAMP will be inserted into the Facility's permit amendment as an attachment.

4.2 CAMP Monitoring Well Network

4.2.1 Revised Compliance Monitoring Network Description

The Facility's new compliance monitoring network under the CAMP will consist of eleven monitoring wells: II-2, II-3, II-4, II-5, II-6, II-8, II-9, II-11, II-12, MW-13, and MW-14. Monitoring wells MW-13 and MW-14 serve as the Facility's upgradient monitoring wells. Former NES wells II-9 and II-11 were added to the list of compliance monitoring wells due to the previous detections of select COCs within groundwater samples collected from these wells.

This suite of compliance monitoring wells will continue to monitor constituent concentrations migrating hydraulically downgradient of the Phase II waste management unit.

4.2.2 Sentinel Monitoring Network Description

The purpose of a sentinel monitoring network is to monitor groundwater quality post interaction with a Facility's remediation system and to ensure that the plume does not adversely threaten receptors. For the White Street Landfill a network of sentinel monitoring wells will be installed downgradient of the phytoremediation beds between the remediation system and North Buffalo Creek. The locations of the proposed sentinel monitoring wells are illustrated on **Figure 9**. These wells will serve to monitor groundwater quality after interaction with the phytoremediation beds and prior to discharging to North Buffalo Creek.

One new sentinel monitoring well will be installed downgradient of each of the compliance or former NES monitoring wells in which COCs have been detected at concentrations exceeding the 2L standard. These wells include compliance wells II-2, II-6, former NES wells II-9, II-11, and compliance well II-12. These sentinel wells will be installed on the downgradient side of the phytoremediation beds downgradient from the above listed impacted monitoring wells. The new sentinel wells will be labeled with the prefix "SMW" for "Sentinel Monitoring Well" and will be labeled SMW-1, SMW-2, SMW-3, SMW-4, and SMW-5 as illustrated on Figure 8. The proposed new sentinel wells will monitor the same portion of the uppermost aquifer as the affected compliance or NES wells upgradient of their location.

Due to space constraints the proposed phytoremediation beds will be installed upgradient of former compliance monitoring wells II-1, II-7, and former NES well II-7B. Therefore, as illustrated on Figure 7, the phytoremediation beds will be installed between these wells and the Phase II waste management unit. As a result, these wells will become sentinel monitoring wells and will be included in the sentinel monitoring network. They will also monitor groundwater quality after interaction with the phytoremediation beds and prior to discharging to North Buffalo Creek. Additionally, former compliance well II-10 will also be added to the sentinel monitoring network. This well is being added for the purpose of monitoring groundwater quality in the zone between the two phytoremediation systems where no trees will be planted. Monitoring groundwater quality at this well will help ensure that impacted groundwater does not pass undetected between the phytoremediation systems, should a future release from the Phase II waste management unit occur.

4.3 CAMP Monitoring Constituent List

Under the CAMP, groundwater samples collected from the compliance monitoring network, which will include monitoring wells: II-2, II-3, II-4, II-5, II-6, II-8, II-9, II-11, II-12, MW-13, and MW-14, will continue to be analyzed on a semi-annual basis. One sampling event will be for all Appendix II constituents, and one sampling event will be for Appendix I constituents plus previously detected Appendix II constituents. A report of each sampling event will continue to be developed and submitted to the Division for placement into the operating record. Additionally, wells II-1, II-2, II-2B, II-7, II-7B, and II-9 will be analyzed for the MNA indicator parameters listed in Table 7 on a quarterly basis for the first monitoring year following NCDENR approval of this CAP and annually thereafter. The basis for sampling on a quarterly frequency for the first year

following CAP approval by NCDENR is for the purpose of establishing background concentrations of these parameters for future comparative purposes.

Under the CAMP, groundwater samples collected from the sentinel monitoring network, which includes former compliance monitoring wells II-1, II-7, II-10, and former NES well II-7B, along with the proposed new sentinel wells SMW-1 thru SMW-5, will be analyzed semi-annually for the COCs listed in Section 2.1 of this report. These wells will be sampled and analyzed during the routine semi-annual compliance monitoring events. Should additional constituents be detected above the 2L groundwater quality standard in the compliance monitoring well network during future groundwater monitoring events, these constituents will be added to the sentinel monitoring well constituent list.

4.4 Surface Water Sampling

The purpose of collecting surface water samples is to verify that the migration of constituents from the landfill will not result in a violation of surface water quality standards. Under the CAMP the Facility will continue monitoring surface water quality at the already established surface water sampling points including: SW-2, SW-3, SW-4, and SW-5. Surface water samples will be collected from these sampling points on a semi-annual basis during the routine semi-annual groundwater monitoring events. The collected surface water samples will be analyzed for the North Carolina Appendix I constituents plus the COCs listed in Section 2.1 of this report. The COC list will be amended to include any new constituents which become COCs by exceeding the 2L groundwater standard in either the compliance and/or sentinel monitoring network should this occur in the future. The surface water sampling locations are illustrated on Figure 1 of this report.

5.0 EVALUATION OF EFFECTIVENESS OF REMEDIAL ACTIONS

5.1 Performance Evaluations

The Facility will demonstrate that the phytoremediation system coupled with MNA is performing according to design and meeting the requirements set forth in this Plan through scheduled performance evaluations. These scheduled performance evaluations will contain technical information outlined below and will be prepared in accordance with 15A NCAC 13.B1637 of the NCDENR DWM.

- Groundwater quality data will be collected from the compliance and sentinel monitoring networks in order to monitor the phytoremediation system and monitored natural attenuation processes ability to achieve clean-up standards at the compliance and sentinel monitoring points. The effectiveness of the system will be determined through evaluation of the analytical data. The evaluations will include analysis of physical and chemical changes in the aquifer conditions as well as physical and chemical changes in the plume characteristics. Details of the evaluations will be discussed in Section 5.2 below.

  This data will be collected on a quarterly basis for the first monitoring year following NCDENR approval of this CAP and annually thereafter. The basis for sampling on a quarterly frequency for the first year following CAP approval by

NCDENR is for the purpose of establishing background concentrations of the MNA indicator parameters for future comparative purposes.

- The Facility will maintain annual phytoremediation assessment logs for the phytoremediation system. Each annual phytoremediation assessment log will contain entries for observed site conditions including general site conditions, annual rainfall to date, phytoremediation bed inspections, tree health observations, tree growth observations, phytoremediation bed maintenance, and general information. An example phytoremediation assessment log is included in **Appendix VI** of this Report. The annual phytoremediation assessment logs will be included in an annual Corrective Action Site Evaluation (CASE) Report which will be discussed in detail in Section 5.2 below.
- In conjunction with the annual phytoremediation assessment logs, the Facility will also perform an annual tree growth survival audit. Under this audit, each tree within the phytoremediation system will be visually inspected to determine if it is: dead or dying, shows limited growth, is established, or shows good growth and appears healthy. This audit will ensure the phytoremediation beds remain healthy to promote effective remediation of groundwater quality. The results of this annual audit will be summarized in a spreadsheet and included in the annual CASE Report discussed in Section 5.2 below.
- The groundwater analytical results will be reviewed each year to assure that the remedial actions proposed in this CAP remain on schedule with the proposed schedule outlined in Section 7 of this Plan.
- The continuous groundwater and surface water monitoring activities and subsequent laboratory analytical data will be monitored to assure that the remedial actions outlined in this Plan are protecting human health and the environment.
- All groundwater monitoring personnel will be OSHA trained and certified and will comply with OSHA standards to assure safety of site personnel. No other personnel will be in contact with groundwater influenced by the Phase II waste management unit.
- Installation and operational budgets will be set to ensure that the remedial actions proposed in this CAP meet the anticipated start-up and annual O&M costs as defined in the Facility's ACM.

It is anticipated that it will require several years for the phytoremediation system to become established. Water quality improvements due to phytoremediation are not expected to be observed in this interim timeframe.

It is not anticipated that the phytoremediation system coupled with monitored natural attenuation will have negative impacts to other media. Additionally, given the relatively low concentrations of the listed COC's as well as the theory that VOCs will be transpired through the surface biomass of the hybrid poplar trees, we do not anticipate that there will be "residuals" generated from the phytoremediation system or MNA processes.

5.2 Corrective Action Site Evaluation Reporting

The Facility will prepare and submit Corrective Action Site Evaluation (CASE) reports annually to NCDENR which will provide an analysis of the progress and effectiveness of

the phytoremediation system as well as MNA processes at restoring groundwater quality at the Facility. The Facility will also maintain copies of the CASE Reports on file for its records. The CASE Reports will each include a summary of the following:

- An analysis of the statistical trends in the MNA indicator parameters analytical results from the groundwater monitoring year for which the CASE Report is being prepared. The concentration trends in the analytical data from the sentinel monitoring wells will reviewed in order to determine the effectiveness of the selected remedies at restoring groundwater quality at the Facility. The evaluation may include a direct point comparison to historical concentrations or may include a statistical evaluation using one of the five NCDENR approved statistical evaluation methods for MSWLF Facilities. This evaluation will also include trend graphs.
- The most recent groundwater elevation data with respect to the revised compliance and sentinel monitoring network functionality. A potentiometric map will be constructed and included from the groundwater elevation data collected throughout the specific groundwater monitoring year.
- Contaminant and daughter product isoconcentration maps will be prepared from the analytical data collected for the specific monitoring year. These maps will be prepared for the COC's detected in the monitoring well network. These maps will graphically illustrate the interpretation of data on the distribution and relative transport and degradation rates of contaminants in the subsurface, and will be utilized to monitor and illustrate the effectiveness of the phytoremediation system.
- Contour maps will also be prepared for electron acceptors and metabolic by-products. These contour maps will also be prepared and submitted in each CASE report to graphically illustrate the effectiveness of the MNA process at the Facility. Contours will be generated for electron acceptors consumed (decrease in the concentration of dissolved oxygen (DO), nitrate, and sulfate) and metabolic by-products produced (increase in the concentration of iron (Fe+2), chloride, and methane) during biodegradation. Under anaerobic conditions, the concentrations of nitrate and sulfate will be seen to decrease to levels below background over time, and the concentrations of iron (Fe+2), chloride, and methane will increase to levels above background of time. Dissolved oxygen concentrations will decrease when biodegradation occurs under aerobic conditions.
- Contour maps will also be prepared for total organic carbon, total alkalinity (as calcium carbonate), and oxidation-reduction potential (ORP). Respiration of dissolved oxygen, nitrate, iron (Fe+2), and sulfate tends to increase the total alkalinity of groundwater. Oxidation-reduction potential potential in groundwater will be monitored because some biological processes operate only within a prescribed range of ORP conditions.
- Each CASE Report will include the annual phytoremediation assessment logs as well as the annual tree growth survival audits. The CASE report will include recommendations for tree replacement or additional tree plantings if site conditions and/or analytical assessments warrant it. Additionally, recommendations for specific maintenance or upkeep steps may be recommended in a CASE report if it is deemed necessary.

- Each CASE Report will include a conclusions and recommendations section which will include an evaluation of the effectiveness of the corrective action process, and recommendations for upkeep and/or system modifications if warranted.

The CASE Reports will be signed and sealed by a North Carolina Licensed Geologist or North Carolina Registered Engineer and submitted to NCDENR within 90 days after completing the second semi-annual groundwater monitoring event at the Facility each year unless an alternate schedule is established in the Facility's permit.

6.0 CONTINGENCY PLAN

If, prior to CAP approval by NCDENR and subsequent implementation, an unforeseen condition should develop or other such site conditions exist which require additional or alternative immediate action by the Facility in order to protect human health or the environment, appropriate action will be taken to address the issue(s). If alternate corrective measures are implemented, a minor permit amendment will be sought by the City to implement the alternative measures. Any additional corrective action measures will be submitted to NCDENR for approval as an addendum to the CAP prior to implementing the measures.

If a significant portion of the trees in the phytoremediation program die, or the overall health of the trees is considered to be inadequate for effective remediation, an assessment will be prepared to determine if the program should be modified by adding different types of trees and/or revising the locations of the trees.

If the CASE Reports show that, over the time period outlined and discussed in Section 7 of this report, the phytoremediation system coupled with monitored natural attenuation is not effectively restoring groundwater quality to concentrations at or below the 2L standards, the Facility will evaluate adding additional rows of hybrid poplar trees to the phytoremediation beds. If modifying the phytoremediation system remains unsuccessful over a reasonable period of time at restoring groundwater quality to levels at or below the 2L standards, the Facility will implement additional remedial action. The alternative remedial action selected will be chosen from the list of possible remedies presented in the ACM previously completed and submitted by S&ME on behalf of the Facility. The most likely alternative remedial option the Facility would consider under these conditions would be the installation of a groundwater extraction system with the collected groundwater being discharged to the local POTW.

If, during the Corrective Action Monitoring Period, the surface water samples collected from North Buffalo Creek immediately adjacent or downgradient of the Facility indicate levels of the COCs in excess of the 15A NCAC 2B surface water standards, and it is determined through analysis that the exceedance has been caused by the Facility, then the Facility will select, design, submit to NCDENR for approval, and implement corrective measures adequate to reduce the contaminates to levels below the surface water standards. The selected corrective measures will be selected from the possible remedies presented in the Facility's ACM and will be adequate to prevent adverse impact to the environmental receptor's aquatic regime.

The selection of an alternative remedy will be made only if, at a point in time in the future, it is deemed necessary to implement an alternative corrective measure based on the above criteria. The alternate remedy selection will be based on specific data obtained throughout the corrective action phase of monitoring as well as site conditions exhibited at the time the alternate remedy is selected.

7.0 CORRECTIVE ACTION PLAN IMPLEMENTATION SCHEDULE

For the following discussions, please refer to the Proposed Timeline for Corrective Action Plan Implementation included in **Appendix VII** of this Report. This schedule is subject to change if NCDENR approval of this CAP takes longer than projected.

7.1 Corrective Action Plan Completion

- The completed Corrective Action Plan will be submitted to NCDENR by July 1, 2008 for review and comments.
- Per the North Carolina Solid Waste Management Act, NCDENR has 90 days to complete their review of the submitted CAP and provide their comments. Therefore, it is anticipated that review comments from NCDENR will be received by the second week of October 2008.
- If required, the Corrective Action Plan will be revised per NCDENR review comments and resubmitted for NCDENR final review and approval on a schedule yet to be determined.
- The NCDENR approval letter of the final Cap submission is anticipated by mid December 2008, however, this date is subject to change.

7.2 CAP Implementation Bid Process and Proposal Preparation

- The City of Greensboro will issue an invitation for Bids/Proposals for a detailed Phytoremediation System Design within 30 days of receiving the CAP approval letter from NCDENR DWM.
- The contract for Phytoremediation System Design will be awarded within 60 days of receiving the CAP approval letter from NCDENR DWM.
- It is anticipated that the Phytoremediation System design will be completed within 30 days of awarding the Phytoremediation System Design contract.

7.3 Phytoremediation System Installation, CAP Implementation

- The City of Greensboro will issue an invitation for Bids to install the Phytoremediation System within approximately 3.5 months of receiving the CAP approval letter from NCDENR DWM.
- It is anticipated that the contract for installing the Phytoremediation System will be awarded within approximately 60 days of issuing the invitation for bids.
- Site clearing and grading in preparation to install the system will begin within approximately 90 days of issuing the invitation for bids.

- Installation of the sentinel groundwater monitoring network will begin approximately 90 days from awarding the contract to install the phytoremediation system.
- Installation of the Phytoremediation System is anticipated to begin by December 2009 and is anticipated to be completed by the end of February 2010. This delay in the schedule to plant the hybrid poplar trees is being proposed in order to avoid planting during the hot, potentially dry season which may necessitate the need for supplemental irrigation. Additionally, in order to optimize the tree survival rate, it is best to plant seedlings during their dormant season which is usually from December to the end of March.
- A report documenting the installation of the Phytoremediation System will be submitted approximately 30 days after installation of the phytoremediation system is completed.

7.4 MNA Indicator Background Sampling Events

- The first MNA Quarterly Background Sampling Event will be conducted in mid February 2009.
- The second MNA Quarterly Background Sampling Event will be conducted in mid May 2009.
- The third MNA Quarterly Background Sampling Event will be conducted in mid August 2009.
- The fourth and final MNA Quarterly Background Sampling Event will be conducted in mid-November 2009.
- The MNA Indicator Parameter Background Sampling Report will be prepared and submitted by the end of December 2009.

Based on the project schedule discussed above, the first CASE Report for the White Street Landfill will be submitted after completion of the 2010 groundwater monitoring year.

8.0 FINANCIAL ASSURANCE REQUIREMENTS

Per 15A NCAC 13B.0547, the City of Greensboro North Carolina has completed the local government test for financial assurance to implement this Corrective Action Plan. The supporting documentation for financial assurance is included in **Appendix VIII** of this Report.

9.0 COMPLETION OF CORRECTIVE ACTION

The remedies for groundwater quality restoration will be considered complete as per 15A NCAC 13B.1637 when the following occurs:

- The Facility complies with the 15A NCAC 2L groundwater quality standards, or NCDENR DWM groundwater protection standards for constituents for which a 2L groundwater quality standard has not been promulgated, at all monitoring points within the plume of contamination.

- Compliance with the 15A NCAC 2L groundwater quality standards, or NCDENR DWM groundwater protection standards (GPS) has been achieved by demonstration that all concentrations of all NCDENR DWM Appendix I and Appendix II constituents have not exceeded the 2L standard or GPS and is at or below background values for a period of three consecutive years using the NCDENR appropriate statistical procedures and performance standards.
- All actions outlined in the Plan required to complete the selected remedies have been satisfied, including actions required under this CAP and providing the certifications required under 15A NCAC 13B.1637.

Upon completion of the remedies outlined in this CAP, the Facility will notify NCDENR within 14 days by submitting a certification that the remedies have been completed in compliance with the requirements discussed above. The certification will be signed by the facility's designated representative and by a licensed Geologist or Registered Engineer.

When, upon completion of the certification, NCDENR determines that the corrective action remedies have been completed in accordance with the requirements described above, the Facility will be released from the requirements for financial assurance for corrective action under 15A NCAC 13B.0547.

10.0 REFERENCES

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Proposed Timeline For Corrective Action Plan Implementation

APPENDIX VIII

Financial Assurance Documentation

Phase II Groundwater Corrective Actions
December 20, 2007 Public Meeting
Press Release

News & Record

Published by
News & Record, Inc.
Greensboro, North Carolina

North Carolina, Guilford County

AFFIDAVIT OF PUBLICATION

Before the undersigned, a Notary Public of said County and State, duly commissioned, qualified and authorized by law to administer oaths, personally appeared the Publisher's Representative who being first duly sworn, deposed and says:

1. That he/she is the Publisher's Representative of the Greensboro News & Record, Inc. a corporation, engaged in the publication of newspapers known as "News & Record", published, issued and entered as second class mail in the City of Greensboro in said County and State.

2. That he/she is authorized to make this affidavit and sworn statement; that the notice or other legal advertisement, a copy of which is attached hereto, was published in the News & Record on the dates listed below.

3. That the said newspaper (or newspapers) in which such notice, paper, document, or legal advertisement was published was, at the time of each and every such publication, a newspaper meeting all of the requirements and qualifications of Section 1-597 of the General Statutes of North Carolina and was a qualified newspaper within the meaning of Section 1-597 of the General Statutes of North Carolina.

Publisher's Representative _____

Sworn to and subscribed before me, this 14th day of December 2007.

VALERIE McNEIL
NOTARY PUBLIC
GUILFORD COUNTY, NC
COMM. EXP. 8-23-2010

Valerie McNeil
Notary Public

My commission expires: August 23, 2010

Name	Ad #	Date	Edition	Class	PO	Ad Copy
CITY OF GREENSBORO	30681295	11/18/07	News & Record	400	WHITE ST MS	PUBLIC MEETING TO REVIEW GROUNDWA

RECD NOV 26 2007

Ad ID 30681295 Date 11/14/2007 Time 8:52 AM

PUBLIC MEETING TO REVIEW GROUNDWATER FINDINGS AND CORRECTIVE MEASURES FOR THE WHITE STREET MUNICIPAL SOLID WASTE LANDFILL

City of Greensboro - Environmental Services Department
P.O. Box 3136
Greensboro, North Carolina 27402-3136

In accordance with Title 15A NCAC 13B .1635(d), the City of Greensboro-Environmental Services Department is holding a public meeting to review the findings and to discuss corrective measures related to impacted groundwater associated with the formerly operated Phase II municipal solid waste landfill. The former Phase II landfill operated from 1978 to 1997. Phase II is within the White Street Landfill which is located at 2503 White Street.

After the public meeting, the City of Greensboro will select a remedy(ies) in accordance with the requirements of 15A NCAC 13B .1636 and submit the corrective measure(s) in a Corrective Action Plan for approval by the Solid Waste Section of the NC Department of Environment and Natural Resources.

The public meeting will be held on December 20, 2007 at the Peeler Recreational Facility, 1300 Sykes Ave., at 6:30 p.m.

The groundwater studies are available for public inspection at the following locations during normal business hours:

City of Greensboro Central Library
219 North Church Street

McGirt-Horton Branch Library
2509 Phillips Avenue

Ad shown is not actual print size

News & Record

Published by
News & Record, Inc.
Greensboro, North Carolina

North Carolina, Guilford County

AFFIDAVIT OF PUBLICATION

Before the undersigned, a Notary Public of said County and State, duly commissioned, qualified and authorized by law to administer oaths, personally appeared the Publisher's Representative who being first duly sworn, deposed and says:

1. That he/she is the Publisher's Representative of the Greensboro News & Record, Inc. a corporation, engaged in the publication of newspapers known as "News & Record", published, issued and entered as second class mail in the City of Greensboro in said County and State.

2. That he/she is authorized to make this affidavit and sworn statement; that the notice or other legal advertisement, a copy of which is attached hereto, was published in the News & Record on the dates listed below.

3. That the said newspaper (or newspapers) in which such notice, paper, document, or legal advertisement was published was, at the time of each and every such publication, a newspaper meeting all of the requirements and qualifications of Section 1-597 of the General Statutes of North Carolina and was a qualified newspaper within the meaning of Section 1-597 of the General Statutes of North Carolina.

Publisher's Representative _____

Sworn to and subscribed before me, this 19th day of November 2007.

VALERIE McNEIL
NOTARY PUBLIC
GUILFORD COUNTY, NC
COMM. EXP. 8-23-2010

_____
Notary Public

My commission expires: August 23, 2010

Name	Ad #	Date	Edition	Class	PO	Ad Copy
CITY OF GREENSBORO	30681295	11/18/07	News & Record	400	WHITE ST MS	PUBLIC MEETING TO REVIEW GROUNDWA

RECD NOV 26 2007

Ad ID 30681295 Date 11/15/2007 Time 9:20 AM

PUBLIC MEETING TO REVIEW GROUNDWATER FINDINGS AND CORRECTIVE MEASURES FOR THE WHITE STREET MUNICIPAL SOLID WASTE LANDFILL

City of Greensboro - Environmental Services Department
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City of Greensboro

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Greensboro, NC 27402-3136
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Fax: 336-373-2988

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To:	News 45 WXLV	**From:**	Jeryl W. Covington, Director Environmental Services Department
Fax:	336- 723-8217	**Pages:**	2 (including cover sheet)
Phone:	336- 722-4545	**Date:**	11/19/2007
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Fax

To:	News 14 Carolina	**From:**	Jeryl W. Covington, Director Environmental Services Department
Fax:	336- 856-9499	**Pages:**	2 (including cover sheet)
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To:	WFMY News 2	**From:**	Jeryl W. Covington, Director Environmental Services Department
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Fax: 336-373-2988

Fax

To:	WGHP Fox News	**From:**	Jeryl W. Covington, Director Environmental Services Department
Fax:	336- 841-5169	**Pages:**	2 (including cover sheet)
Phone:	336- 275-1850	**Date:**	11/19/2007
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Fax: 336-373-2988

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To:	WXII News	**From:**	Jeryl W. Covington, Director Environmental Services Department
Fax:	336- 721-0856	**Pages:**	2 (including cover sheet)
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City of Greensboro
North Carolina

Public Meeting to Review Groundwater Findings and Corrective Measures for the White Street Municipal Solid Waste Landfill

City of Greensboro- Environmental Services Department
P.O. Box 3136
Greensboro, North Carolina 27402-3136

In accordance with Title 15A NCAC 13B .1635(d), the City of Greensboro-Environmental Services Department is holding a public meeting to review the findings and to discuss corrective measures related to impacted groundwater associated with the formerly operated Phase II municipal solid waste landfill. The former Phase II landfill operated from 1978 to 1997. Phase II is within the White Street Landfill which is located at 2503 White Street.

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2509 Phillips Avenue

P.O. Box 3136 · Greensboro, NC 27402-3136 · www.greensboro-nc.gov · (336) 373-2065 · TTY # 333-6930

Activity Report

TX Date/Time		Function	No.	Destination	Duration	P.#	Result
OCT-19	07:12	Send	*925	AON CLAIMS	0'00'47"	002	OK
OCT-23	07:08	Send	*928	AON CLAIMS	0'00'42"	002	OK
OCT-25	15:08	Send	*933	ECOFLO	0'00'31"	005	OK
OCT-29	14:18	Send	*936	336 333 0000000	0'00'26"	001	OK
OCT-31	10:08	Send	*942	ECOFLO	0'00'13"	002	OK
	12:02	Send	*943	ECOFLO	0'00'19"	003	OK
NOV-06	09:45	Send	*947	703 790 2672	0'00'26"	002	OK
NOV-09	13:49	Send	*952	336 373 4812	0'00'17"	001	OK
NOV-12	10:22	Send	*954	AON CLAIMS	0'00'43"	002	OK
NOV-13	11:07	Send	*957	336+373+5964	0'00'16"	002	OK
	16:54	Send	959	AON CLAIMS	0'00'38"	002	OK
NOV-14	10:50	Send	962	918668873195	0'00'43"	002	OK
NOV-19	08:47	Send	967	7238217	0'00'13"	002	OK
	08:48	Send	968	336 517 2448	0'00'18"	002	OK
	08:49	Send	969	336+373+7382	0'00'14"	002	OK
	08:50	Send	970	3368569499	0'00'34"	002	OK
	08:52	Send	972	336 841 5169	0'00'34"	002	OK
	08:54	Send	971	336 230 0971	0'00'21"	002	OK
	08:55	Send	973	336 721 0856	0'00'13"	002	OK
OCT-19	01:45	Reception	*924	866 575 5783	0'01'07"	002	OK
	11:27	Reception	*926	9528316550	0'01'13"	006	OK
OCT-22	07:38	Reception	*927		0'00'34"	001	OK
OCT-23	21:17	Reception	*929		0'00'55"	001	OK
OCT-24	01:07	Reception	*930	336 3877219	0'02'01"	004	OK
	16:41	Reception	*931	6417392825	0'00'31"	001	OK
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OCT-26	15:45	Reception	*934	ECOFLO	0'00'25"	002	OK
OCT-27	13:09	Reception	*935		0'00'54"	001	OK
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	01:25	Reception	*938		0'00'53"	001	OK
	20:15	Reception	*939		0'00'53"	001	OK
OCT-31	07:17	Reception	*940	ECOFLO	0'00'31"	003	OK
	09:25	Reception	*941		0'00'34"	001	OK
	22:09	Reception	*944		0'00'59"	001	OK
NOV-04	23:32	Reception	*945		0'01'13"	002	OK
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	10:09	Reception	*948		0'00'43"	001	OK
NOV-07	13:57	Reception	*949		0'00'43"	001	OK
NOV-08	10:01	Reception	*950	336 375 0046	0'00'30"	001	OK
NOV-09	09:39	Reception	*951	816 595 5357	0'00'25"	001	OK
NOV-11	22:18	Reception	*953		0'00'48"	001	OK
NOV-12	11:16	Reception	*955		0'00'33"	001	OK
NOV-13	07:49	Reception	*956	336 373 4812	0'00'37"	001	OK
	16:50	Reception	958	336 885 9038	0'00'20"	001	OK
	16:52	Reception	960	336 885 9038	0'00'18"	001	OK
	21:37	Reception	961		0'00'49"	001	OK
NOV-15	19:56	Reception	963		0'00'58"	001	OK
NOV-19	05:23	Reception	964		0'01'04"	001	OK
	07:36	Reception	965	1202 280 1239	0'01'28"	002	OK
	07:56	Reception	966		0'00'54"	001	OK

December 20, 2007 Public Meeting
Attendees List

Public Meeting to Review Groundwater Findings and Corrective Measures for the White Street MSW Landfill
December 20, 2007
Peeler Recreation Center
6:30 p.m.

Name Erin M. Crouch			Do you want a copy of the presentation?
Address 15 Cliffe Court			
City Greensboro	State N.C.	Zip Code 27405-5546	Yes ☑ No ☐

Name Chris Marriott			Do you want a copy of the presentation?
Address 2503 White St.			
City Greensboro	State NC	Zip Code 27405	Yes ☐ No ☒

Name Cornel D. Ware (S&ME)			Do you want a copy of the presentation?
Address 3718 Old Battleground Rd			
City Greensboro	State NC	Zip Code 27410	Yes ☐ No ☑

Name Ed Henriques (S&ME)			Do you want a copy of the presentation?
Address 3718 Old Battleground Rd			
City Greensboro	State NC	Zip Code 27410	Yes ☐ No ☑

Name Greg Thomasson			Do you want a copy of the presentation?
Address 105 Tyneccastle Ct.			
City Greensboro	State NC	Zip Code 27455	Yes ☐ No ☑

Public Meeting to Review Groundwater Findings and Corrective Measures for the White Street MSW Landfill
December 20, 2007
Peeler Recreation Center
6:30 p.m.

Name Jim Kea			Do you want a copy of the presentation?
Address 4302 Lord Jeff Dr.			
City Greensboro	State NC	Zip Code 27405	Yes ☐ No ☐

Name Goldie F. Wells			Do you want a copy of the presentation?
Address 4203 Belfield Drive			
City Greensboro	State NC	Zip Code 27405	Yes ☐ No ☐

Name HAROLD C. FIELDS			Do you want a copy of the presentation?
Address 1903 BELDEN DR.			
City GREENSBORO	State N.C.	Zip Code 27405	Yes ☐ No ☐

Name Samuel Vincent			Do you want a copy of the presentation?
Address 1415 Wayside Dr			
City Greensboro	State N.C.	Zip Code 27405	Yes ☐ No ☐

Name James H Robinson			Do you want a copy of the presentation?
Address 1918 Belden St			
City Greensboro	State N.C	Zip Code 27405	Yes ☐ No ☐

Public Meeting to Review Groundwater Findings and Corrective Measures for the White Street MSW Landfill
December 20, 2007
Peeler Recreation Center
6:30 p.m.

Name Wesley McGuire			Do you want a copy of the presentation?
Address 4300 Belfield DR			
City Greensboro	State NC	Zip Code 27405	Yes ☐ No ☐

Name Robert Davis			Do you want a copy of the presentation?
Address 1407 Lord Farley Dr			
City G'boro	State NC	Zip Code 27405	Yes ☒ No ☐

Name Carolyn S Allen			Do you want a copy of the presentation?
Address 2611 David Caldwell Dr			
City Greensboro	State NC	Zip Code 27408	Yes ☑ No ☐

Name JAMES HAYS			Do you want a copy of the presentation?
Address 192-A WOODWINDS IND. CRT			
City CARY	State NC	Zip Code 27511	Yes ☐ No ☒

Name Rachel Kirkman, P.G. Golder Associates Inc.			Do you want a copy of the presentation?
Address 4900 Koger Boulevard Suite 140			
City Greensboro	State NC	Zip Code 27407	Yes ☐ No ☒

Public Meeting to Review Groundwater Findings and Corrective Measures for the White Street MSW Landfill
December 20, 2007
Peeler Recreation Center
6:30 p.m.

Name Lila Pleasant			Do you want a copy of the presentation?
Address 1702 Woodbriar Ave			
City Greensboro	State NC	Zip Code 27405	Yes ☑ No ☐

Name Belinda Sellers			Do you want a copy of the presentation?
Address 3901 Hope Valley Lane			
City G'boro	State NC	Zip Code 27401	Yes ☒ No ☐

Name Sibyl M. Hicks			Do you want a copy of the presentation?
Address 1700 GORDON ST			
City Greensboro	State NC	Zip Code 27405	Yes ☒ No ☐

Name Billie Jean White			Do you want a copy of the presentation?
Address 1905 Rayston DR			
City G'boro	State NC	Zip Code 27405	Yes ☑ No ☐

Name Paul Hickerson			Do you want a copy of the presentation?
Address 4118 Ashmore Dr			
City Greensboro	State NC	Zip Code 27405	Yes ☒ No ☐

Public Meeting to Review Groundwater Findings and Corrective Measures for the White Street MSW Landfill
December 20, 2007
Peeler Recreation Center
6:30 p.m.

Name Eileen King			Do you want a copy of the presentation?
Address 404 - Franklin Blvd			
City G Boro	State NC	Zip Code 27401	Yes ☑ No ☐

Name Delores McEachirn			Do you want a copy of the presentation?
Address 2425 Byrwood Rd			
City Greensboro, NC,	State C	Zip Code 27405	Yes ☑ No ☐

Name Ralph Johnson			Do you want a copy of the presentation?
Address 2402 Bothwell St			
City Greensboro	State NC	Zip Code 27401	Yes ☑ No ☐

Name Melde Rutledge			Do you want a copy of the presentation?
Address 400 Summitt Ave			
City Greensboro	State NC	Zip Code 27401	Yes ☐ No ☑

Name Jonah Smith, Sr.			Do you want a copy of the presentation?
Address 1605 Woodridge Ave.			
City Greensboro	State N.C.	Zip Code 27405	Yes ☒ No ☐

Public Meeting to Review Groundwater Findings and Corrective Measures for the White Street MSW Landfill
December 20, 2007
Peeler Recreation Center
6:30 p.m.

Name David Dansby			Do you want a copy of the presentation?
Address 1420 Larchmont Drive			
City Greensboro	State N. C.	Zip Code 27410	Yes ☑ No ☐

Name Doris Johnson			Do you want a copy of the presentation?
Address 1908 Weyland Dr			
City Greensboro	State N. C.	Zip Code 27405	Yes ☑ No ☐

Name Zenobia Dansby			Do you want a copy of the presentation?
Address 4218 Kildare Dr			
City Greensboro	State NC	Zip Code 27405	Yes ☑ No ☐

Name CYNTHIA PINNIX			Do you want a copy of the presentation?
Address 1302 HAKEHILL DR.			
City G'BORO,	State N.C.	Zip Code 27405	Yes ☑ No ☐

Name Jeryl K. Covington			Do you want a copy of the presentation?
Address City of GSO Box 3136			
City GSO	State NC	Zip Code 27401-3136	Yes ☐ No ☒

December 20, 2007 Public Meeting Transcript

Groundwater Findings and Corrective Measures
Public Meeting Minutes
City of Greensboro – Environmental Services Department

Attendees:

Jeryl W. Covington, Director, Environmental Services Department
Scott Boss, Acting Solid Waste Disposal Manager
Greg Thomasson, Technical & Planning Support Manager
Chris Marriott, Environmental Compliance Manager
Connel Ware, S&ME
Ed Henriques, S&ME

A copy of the sign-in sheet which identifies who attended from the public is attached.

Meeting Summary:

At 6:30 PM on December 20, 2007, the Environmental Services Department of the City of Greensboro held a public meeting to discuss the groundwater findings and potential corrective measures associated with the formerly operated Phase II municipal solid waste landfill at the White Street Landfill. The public meeting was located at the Peeler Recreation Facility located at 1300 Sykes Avenue.

Ms. Jeryl W. Covington opened the public meeting with an introduced of herself and the technical staff present from the City of Greensboro and S&ME. She also provided a brief statement as to the purpose of the meeting and introduced Mr. Ed Henriques of S&ME to give the formal presentation. Mr. Henriques presentation included the attached slides and several exhibits. One exhibit was an aerial of the general area including Phase II waste boundaries, the approximate plume location, groundwater flow direction, groundwater monitoring wells, and surface water monitoring locations. Other exhibits included a typical well schematic and a cross section view of the waste boundary, groundwater table, and groundwater monitoring well.

At the end of that presentation, Mr. Henriques opened the meeting to questions. The following questions were asked by the public and answered by Ms. Covington and Mr. Henriques.

- Is this meeting a requirement of the regulations?
- One attendee wanted to discuss the potential corrective measure of building a wall to protect Buffalo Creek.
- Is Buffalo Creek in danger from the landfill?
- Once the corrective measure is chosen, will the corrective measure be an on-going process?
- If you install a barrier or wall, will it be designed for wet weather as well as dry weather?
- Would there be a barrier or wall on the southern end of Phase II?

No written comments were received from the public before, during, or after the meeting.

At the end of the public meeting, Ms. Jeryl Covington proceeded to discuss some of the financial issues regarding the landfill and transfer station and future development of Phase IV for C&D disposal at the White Street Landfill.

Phase II Groundwater Corrective Actions
June 9, 2008 Public Meeting
Press Release

News & Record

Published by
News & Record, Inc.
Greensboro, North Carolina

AFFIDAVIT OF PUBLICATION

North Carolina, Guilford County

Before the undersigned, a Notary Public of said County and State, duly commissioned, qualified and authorized by law to administer oaths, personally appeared the Publisher's Representative who being first duly sworn, deposed and says:

1. That he/she is the Publisher's Representative of the Greensboro News & Record, Inc. a corporation, engaged in the publication of newspapers known as "News & Record", published, issued and entered as second class mail in the City of Greensboro in said County and State.

2. That he/she is authorized to make this affidavit and sworn statement; that the notice or other legal advertisement, a copy of which is attached hereto, was published in the News & Record on the dates listed below.

3. That the said newspaper (or newspapers) in which such notice, paper, document, or legal advertisement was published was, at the time of each and every such publication, a newspaper meeting all of the requirements and qualifications of Section 1-597 of the General Statutes of North Carolina and was a qualified newspaper within the meaning of Section 1-597 of the General Statutes of North Carolina.

Publisher's Representative _____

Sworn to and subscribed before me, this 8th day of May, 2008.

_____
Notary Public

My commission expires: August 23, 2010

NOTARY PUBLIC
VALERIE McNEIL
GUILFORD COUNTY, NC
My Commission Expires August 23, 2010

Name	Ad #	Date	Edition	Class	PO	Ad Copy
CITY OF GSO ENVIRONMENTAL	30917445	05/08/08	News & Record	400	MTG 6/9/08	Public Meeting to Review Groundwater Cor

Ad ID 30917445 Date 05/05/2008 Time 12:58 PM

Public Meeting to Review Groundwater Corrective Measures for the White Street Municipal Solid Waste Landfill

City of Greensboro-Environmental Services Department P.O. Box 3136 Greensboro, North Carolina 27402-3136

In accordance with Title 15A NCAC 13B .1635(d), the City of Greensboro-Environmental Services Department is holding a public meeting to discuss the implementation of phytoremediation as an additional corrective measure related to impacted groundwater associated with the formerly operated Phase II municipal solid waste landfill. The former Phase II landfill operated from 1978 to 1997. Phase II is within the White Street Landfill which is located at 2503 White Street.

After the public meeting, the City of Greensboro will select a remedy(ies) in accordance with the requirements of 15A NCAC 13B .1636 and submit the corrective measure(s) in a Corrective Action Plan for approval by the Solid Waste Section of the NC Department of Environment and Natural Resources.

The public meeting will be held on June 9, 2008 at the Peeler Recreational Facility, 1300 Sykes Ave., at 6:30 p.m.

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Branch Library
2509 Phillips Avenue

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Aerial Photo