CAROLINA
ECOSYSTEMS, INC.

3040 NC Hwy 42 West; Clayton, NC 27520
P:919-359-1102 – F:919-585-5570

May 2, 2016

US Army Corps of Engineers
Raleigh Regulatory Field Office
Mr. David Bailey
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587

RE: Clean Water Act Section 404/401 Individual Permit Application
Waste Industries High Point C&D Landfill
Jamestown, NC

Dear Mr. Bailey:

The purpose of this letter and application is to request Individual Permit (IP) approval under Sections 404 and 401 of the Clean Water Act (CWA) from the US Army Corps of Engineers (USACE) and NC Department of Environmental Quality (NCDEQ) for impacts to Waters of the United States associated with expansion of the Waste Industries High Point Construction and Demolition (C&D) landfill.

This letter was prepared to introduce the project, and supplement the attached ENG Form 4345 with Nature of the Activity, Reasons for Discharge, Description of Avoidance, Minimization, and Compensation, and Addresses of Adjacent Property Owners information. Section numbering below corresponds to that form. A detailed discussion of alternatives considered throughout development of this project is also included in the Section 23 discussion.

18. Nature of the Activity:

The Waste Industries High Point C&D Landfill (Site) is located at 5822 Riverdale Drive, Jamestown NC, in southwestern Guilford County (**Figure 1**). It lies within the Randleman Lake/Deep River watershed of the Cape Fear River (8-digit HUC 03030003). Stream and wetland resources on the site drain to an unnamed tributary of Richland Creek (17-7-(4)), classified by NC Division of Water Resources (NCDWR) as WS-IV. **Figures 4 & 5** illustrate the Site on the High Point East, NC USGS topographic quadrangle map, and the Guilford County Soil Survey, respectively.

Due to the rapid growth in the Triad area, there is a continuous demand for C&D disposal. The purpose of the Site expansion is to provide construction and demolition waste capacity to serve the growth and development over the next 20 or more years in High Point and the Triad area.

The Site is a 153.8 acre tract. Existing development on the property includes a scale house and office, a recycling center, maintenance building and parking/storage area, the existing C&D landfill, and the future landfill cell areas that are currently pasture, scrub, and forest (**Figure 2**). The remainder of the property is within the Randleman Lake critical area, and is reserved for stormwater basins, minor grading, and a recorded easement for a future City relocation of Kersey Valley Road. This reserved area takes up approximately 73 acres (47% of the entire site).

The proposed expansion area contains two drainages with wetlands and a stream under the jurisdiction of the CWA. The stream and wetland areas depicted in **Figure 2** have been verified in the field by Mr. David Bailey of the US Army Corps of Engineers (USACE) on 8/26/2014. Riparian Buffer areas regulated under 15A NCAC 02B .0250, Randleman Lake Water Supply Watershed: Protection and Maintenance of Existing Riparian Buffers, are being addressed separately through a Major Variance application to the North Carolina Environmental Management Commission.

20. Reasons for Discharge:

The project goal is to realize the previously planned and permitted waste capacity of the landfill as approved in the facility's Conditional Use Permit and Solid Waste Permit, while avoiding the designated water supply critical area on the site.

Figure 3 is included to illustrate the limited number of C&D facilities that occur within 50-miles of the Site. The permitted capacities of each of these landfills are shown in the table below. Only three of the ten alternative existing disposal locations are private facilities, while the remainder are public and take waste primarily from their local area. The total available capacity of all these sites does not meet the future demand for C&D disposal over the next several decades.

Permitted C&D Landfills

Figure 3 Location ID	Permit Name	Public/ Private	Gross Capacity (cy)	Remaining Airspace (cy)	Remaining Life (yrs)
P0792	Albemarle, City Of, CDLF	Public	2,390,900	1,757,527	10.4
P0796	Cabarrus County CDLF	Public	535,284	165,055	0.6
P1019	Gold Hill Road C&D Debris Landfill	Private	1,114,400	566,170	15.9
P1051	Davidson County CDLF	Public	308,752	107,932	4.1
P0563	Austin Quarter C&D Unit	Public	338,897	115,601	12.9
P0879	Cobles C&D Landfill	Private	6,935,903	6,089,192	45.9
P1067	High Point C&D Debris Landfill	Private	4,773,968	4,700,995	21.9
P1170	Orange County C&D Landfill	Public	790,000	652,900	12.0
P0970	A-1 Sandrock C&D Landfill	Private	2,231,848	1,930,228	12.8
P0708	Old Salisbury Road CDLF	Public	4,030,000	1,282,746	3.8
P0801	Greensboro, City Of	Public	2,525,443	1,202,343	25.1

- Gross capacity determined from most recent Permit to Construct or Permit to Operate.
- Remaining Life calculated assuming LF receives waste in the amount equal to permitted limit each year and two years subtracted.

23. Description of Avoidance, Minimization, and Compensation:

Alternative site designs considered during planning encompassed complete avoidance of all resources to multiple minimization alternatives. While the selected alternative has the highest amount of direct impacts, practical minimization and avoidance alternatives would have equal indirect impacts. As discussed below, the no impact alternative would reduce the facility's volume by 70 percent; Minimization of Impact Option 1 would result in a 45% loss of capacity; and, Minimization of Impact Option 2 would reduce the watershed of jurisdictional features by over 90%, and likely lead to similar long-term impacts. Each of these outcomes were considered impractical and discarded from consideration as discussed below.

A consideration common to all avoidance and minimization options is that of capacity. Waste Industries employs all best management practices and best available science as a standard practice. There are no unpursued opportunities to improve operationally and extend a facility's lifetime. Lower capacities translate to earlier efforts to locate new sites, which themselves will likely have stream and wetland resources, concerned neighbors, transportation hurdles, etc. Maximizing capacity at a previously planned and permitted C&D facility is an avoidance and minimization of impacts to alternative sites. These sites may not be practical due to the aforementioned constraints. Very few new landfill facilities have been permitted in the state under current regulations (since 2007).

Engineering exhibits that correspond to each of the alternatives are presented in **Attachment 6**. Intermediate alternatives between these options were considered, but not included as they did not provide significant or practical differences from the options below.

High Point C&D Landfill Expansion Alternatives

Alternative (see attached plans)	Waste Area (ac)	Capacity (mcy)	Impacts		
			Wetland (ac)	Stream (lf)	Buffers (sq.ft.) Zone 1 / Zone 2
No Impact	33.4	1.0	0 ac	0	0 / 0
Minimization Impact I	41.3	2.0	0.55	0	0 / 0
Minimization Impact II	44.0	2.7	0.59	0	0 / 0
Proposed Project	46.0	3.3	0.59	394	19,780 / 20,106

ac = acres; mcy= million cubic yards; lf = linear feet; sq. ft. = square feet

A no impact to jurisdictional features (buffers, streams, and wetlands) alternative (**Attachment 6**) was evaluated but deemed not practical as it creates fragmented, impractical cells. The areas remaining for landfill with this option yield approximately 0.98 MCY of capacity, which is a 70% loss compared to the proposed project. Due to the cost and difficulty of permitting, constructing, and maintaining three mostly isolated cell units, this option was determined not to be feasible.

Minimization Impact Option I (**Attachment 6**) would avoid the primary drainage on the site including the existing stormwater BMP and wetlands above the subject buffered stream. This landfill configuration would require issuance of an Individual Permit from the USACE for wetland impacts. The option would create two distinct landfill cells that collectively yield approximately 1.8 MCY of capacity, which is about a 45% loss compared to the proposed project. The watershed of the subject drainage would be reduced

from 35 acres to 6.5 acres due to landfill configuration and required stormwater management. Stormwater runoff from the remaining acreage would be discharged in a similar location to the Proposed Project. Due to the significant loss of landfill volume, in combination with the change in site hydrology and potential long-term drainage of the upper portion of the stream channel, this option was determined not practical. In addition, to retain maximum drainage into the stream channel, a BMP would be required in jurisdictional wetlands, which is often difficult to permit through the CWA.

Minimization Impact Option 2 (**Attachment 6**) would avoid all stream impacts, but result in similar wetland impacts to those in Minimization Option 1 and the Proposed Project, and would require a CWA Individual Permit. This option results in a landfill capacity of 2.675 MCY, which is a 19% loss versus the proposed project. While this is a much greater landfill volume than the No Impact and Minimization Option 1, the drainage to the subject stream would be radically altered. Less than an acre of landfill berm slopes would drain to the stream, and runoff from the remaining 35-acre watershed would be rerouted and captured in on-site BMPs before discharging at a similar point to that of the Proposed Project. This stormwater management is required by solid wastes regulations. This loss of hydrologic input to the upper reach of stream would likely reduce or eliminate function down to a point where groundwater flow significantly contributes to the stream (regular intersection of the stream channel and water table). Based on site hydrogeologic data, this point is near the limit of impact of the Proposed Project as described below. This option is not deemed preferable due to the loss of approximately 20% capacity, associated with a similar long-term stream impact as the Proposed Project.

The proposed project involves building the full capacity of the landfill anticipated under the existing CUP and Solid Waste Permit. Impacts to wetlands would be similar to other options, but there would also be impacts to both stream and riparian buffers. Since the avoidance of the stream would likely cause similar long-term effects as described above, the Proposed Project was deemed the most practical alternative. Building Minimization Option 2 and waiting a number of years to evaluate the condition of the subject stream was considered, as this could avoid the need for a state buffer variance or any compensatory stream and buffer mitigation. Due to the uncertainty of the exact location where the stream characteristics would be retained, and the difficulty of constructing and maintaining a "bowl" around the stream, it was determined to be better engineering practice to accept the proposed impact and provide compensatory mitigation to offset this loss.

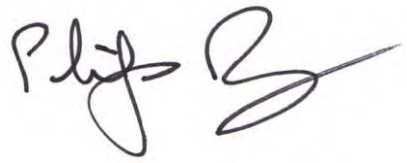
Based on the change between pre and post-construction watershed sizes, there would be a significant loss of drainage contributing to the subject stream's upper reaches with all practical landfill options (Minimization Option 2 and Proposed Project). This would have a long term effect on the hydrology of the subject stream to such an extent that it might no longer be jurisdictional in the future. Similar situations on other solid waste sites, due to the reconfiguration of on-site drainage associated with these facilities, have shown this to be a valid concern. This, in addition to maximizing landfill capacity, resulted in the Proposed Project being chosen.

On-site mitigation was evaluated and deemed not practical. NC Division of Mitigation Services approval has been issue (**Attachment 3**).

As discussed above, review of this project by NCDEQ and the NC Environmental Management Commission is ongoing through a Major Variance request under State riparian buffer rules. The final stormwater management plan will be submitted to, and approved by, the City of High Point prior to construction.

If you have any questions or need additional information, please contact me at your earliest convenience at (919) 606-1065 or phil.may@carolinaeco.com.

Sincerely,
Carolina Ecosystems, Inc.



Philip May
Senior Environmental Scientist

cc: Karen Higgins, NCDEQ
David Pepper, Waste Industries
Stacey Smith, P.E., Smith Gardner Inc.

Waste Industries High Point C&D Landfill Expansion
Guilford County, North Carolina

Individual Permit Application

April 2016

ATTACHMENT LIST

Attachment

1	ENG Form 4345
2	Agent Authorization
3	DMS Mitigation Acceptance
4	NC WAM Wetland Assessment Forms
5	Figures
6	Engineering Drawings & Calculations
7	Regulatory Approvals and Correspondence (Electronic only)

- Buffer Determination
- JD Request
- Solid Waste Permit #4116
- Conditional and Special Use Permits

Figures (Attachment 5)

1	Project Vicinity
2	Jurisdictional Features
3	Permitted C&D Landfills
4	USGS Map
5	NRCS Soil Survey
6	Adjacent Property Owners

Engineering Drawings (Attachment 6)

Existing Conditions
Overall Site Plan
Proposed Site Development
No Impact Option
Option 1
Option 2
Wetlands Impact
Stream Impacts
Buffer Impacts
Details Sheet 1
Details Sheet 2

U.S. ARMY CORPS OF ENGINEERS

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

33 CFR 325. The proponent agency is CECW-CO-R.

OMB APPROVAL NO. 0710-0003
EXPIRES: 28 FEBRUARY 2013

Public reporting for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - David Middle - Last - Pepper	First - Philip Middle - Last - May
Company - WI High Point Landfill, LLC	Company - Carolina Ecosystems, Inc.
E-mail Address - david.pepper@wasteindustries.com	E-mail Address - phil.may@carolinaeo.com
6. APPLICANT'S ADDRESS:	**9. AGENT'S ADDRESS:**
Address- 3301 Benson Drive, Ste 601	Address- 3040 NC Hwy 42 West
City - Raleigh State - NC Zip - 27509 Country -	City - Clayton State - NC Zip - 27520 Country - US
7. APPLICANT'S PHONE NOs. w/AREA CODE	**10. AGENTS PHONE NOs. w/AREA CODE**
a. Residence b. Business c. Fax	a. Residence b. Business c. Fax
	919-359-1102

STATEMENT OF AUTHORIZATION

11. I hereby authorize, Philip May to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application:

DocuSigned by:
David W. Pepper
96A7EA0C743482...
SIGNATURE OF APPLICANT — 4/29/2016 DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
Waste Industries High Point C&D Landfill

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
UT Richland Creek (17-7-(4))	Address 5822 Riverdale Drive
15. LOCATION OF PROJECT	City - Jamestown State- NC Zip- 27282
Latitude: ◦N 35.9486 Longitude: ◦W -79.9224	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)
State Tax Parcel ID 0213048 Municipality Guilford County
Section - Township - Jamestown Range -

17. DIRECTIONS TO THE SITE

From Raleigh, head west on I-40 to I-85. Exit 118 off of I-85 south onto I-85 Business South/US-29 South/US 70 West. Continue 3.7 miles and turn south (right) onto Riverdale Drive. Site will be on the right.

18. Nature of Activity (Description of project, include all features)

See Cover Letter.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The purpose of the Waste Industries High Point C&D Landfill Expansion is to provide construction and demolition waste capacity to serve the growth and development over the next 20 or more years in High Point and the Triad area. The project goal is to realize the previously planned and permitted waste capacity of the landfill as approved in the facility•s CUP and Solid Waste Permit, while avoiding the designated water supply critical area on the site. Due to the rapid growth in the Triad area, there is a continuous demand for C&D disposal. Ten C&D landfills occur within 50-miles of the Site. Only three of the ten alternative existing disposal locations are private facilities, while the remainder are public and take waste primarily from their local area. The total available capacity of all these sites does not meet the future demand for C&D disposal over the next several decades. Construction of the project is planned to begin in Fall 2016.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

See Cover Letter.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
Gravel - 150 cy		

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres 0.60

or

Linear Feet 404' Total (394' Permanent and 10' Temporary)

23. Description of Avoidance, Minimization, and Compensation (see instructions)

See Cover Letter.

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- See Cover Letter.

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
See Cover Letter.					

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

DocuSigned by: David W. Pepper — 4/29/2016
SIGNATURE OF APPLICANT — DATE

DocuSigned by: Philip May — 4/28/2016
SIGNATURE OF AGENT — DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Mitigation Services
ENVIRONMENTAL QUALITY

PAT MCCRORY
Governor

DONALD R. VAN DER VAART
Secretary

April 25, 2016

David Pepper
Waste Industries High Point Landfill
3301 Benson Drive
Raleigh, NC 27609

Expiration of Acceptance: October 25, 2016

Project: High Point C&D Landfill

County: Guilford

The purpose of this letter is to notify you that the NCDEQ Division of Mitigation Services (DMS) is willing to accept payment for compensatory mitigation for impacts associated with the above referenced project as indicated in the table below. Please note that this decision does not assure that participation in the DMS in-lieu fee mitigation program will be approved by the permit issuing agencies as mitigation for project impacts. It is the responsibility of the applicant to contact permitting agencies to determine if payment to the DMS will be approved. You must also comply with all other state, federal or local government permits, regulations or authorizations associated with the proposed activity including G.S. § 143-214.11.

This acceptance is valid for six months from the date of this letter and is not transferable. **If we have not received a copy of the issued 404 Permit/401 Certification/CAMA permit within this time frame, this acceptance will expire.** It is the applicant's responsibility to send copies of the permits to DMS. Once DMS receives a copy of the permit(s) an invoice will be issued based on the required mitigation in that permit and payment must be made prior to conducting the authorized work. The amount of the in-lieu fee to be paid by an applicant is calculated based upon the Fee Schedule and policies listed at http://portal.ncdenr.org/web/eep.

Based on the information supplied by you in your request to use the DMS, the impacts that may require compensatory mitigation are summarized in the following table. The amount of mitigation required and assigned to DMS for this impact is determined by permitting agencies and may exceed the impact amounts shown below.

	River Basin	CU Location (8-digit HUC)	Stream (feet)			Wetlands (acres)			Buffer I (Sq. Ft.)	Buffer II (Sq. Ft.)
			Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Randleman	
Impact	Cape Fear	03030003	0	0	407	0.60	0	0	24,321	16,858

Upon receipt of payment, DMS will take responsibility for providing the compensatory mitigation. The mitigation will be performed in accordance with the In-Lieu Fee Program instrument dated July 28, 2010 and 15A NCAC 02B .0295 as applicable. Thank you for your interest in the DMS in-lieu fee mitigation program. If you have any questions or need additional information, please contact Kelly Williams at (919) 707-8915.

Sincerely,

James. B Stanfill
Asset Management Supervisor

cc: David Bailey, USACE-Raleigh
Phil May- agent

NC WAM Wetland Rating Sheet
Accompanies User Manual Version 4.1
Rating Calculator Version 4.1

Wetland Site Name	W1	Date	3/28/2016
Wetland Type	Non-Tidal Freshwater Marsh	Assessor Name/Organization	Phil May

Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	NO
Wetland is intensively managed (Y/N)	YES
Assessment area is located within 50 feet of a natural tributary or other open water (Y/N)	NO
Assessment area is substantially altered by beaver (Y/N)	NO
Assessment area experiences overbank flooding during normal rainfall conditions (Y/N)	NO
Assessment area is on a coastal island (Y/N)	NO

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	NA
	Sub-Surface Storage and Retention	Condition	NA
Water Quality	Pathogen Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Particulate Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Soluble Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Physical Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Pollution Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
Habitat	Physical Structure	Condition	**LOW**
	Landscape Patch Structure	Condition	**LOW**
	Vegetation Composition	Condition	**MEDIUM**

Function Rating Summary

Function	Metrics/Notes	Rating
Hydrology	Condition	**LOW**
Water Quality	Condition	**LOW**
	Condition/Opportunity	**LOW**
	Opportunity Presence? (Y/N)	**NO**
Habitat	Conditon	**LOW**

Overall Wetland Rating **LOW**

NC WAM WETLAND ASSESSMENT FORM
Accompanies User Manual Version 4.1
Rating Calculator Version 4.1

Wetland Site Name W1 **Date** 3/28/2016

Wetland Type Non-Tidal Freshwater Marsh **Assessor Name/Organization** Phil May

Level III Ecoregion Piedmont **Nearest Named Water Body** UT to Richland Creek

River Basin Cape Fear **USGS 8-Digit Catalogue Unit** 03030003

( ) Yes (•) No **Precipitation within 48 hrs?** **Latitude/Longitude (deci-degrees)** 35.9498 / -79.9207

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note on last page if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, approximately within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? (•) Yes ( ) No

Regulatory Considerations (select all that apply to the assessment area)

- [ ] Anadromous fish
- [ ] Federally protected species or State endangered or threatened species
- [ ] NCDWQ riparian buffer rule in effect
- [ ] Abuts a Primary Nursery Area (PNA)
- [ ] Publicly owned property
- [ ] N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- [ ] Abuts a stream with a NCDWQ classification of SA or supplemental classifications of HQW, ORW, or Trout
- [ ] Designated NCNHP reference community
- [ ] Abuts a 303(d)-listed stream or a tributary to a 303(d)-listed stream

What type of natural stream is associated with the wetland, if any? (check all that apply)

- ( ) Blackwater
- ( ) Brownwater
- [ ] Tidal (if tidal, check one of the following boxes) ( ) Lunar ( ) Wind ( ) Both

Is the assessment area on a coastal island? ( ) Yes (•) No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ( ) Yes (•) No

Does the assessment area experience overbank flooding during normal rainfall conditions? ( ) Yes (•) No

1. Ground Surface Condition/Vegetation Condition – assessment area condition metric
Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual). If a reference is not applicable, then rate the assessment area based on evidence of an effect.

GS	VS	
( ) A	( ) A	Not severely altered
(•) B	(•) B	Severely altered over a majority of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], hydrologic alteration)

2. Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric
Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the current NRCS lateral effect of ditching guidance for North Carolina hydric soils (see USACE Wilmington District website) for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and ditch sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
( ) A	( ) A	Water storage capacity and duration are not altered.
( ) B	(•) B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
(•) C	( ) C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: draining, flooding, soil compaction, filling, excessive sedimentation, underground utility lines).

3. Water Storage/Surface Relief – assessment area/wetland type condition metric (answer for non-marsh wetlands only)
Check a box in each column for each group below. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

	AA	WT	
3a.	( ) A	( ) A	Majority of wetland with depressions able to pond water > 1 foot deep
	( ) B	( ) B	Majority of wetland with depressions able to pond water 6 inches to 1 foot deep
	( ) C	( ) C	Majority of wetland with depressions able to pond water 3 to 6 inches deep
	( ) D	( ) D	Depressions able to pond water < 3 inches deep

3b.	( ) A	Evidence that maximum depth of inundation is greater than 2 feet
	( ) B	Evidence that maximum depth of inundation is between 1 and 2 feet
	( ) C	Evidence that maximum depth of inundation is less than 1 foot

4. Soil Texture/Structure – assessment area condition metric

Check a box from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional indicators.

4a.
- ○ A Sandy soil
- ◉ B Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)
- ○ C Loamy or clayey soils not exhibiting redoximorphic features
- ○ D Loamy or clayey gleyed soil
- ○ E Histosol or histic epipedon

4b.
- ○ A Soil ribbon < 1 inch
- ◉ B Soil ribbon ≥ 1 inch

4c.
- ◉ A No peat or muck presence
- ○ B A peat or muck presence

5. Discharge into Wetland – opportunity metric

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
◉ A	◉ A	Little or no evidence of pollutants or discharges entering the assessment area
○ B	○ B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
○ C	○ C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)

6. Land Use – opportunity metric

Check all that apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion.

WS	5M	2M	
☐ A	☐ A	☐ A	≥ 10% impervious surfaces
☑ B	☑ B	☑ B	< 10% impervious surfaces
☐ C	☐ C	☐ C	Confined animal operations (or other local, concentrated source of pollutants)
☐ D	☐ D	☐ D	≥ 20% coverage of pasture
☐ E	☐ E	☐ E	≥ 20% coverage of agricultural land (regularly plowed land)
☑ F	☑ F	☑ F	≥ 20% coverage of maintained grass/herb
☐ G	☐ G	☐ G	≥ 20% coverage of clear-cut land
☑ H	☑ H	☑ H	Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations that prevent drainage or overbank flow from affecting the assessment area.

7. Wetland Acting as Vegetated Buffer – assessment area/wetland complex condition metric

7a. Is assessment area within 50 feet of a tributary or other open water?

○ Yes ◉ No If Yes, continue to 7b. If No, skip to Metric 8.

Wetland buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. Record a note if a portion of the buffer has been removed or disturbed.

7b. How much of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.
- ○ A ≥ 50 feet
- ○ B From 30 to < 50 feet
- ○ C From 15 to < 30 feet
- ○ D From 5 to < 15 feet
- ○ E < 5 feet or buffer bypassed by ditches

7c. Tributary width. If the tributary is anastomosed, combine widths of channels/braids for a total width.

○ ≤ 15-feet wide ○ > 15-feet wide ○ Other open water (no tributary present)

7d. Do roots of assessment area vegetation extend into the bank of the tributary/open water?

○ Yes ○ No

7e. Is tributary or other open water sheltered or exposed?
- ○ Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
- ○ Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic.

8. Wetland Width at the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only)

Check a box in each column. Select the average width for the wetland type at the assessment area (WT) and the wetland complex at the assessment areas (WC). See User Manual for WT and WC boundaries.

WT	WC	
○ A	○ A	≥ 100 feet
○ B	○ B	From 80 to < 100 feet
○ C	○ C	From 50 to < 80 feet
○ D	○ D	From 40 to < 50 feet
○ E	○ E	From 30 to < 40 feet
○ F	○ F	From 15 to < 30 feet
○ G	○ G	From 5 to < 15 feet
○ H	○ H	< 5 feet

9. Inundation Duration – assessment area condition metric

Answer for assessment area dominant landform.

- ○ A Evidence of short-duration inundation (< 7 consecutive days)
- ◉ B Evidence of saturation, without evidence of inundation
- ○ C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

Consider recent deposition only (no plant growth since deposition).

- ◉ A Sediment deposition is not excessive, but at approximately natural levels.
- ○ B Sediment deposition is excessive, but not overwhelming the wetland.
- ○ C Sediment deposition is excessive and is overwhelming the wetland.

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.

WT	WC	FW (if applicable)	
○ A	○ A	○ A	≥ 500 acres
○ B	○ B	○ B	From 100 to < 500 acres
○ C	○ C	○ C	From 50 to < 100 acres
○ D	○ D	○ D	From 25 to < 50 acres
○ E	○ E	○ E	From 10 to < 25 acres
○ F	○ F	○ F	From 5 to < 10 acres
○ G	○ G	○ G	From 1 to < 5 acres
○ H	○ H	○ H	From 0.5 to < 1 acre
◉ I	◉ I	◉ I	From 0.1 to < 0.5 acre
○ J	○ J	○ J	From 0.01 to < 0.1 acre
○ K	○ K	○ K	< 0.01 acre or assessment area is clear-cut

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

- ○ A Pocosin is the full extent (≥ 90%) of its natural landscape size.
- ○ B Pocosin is < 90% of the full extent of its natural landscape size.

13. Connectivity to Other Natural Areas – landscape condition metric

13a. **Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment.** This evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.

Well	Loosely	
○ A	○ A	≥ 500 acres
○ B	○ B	From 100 to < 500 acres
○ C	○ C	From 50 to < 100 acres
○ D	◉ D	From 10 to < 50 acres
○ E	○ E	< 10 acres
○ F	○ F	Wetland type has a poor or no connection to other natural habitats

13b. **Evaluate for marshes only**.

○ Yes ◉ No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.

14. Edge Effect – wetland type condition metric (skip for all marshes)

May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts. Consider the eight main points of the compass.

- ○ A No artificial edge within 150 feet in all directions
- ○ B No artificial edge within 150 feet in four (4) to seven (7) directions
- ○ C An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)

- ○ A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
- ○ B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
- ○ C Vegetation severely altered from reference in composition. Expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in at least one stratum.

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

- ○ A Vegetation diversity is high and is composed primarily of native species (<10% cover of exotics).
- ◉ B Vegetation diversity is low or has > 10% to 50% cover of exotics.
- ○ C Vegetation is dominated by exotic species (>50% cover of exotics).

17. Vegetative Structure – assessment area/wetland type condition metric

17a. Is vegetation present?

(•) Yes ( ) No If Yes, continue to 17b. If No, skip to Metric 18.

17b. Evaluate percent coverage of assessment area vegetation **for all marshes only**. Skip to 17c for non-marsh wetlands.

(•) A ≥ 25% coverage of vegetation
( ) B < 25% coverage of vegetation

17c. **Check a box in each column for each stratum**. Evaluate this portion of the metric **for non-marsh wetlands**. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

	AA	WT	
Canopy	( ) A	( ) A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
	( ) B	( ) B	Canopy present, but opened more than natural gaps
	( ) C	( ) C	Canopy sparse or absent
Mid-Story	( ) A	( ) A	Dense mid-story/sapling layer
	( ) B	( ) B	Moderate density mid-story/sapling layer
	( ) C	( ) C	Mid-story/sapling layer sparse or absent
Shrub	( ) A	( ) A	Dense shrub layer
	( ) B	( ) B	Moderate density shrub layer
	( ) C	( ) C	Shrub layer sparse or absent
Herb	( ) A	( ) A	Dense herb layer
	( ) B	( ) B	Moderate density herb layer
	( ) C	( ) C	Herb layer sparse or absent

18. Snags – wetland type condition metric

( ) A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).
(•) B Not A

19. Diameter Class Distribution – wetland type condition metric

( ) A Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.
( ) B Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.
(•) C Majority of canopy trees are < 6 inches DBH or no trees.

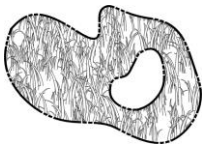
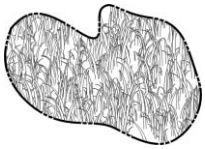
20. Large Woody Debris – wetland type condition metric

Include both natural debris and man-placed natural debris.

( ) A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).
(•) B Not A

21. Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

( ) A 
( ) B 
( ) C 
(•) D 

22. Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)

Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.

( ) A Overbank and overland flow are not severely altered in the assessment area.
( ) B Overbank flow is severely altered in the assessment area.
( ) C Overland flow is severely altered in the assessment area.
( ) D Both overbank and overland flow are severely altered in the assessment area.

Notes

NC WAM Wetland Rating Sheet
Accompanies User Manual Version 4.1
Rating Calculator Version 4.1

Wetland Site Name	W2 & W3	Date	3/28/2016
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization	Phil May

Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	NO
Wetland is intensively managed (Y/N)	NO
Assessment area is located within 50 feet of a natural tributary or other open water (Y/N)	NO
Assessment area is substantially altered by beaver (Y/N)	NO
Assessment area experiences overbank flooding during normal rainfall conditions (Y/N)	NO
Assessment area is on a coastal island (Y/N)	NO

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	NA
	Sub-Surface Storage and Retention	Condition	NA
Water Quality	Pathogen Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Particulate Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Soluble Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Physical Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Pollution Change	Condition	**LOW**
		Condition/Opportunity	**LOW**
		Opportunity Presence? (Y/N)	**YES**
Habitat	Physical Structure	Condition	**HIGH**
	Landscape Patch Structure	Condition	**LOW**
	Vegetation Composition	Condition	**MEDIUM**

Function Rating Summary

Function	Metrics/Notes	Rating
Hydrology	Condition	**MEDIUM**
Water Quality	Condition	**LOW**
	Condition/Opportunity	**LOW**
	Opportunity Presence? (Y/N)	**YES**
Habitat	Conditon	**MEDIUM**

Overall Wetland Rating **MEDIUM**

NC WAM WETLAND ASSESSMENT FORM
Accompanies User Manual Version 4.1
Rating Calculator Version 4.1

Wetland Site Name W2 & W3 **Date** 3/28/2016

Wetland Type Bottomland Hardwood Forest **Assessor Name/Organization** Phil May

Level III Ecoregion Piedmont **Nearest Named Water Body** UT to Richland Creek

River Basin Cape Fear **USGS 8-Digit Catalogue Unit** 03030003

○ Yes ◉ No **Precipitation within 48 hrs?** **Latitude/Longitude (deci-degrees)** 35.9501 / -79.9220

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note on last page if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, approximately within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ○ Yes ◉ No

Regulatory Considerations (select all that apply to the assessment area)

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Abuts a Primary Nursery Area (PNA)
☐ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ Abuts a stream with a NCDWQ classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community
☐ Abuts a 303(d)-listed stream or a tributary to a 303(d)-listed stream

What type of natural stream is associated with the wetland, if any? (check all that apply)

○ Blackwater
○ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ○ Lunar ○ Wind ○ Both

Is the assessment area on a coastal island? ○ Yes ◉ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ○ Yes ◉ No

Does the assessment area experience overbank flooding during normal rainfall conditions? ○ Yes ◉ No

1. Ground Surface Condition/Vegetation Condition – assessment area condition metric
Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual). If a reference is not applicable, then rate the assessment area based on evidence of an effect.

GS	VS	
◉ A	◉ A	Not severely altered
○ B	○ B	Severely altered over a majority of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], hydrologic alteration)

2. Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric
Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the current NRCS lateral effect of ditching guidance for North Carolina hydric soils (see USACE Wilmington District website) for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and ditch sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
○ A	◉ A	Water storage capacity and duration are not altered.
◉ B	○ B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
○ C	○ C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: draining, flooding, soil compaction, filling, excessive sedimentation, underground utility lines).

3. Water Storage/Surface Relief – assessment area/wetland type condition metric (answer for non-marsh wetlands only)
Check a box in each column for each group below. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

	AA	WT	
3a.	○ A	○ A	Majority of wetland with depressions able to pond water > 1 foot deep
	○ B	○ B	Majority of wetland with depressions able to pond water 6 inches to 1 foot deep
	○ C	○ C	Majority of wetland with depressions able to pond water 3 to 6 inches deep
	◉ D	◉ D	Depressions able to pond water < 3 inches deep

3b.	○ A	Evidence that maximum depth of inundation is greater than 2 feet
	○ B	Evidence that maximum depth of inundation is between 1 and 2 feet
	◉ C	Evidence that maximum depth of inundation is less than 1 foot

4. Soil Texture/Structure – assessment area condition metric

Check a box from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional indicators.

4a.
- ○ A Sandy soil
- ◉ B Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)
- ○ C Loamy or clayey soils not exhibiting redoximorphic features
- ○ D Loamy or clayey gleyed soil
- ○ E Histosol or histic epipedon

4b.
- ◉ A Soil ribbon < 1 inch
- ○ B Soil ribbon ≥ 1 inch

4c.
- ◉ A No peat or muck presence
- ○ B A peat or muck presence

5. Discharge into Wetland – opportunity metric

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
○ A	◉ A	Little or no evidence of pollutants or discharges entering the assessment area
◉ B	○ B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
○ C	○ C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)

6. Land Use – opportunity metric

Check all that apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion.

WS	5M	2M	
☐ A	☐ A	☐ A	≥ 10% impervious surfaces
☑ B	☑ B	☑ B	< 10% impervious surfaces
☐ C	☐ C	☐ C	Confined animal operations (or other local, concentrated source of pollutants)
☐ D	☐ D	☐ D	≥ 20% coverage of pasture
☐ E	☐ E	☐ E	≥ 20% coverage of agricultural land (regularly plowed land)
☑ F	☑ F	☑ F	≥ 20% coverage of maintained grass/herb
☐ G	☐ G	☐ G	≥ 20% coverage of clear-cut land
☐ H	☐ H	☐ H	Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations that prevent drainage or overbank flow from affecting the assessment area.

7. Wetland Acting as Vegetated Buffer – assessment area/wetland complex condition metric

7a. Is assessment area within 50 feet of a tributary or other open water?

○ Yes ◉ No If Yes, continue to 7b. If No, skip to Metric 8.

Wetland buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. Record a note if a portion of the buffer has been removed or disturbed.

7b. How much of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.
- ○ A ≥ 50 feet
- ○ B From 30 to < 50 feet
- ○ C From 15 to < 30 feet
- ○ D From 5 to < 15 feet
- ○ E < 5 feet or buffer bypassed by ditches

7c. Tributary width. If the tributary is anastomosed, combine widths of channels/braids for a total width.

○ ≤ 15-feet wide ○ > 15-feet wide ○ Other open water (no tributary present)

7d. Do roots of assessment area vegetation extend into the bank of the tributary/open water?

○ Yes ○ No

7e. Is tributary or other open water sheltered or exposed?
- ○ Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
- ○ Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic.

8. Wetland Width at the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only)

Check a box in each column. Select the average width for the wetland type at the assessment area (WT) and the wetland complex at the assessment areas (WC). See User Manual for WT and WC boundaries.

WT	WC	
○ A	○ A	≥ 100 feet
○ B	○ B	From 80 to < 100 feet
○ C	○ C	From 50 to < 80 feet
○ D	○ D	From 40 to < 50 feet
○ E	○ E	From 30 to < 40 feet
○ F	○ F	From 15 to < 30 feet
○ G	○ G	From 5 to < 15 feet
○ H	○ H	< 5 feet

9. Inundation Duration – assessment area condition metric

Answer for assessment area dominant landform.

- (•) A Evidence of short-duration inundation (< 7 consecutive days)
- ( ) B Evidence of saturation, without evidence of inundation
- ( ) C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

Consider recent deposition only (no plant growth since deposition).

- ( ) A Sediment deposition is not excessive, but at approximately natural levels.
- (•) B Sediment deposition is excessive, but not overwhelming the wetland.
- ( ) C Sediment deposition is excessive and is overwhelming the wetland.

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.

WT	WC	FW (if applicable)	
( ) A	( ) A	( ) A	≥ 500 acres
( ) B	( ) B	( ) B	From 100 to < 500 acres
( ) C	( ) C	( ) C	From 50 to < 100 acres
( ) D	( ) D	( ) D	From 25 to < 50 acres
( ) E	( ) E	( ) E	From 10 to < 25 acres
( ) F	( ) F	( ) F	From 5 to < 10 acres
( ) G	( ) G	( ) G	From 1 to < 5 acres
( ) H	( ) H	( ) H	From 0.5 to < 1 acre
( ) I	( ) I	( ) I	From 0.1 to < 0.5 acre
(•) J	(•) J	(•) J	From 0.01 to < 0.1 acre
( ) K	( ) K	( ) K	< 0.01 acre or assessment area is clear-cut

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

- ( ) A Pocosin is the full extent (≥ 90%) of its natural landscape size.
- ( ) B Pocosin is < 90% of the full extent of its natural landscape size.

13. Connectivity to Other Natural Areas – landscape condition metric

13a. **Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment.** This evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.

Well	Loosely	
( ) A	( ) A	≥ 500 acres
( ) B	( ) B	From 100 to < 500 acres
( ) C	( ) C	From 50 to < 100 acres
( ) D	(•) D	From 10 to < 50 acres
( ) E	( ) E	< 10 acres
( ) F	( ) F	Wetland type has a poor or no connection to other natural habitats

13b. **Evaluate for marshes only**.

( ) Yes ( ) No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.

14. Edge Effect – wetland type condition metric (skip for all marshes)

May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts. Consider the eight main points of the compass.

- ( ) A No artificial edge within 150 feet in all directions
- (•) B No artificial edge within 150 feet in four (4) to seven (7) directions
- ( ) C An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)

- ( ) A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
- (•) B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
- ( ) C Vegetation severely altered from reference in composition. Expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in at least one stratum.

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

- ( ) A Vegetation diversity is high and is composed primarily of native species (<10% cover of exotics).
- ( ) B Vegetation diversity is low or has > 10% to 50% cover of exotics.
- ( ) C Vegetation is dominated by exotic species (>50% cover of exotics).

17. Vegetative Structure – assessment area/wetland type condition metric

17a. Is vegetation present?

(•) Yes ( ) No If Yes, continue to 17b. If No, skip to Metric 18.

17b. Evaluate percent coverage of assessment area vegetation **for all marshes only**. Skip to 17c for non-marsh wetlands.

(•) A ≥ 25% coverage of vegetation
( ) B < 25% coverage of vegetation

17c. **Check a box in each column for each stratum**. Evaluate this portion of the metric **for non-marsh wetlands**. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

	AA	WT	
Canopy	( ) A	( ) A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
	(•) B	(•) B	Canopy present, but opened more than natural gaps
	( ) C	( ) C	Canopy sparse or absent
Mid-Story	(•) A	(•) A	Dense mid-story/sapling layer
	( ) B	( ) B	Moderate density mid-story/sapling layer
	( ) C	( ) C	Mid-story/sapling layer sparse or absent
Shrub	( ) A	( ) A	Dense shrub layer
	(•) B	(•) B	Moderate density shrub layer
	( ) C	( ) C	Shrub layer sparse or absent
Herb	( ) A	( ) A	Dense herb layer
	( ) B	( ) B	Moderate density herb layer
	(•) C	(•) C	Herb layer sparse or absent

18. Snags – wetland type condition metric

( ) A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).
(•) B Not A

19. Diameter Class Distribution – wetland type condition metric

( ) A Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.
(•) B Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.
( ) C Majority of canopy trees are < 6 inches DBH or no trees.

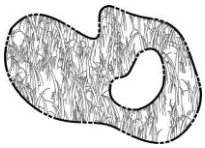
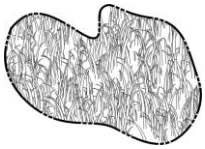
20. Large Woody Debris – wetland type condition metric

Include both natural debris and man-placed natural debris.

( ) A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).
(•) B Not A

21. Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

( ) A 
( ) B 
( ) C 
( ) D 

22. Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)

Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.

( ) A Overbank and overland flow are not severely altered in the assessment area.
( ) B Overbank flow is severely altered in the assessment area.
( ) C Overland flow is severely altered in the assessment area.
( ) D Both overbank and overland flow are severely altered in the assessment area.

Notes

NC WAM Wetland Rating Sheet
Accompanies User Manual Version 4.1
Rating Calculator Version 4.1

Wetland Site Name	W4	Date	3/28/2016
Wetland Type	Basin Wetland	Assessor Name/Organization	Phil May

Notes on Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	NO
Wetland is intensively managed (Y/N)	NO
Assessment area is located within 50 feet of a natural tributary or other open water (Y/N)	NO
Assessment area is substantially altered by beaver (Y/N)	NO
Assessment area experiences overbank flooding during normal rainfall conditions (Y/N)	NO
Assessment area is on a coastal island (Y/N)	NO

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	NA
	Sub-Surface Storage and Retention	Condition	NA
Water Quality	Pathogen Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Particulate Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Soluble Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Physical Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Pollution Change	Condition	**MEDIUM**
		Condition/Opportunity	**MEDIUM**
		Opportunity Presence? (Y/N)	**NO**
Habitat	Physical Structure	Condition	**HIGH**
	Landscape Patch Structure	Condition	**MEDIUM**
	Vegetation Composition	Condition	**MEDIUM**

Function Rating Summary

Function	Metrics/Notes	Rating
Hydrology	Condition	**MEDIUM**
Water Quality	Condition	**MEDIUM**
	Condition/Opportunity	**MEDIUM**
	Opportunity Presence? (Y/N)	**NO**
Habitat	Conditon	**HIGH**

Overall Wetland Rating **MEDIUM**

NC WAM WETLAND ASSESSMENT FORM
Accompanies User Manual Version 4.1
Rating Calculator Version 4.1

Wetland Site Name W4 **Date** 3/28/2016

Wetland Type Basin Wetland **Assessor Name/Organization** Phil May

Level III Ecoregion Piedmont **Nearest Named Water Body** UT to Richland Creek

River Basin Cape Fear **USGS 8-Digit Catalogue Unit** 03030003

○ Yes ◉ No **Precipitation within 48 hrs?** **Latitude/Longitude (deci-degrees)** 35.9487 / -79.9198

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note on last page if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, approximately within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ○ Yes ◉ No

Regulatory Considerations (select all that apply to the assessment area)

☐ Anadromous fish
☐ Federally protected species or State endangered or threatened species
☐ NCDWQ riparian buffer rule in effect
☐ Abuts a Primary Nursery Area (PNA)
☐ Publicly owned property
☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
☐ Abuts a stream with a NCDWQ classification of SA or supplemental classifications of HQW, ORW, or Trout
☐ Designated NCNHP reference community
☐ Abuts a 303(d)-listed stream or a tributary to a 303(d)-listed stream

What type of natural stream is associated with the wetland, if any? (check all that apply)

○ Blackwater
○ Brownwater
☐ Tidal (if tidal, check one of the following boxes) ○ Lunar ○ Wind ○ Both

Is the assessment area on a coastal island? ○ Yes ◉ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ○ Yes ◉ No

Does the assessment area experience overbank flooding during normal rainfall conditions? ○ Yes ◉ No

1. Ground Surface Condition/Vegetation Condition – assessment area condition metric
Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual). If a reference is not applicable, then rate the assessment area based on evidence of an effect.

GS	VS	
◉ A	◉ A	Not severely altered
○ B	○ B	Severely altered over a majority of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], hydrologic alteration)

2. Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric
Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the current NRCS lateral effect of ditching guidance for North Carolina hydric soils (see USACE Wilmington District website) for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and ditch sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
○ A	◉ A	Water storage capacity and duration are not altered.
◉ B	○ B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
○ C	○ C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: draining, flooding, soil compaction, filling, excessive sedimentation, underground utility lines).

3. Water Storage/Surface Relief – assessment area/wetland type condition metric (answer for non-marsh wetlands only)
Check a box in each column for each group below. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

	AA	WT	
3a.	○ A	○ A	Majority of wetland with depressions able to pond water > 1 foot deep
	○ B	○ B	Majority of wetland with depressions able to pond water 6 inches to 1 foot deep
	○ C	○ C	Majority of wetland with depressions able to pond water 3 to 6 inches deep
	◉ D	◉ D	Depressions able to pond water < 3 inches deep

3b.	○ A	Evidence that maximum depth of inundation is greater than 2 feet
	○ B	Evidence that maximum depth of inundation is between 1 and 2 feet
	◉ C	Evidence that maximum depth of inundation is less than 1 foot

4. Soil Texture/Structure – assessment area condition metric

Check a box from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional indicators.

4a.
- ○ A Sandy soil
- ◉ B Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)
- ○ C Loamy or clayey soils not exhibiting redoximorphic features
- ○ D Loamy or clayey gleyed soil
- ○ E Histosol or histic epipedon

4b.
- ○ A Soil ribbon < 1 inch
- ◉ B Soil ribbon ≥ 1 inch

4c.
- ◉ A No peat or muck presence
- ○ B A peat or muck presence

5. Discharge into Wetland – opportunity metric

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

Surf	Sub	
◉ A	◉ A	Little or no evidence of pollutants or discharges entering the assessment area
○ B	○ B	Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
○ C	○ C	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)

6. Land Use – opportunity metric

Check all that apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion.

WS	5M	2M	
☐ A	☐ A	☐ A	≥ 10% impervious surfaces
☑ B	☑ B	☑ B	< 10% impervious surfaces
☐ C	☐ C	☐ C	Confined animal operations (or other local, concentrated source of pollutants)
☐ D	☐ D	☐ D	≥ 20% coverage of pasture
☐ E	☐ E	☐ E	≥ 20% coverage of agricultural land (regularly plowed land)
☑ F	☑ F	☑ F	≥ 20% coverage of maintained grass/herb
☐ G	☐ G	☐ G	≥ 20% coverage of clear-cut land
☐ H	☐ H	☐ H	Little or no opportunity to improve water quality. Lack of opportunity may result from hydrologic alterations that prevent drainage or overbank flow from affecting the assessment area.

7. Wetland Acting as Vegetated Buffer – assessment area/wetland complex condition metric

7a. Is assessment area within 50 feet of a tributary or other open water?

○ Yes ◉ No If Yes, continue to 7b. If No, skip to Metric 8.

Wetland buffer need only be present on one side of the water body. Make buffer judgment based on the average width of the wetland. Record a note if a portion of the buffer has been removed or disturbed.

7b. How much of the first 50 feet from the bank is weltand? Descriptor E should be selected if ditches effectively bypass the buffer.
- ○ A ≥ 50 feet
- ○ B From 30 to < 50 feet
- ○ C From 15 to < 30 feet
- ○ D From 5 to < 15 feet
- ○ E < 5 feet or buffer bypassed by ditches

7c. Tributary width. If the tributary is anastomosed, combine widths of channels/braids for a total width.

○ ≤ 15-feet wide ○ > 15-feet wide ○ Other open water (no tributary present)

7d. Do roots of assessment area vegetation extend into the bank of the tributary/open water?

○ Yes ○ No

7e. Is tributary or other open water sheltered or exposed?
- ○ Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
- ○ Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic.

8. Wetland Width at the Assessment Area – wetland type/wetland complex metric (evaluate for riparian wetlands only)

Check a box in each column. Select the average width for the wetland type at the assessment area (WT) and the wetland complex at the assessment areas (WC). See User Manual for WT and WC boundaries.

WT	WC	
○ A	○ A	≥ 100 feet
○ B	○ B	From 80 to < 100 feet
○ C	○ C	From 50 to < 80 feet
○ D	○ D	From 40 to < 50 feet
○ E	○ E	From 30 to < 40 feet
○ F	○ F	From 15 to < 30 feet
○ G	○ G	From 5 to < 15 feet
○ H	○ H	< 5 feet

9. Inundation Duration – assessment area condition metric

Answer for assessment area dominant landform.

- ○ A Evidence of short-duration inundation (< 7 consecutive days)
- ◉ B Evidence of saturation, without evidence of inundation
- ○ C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

Consider recent deposition only (no plant growth since deposition).

- ○ A Sediment deposition is not excessive, but at approximately natural levels.
- ◉ B Sediment deposition is excessive, but not overwhelming the wetland.
- ○ C Sediment deposition is excessive and is overwhelming the wetland.

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.

WT	WC	FW (if applicable)	
○ A	○ A	○ A	≥ 500 acres
○ B	○ B	○ B	From 100 to < 500 acres
○ C	○ C	○ C	From 50 to < 100 acres
○ D	○ D	○ D	From 25 to < 50 acres
○ E	○ E	○ E	From 10 to < 25 acres
○ F	○ F	○ F	From 5 to < 10 acres
○ G	○ G	○ G	From 1 to < 5 acres
○ H	○ H	○ H	From 0.5 to < 1 acre
◉ I	◉ I	◉ I	From 0.1 to < 0.5 acre
○ J	○ J	○ J	From 0.01 to < 0.1 acre
○ K	○ K	○ K	< 0.01 acre or assessment area is clear-cut

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

- ○ A Pocosin is the full extent (≥ 90%) of its natural landscape size.
- ○ B Pocosin is < 90% of the full extent of its natural landscape size.

13. Connectivity to Other Natural Areas – landscape condition metric

13a. **Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment.** This evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous metric naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, fields (pasture open and agriculture), or water > 300 feet wide.

Well	Loosely	
○ A	○ A	≥ 500 acres
○ B	○ B	From 100 to < 500 acres
○ C	○ C	From 50 to < 100 acres
○ D	◉ D	From 10 to < 50 acres
○ E	○ E	< 10 acres
○ F	○ F	Wetland type has a poor or no connection to other natural habitats

13b. **Evaluate for marshes only**.

○ Yes ○ No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.

14. Edge Effect – wetland type condition metric (skip for all marshes)

May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors and clear-cuts. Consider the eight main points of the compass.

- ◉ A No artificial edge within 150 feet in all directions
- ○ B No artificial edge within 150 feet in four (4) to seven (7) directions
- ○ C An artificial edge occurs within 150 feet in more than four (4) directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)

- ○ A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
- ◉ B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
- ○ C Vegetation severely altered from reference in composition. Expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species). Exotic species are dominant in at least one stratum.

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

- ○ A Vegetation diversity is high and is composed primarily of native species (<10% cover of exotics).
- ◉ B Vegetation diversity is low or has > 10% to 50% cover of exotics.
- ○ C Vegetation is dominated by exotic species (>50% cover of exotics).

17. Vegetative Structure – assessment area/wetland type condition metric

17a. Is vegetation present?

(•) Yes ( ) No If Yes, continue to 17b. If No, skip to Metric 18.

17b. Evaluate percent coverage of assessment area vegetation **for all marshes only**. Skip to 17c for non-marsh wetlands.

(•) A ≥ 25% coverage of vegetation
( ) B < 25% coverage of vegetation

17c. **Check a box in each column for each stratum**. Evaluate this portion of the metric **for non-marsh wetlands**. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

	AA	WT	
Canopy	(•) A	(•) A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
	( ) B	( ) B	Canopy present, but opened more than natural gaps
	( ) C	( ) C	Canopy sparse or absent
Mid-Story	( ) A	( ) A	Dense mid-story/sapling layer
	(•) B	(•) B	Moderate density mid-story/sapling layer
	( ) C	( ) C	Mid-story/sapling layer sparse or absent
Shrub	( ) A	( ) A	Dense shrub layer
	( ) B	( ) B	Moderate density shrub layer
	(•) C	(•) C	Shrub layer sparse or absent
Herb	( ) A	( ) A	Dense herb layer
	(•) B	(•) B	Moderate density herb layer
	( ) C	( ) C	Herb layer sparse or absent

18. Snags – wetland type condition metric

( ) A Large snags (more than one) are visible (> 12-inches DBH, or large relative to species present and landscape stability).
(•) B Not A

19. Diameter Class Distribution – wetland type condition metric

( ) A Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.
(•) B Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.
( ) C Majority of canopy trees are < 6 inches DBH or no trees.

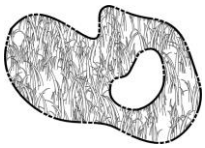
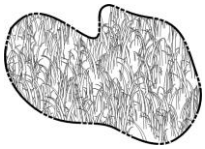
20. Large Woody Debris – wetland type condition metric

Include both natural debris and man-placed natural debris.

( ) A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).
(•) B Not A

21. Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)

Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.

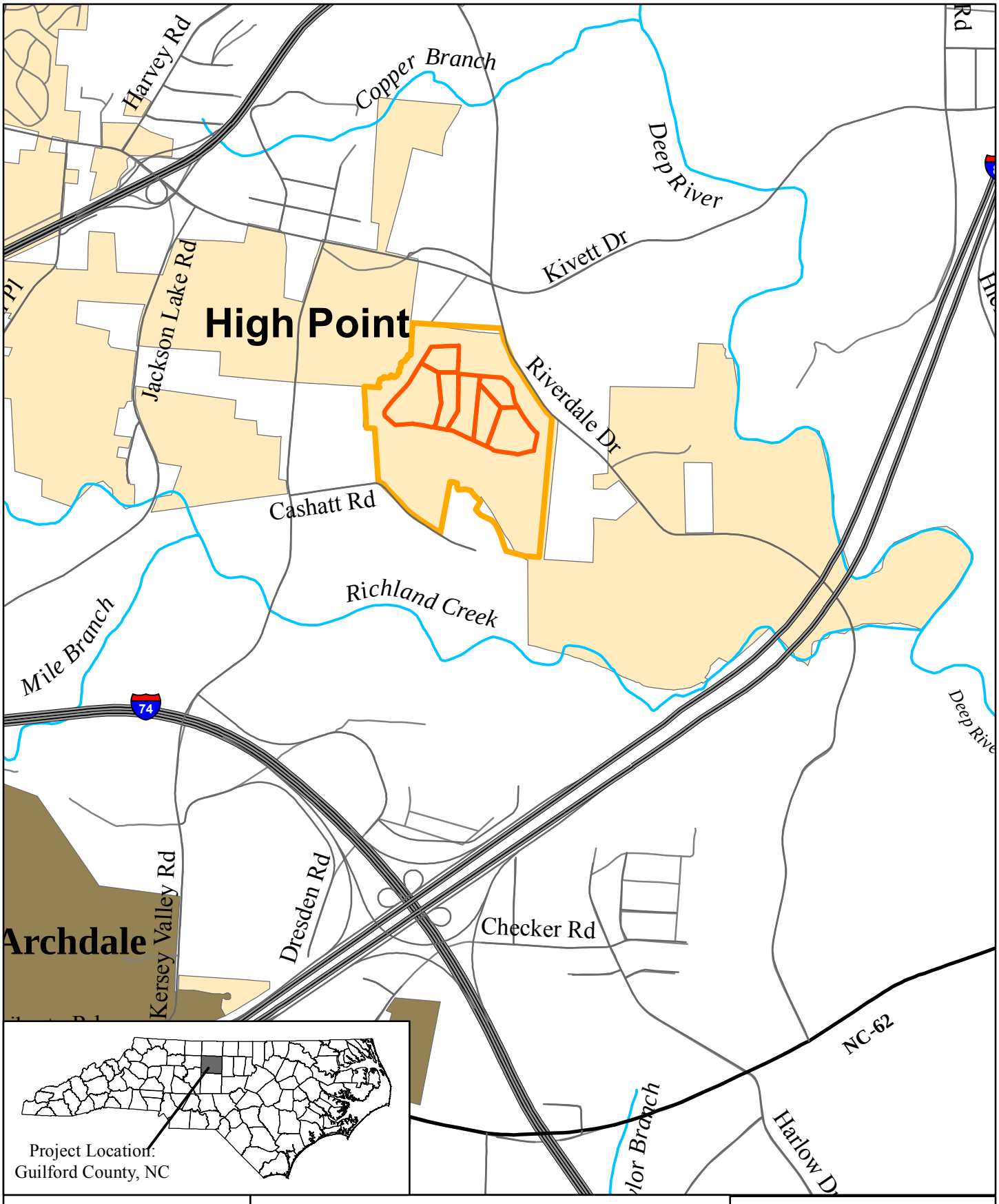
( ) A 
( ) B 
( ) C 
( ) D 

22. Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands only)

Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision.

( ) A Overbank and overland flow are not severely altered in the assessment area.
( ) B Overbank flow is severely altered in the assessment area.
( ) C Overland flow is severely altered in the assessment area.
( ) D Both overbank and overland flow are severely altered in the assessment area.

Notes



CAROLINA ECOSYSTEMS, INC.
3040 NC 42 West; Clayton, NC 27520
P: (919)-606-1065 F:(919)-585-5570

Septermber 2015

Figure 1: Project Vicinity

High Point Landfill, LLC
High Point C&D Landfill
Guilford County, NC

CAROLINA ECOSYSTEMS
3040 NC 42 West; Clayton, NC 27520
P: (919)-606-1065 F:(919)-585-5570

September 2015

N

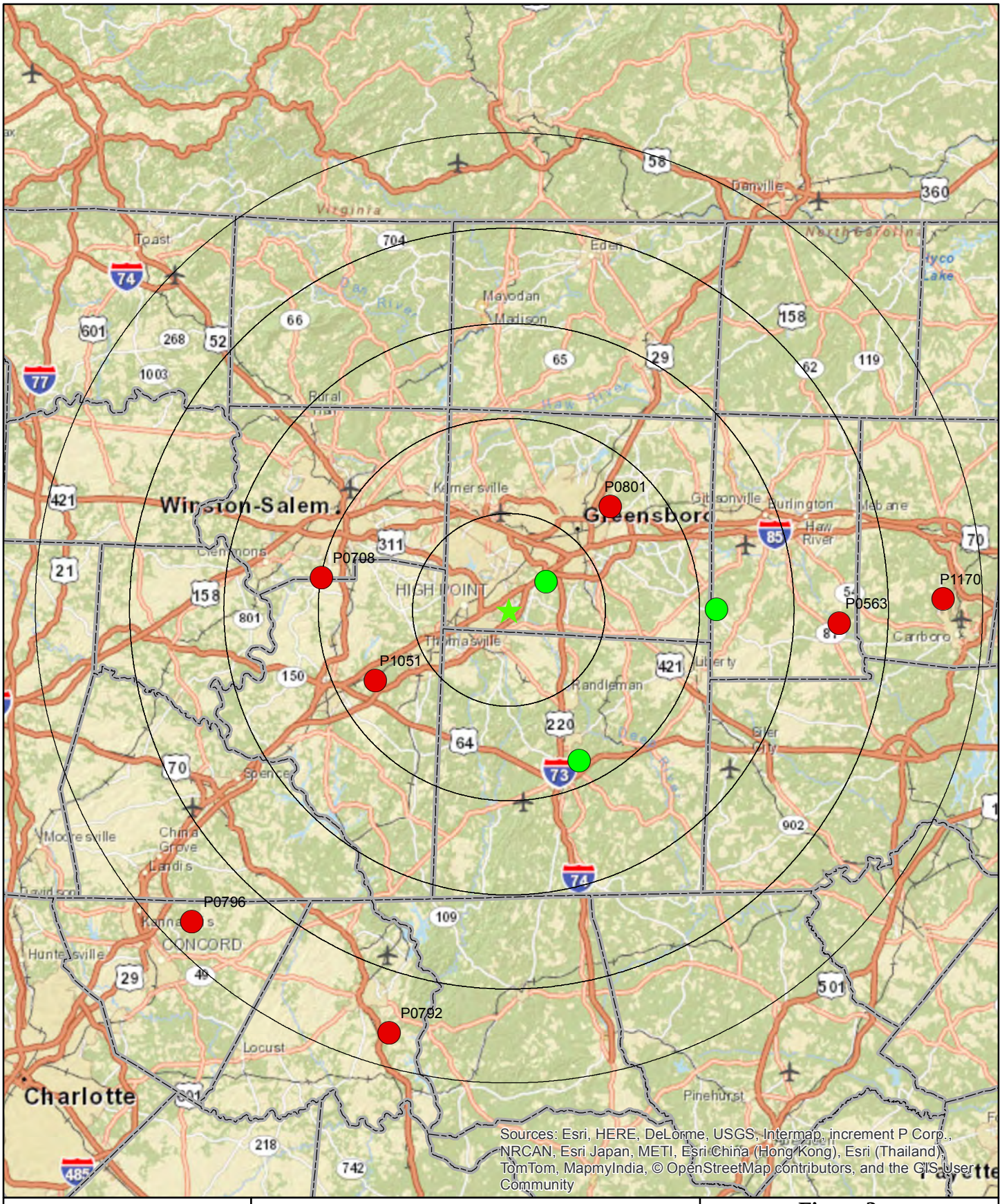
Feet

0 250 500

Proposed Landfill Cells
Property Boundary
Watershed Tiers
Wetlands
Streams
Zone 1 Buffers
Zone 2 Buffers

Figure 2: Jurisdictional Features

High Point Landfill, LLC
High Point C&D Landfill
Guilford County, NC



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September 2015

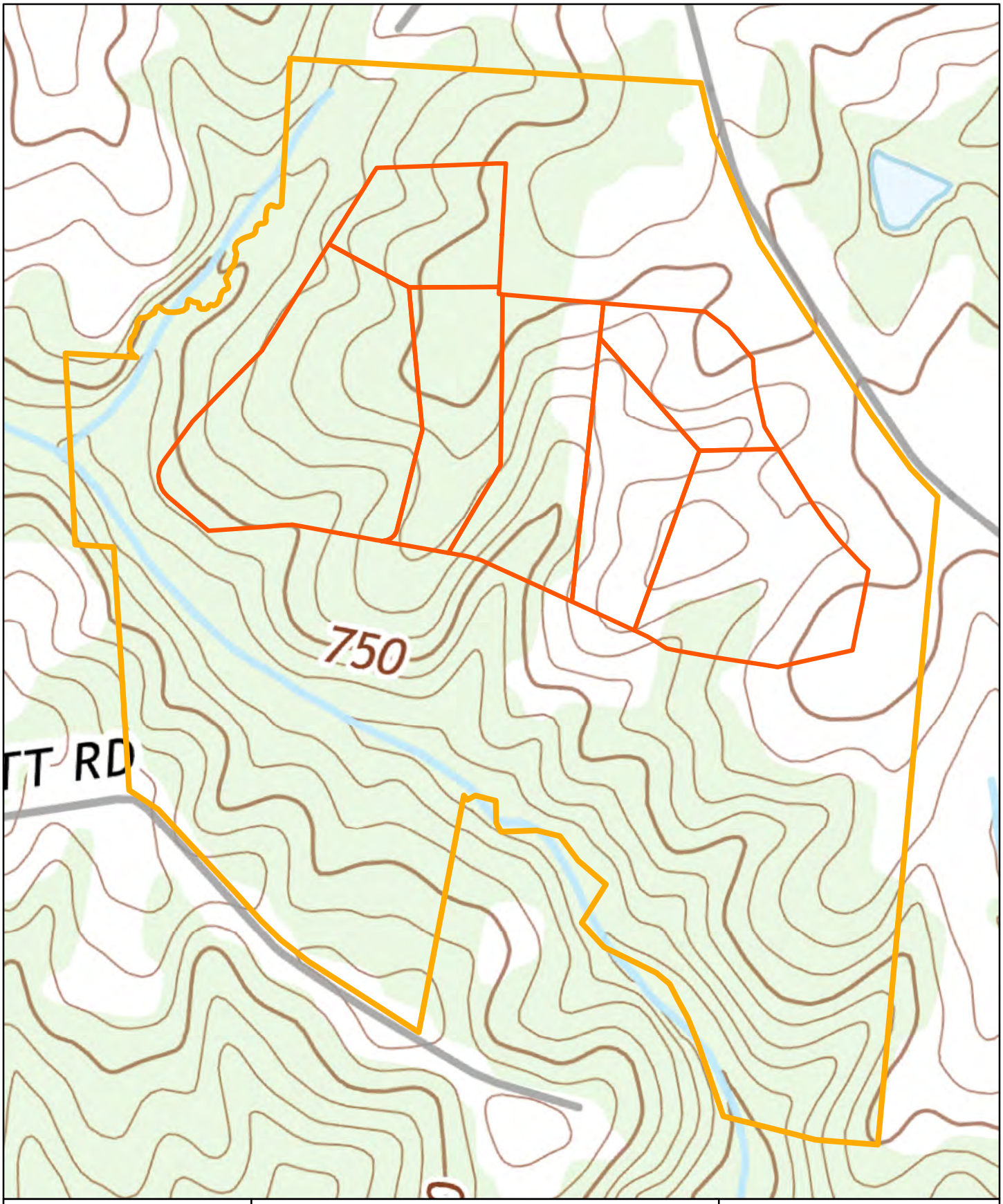
Public C&D Landfills
Private C&D Landfills
Site

N

0 10 Miles

Figure 3:
Permitted C&D Landfills

High Point Landfill, LLC
High Point C&D Landfill
Guilford County, NC



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September 2015

N

Feet

0 250 500

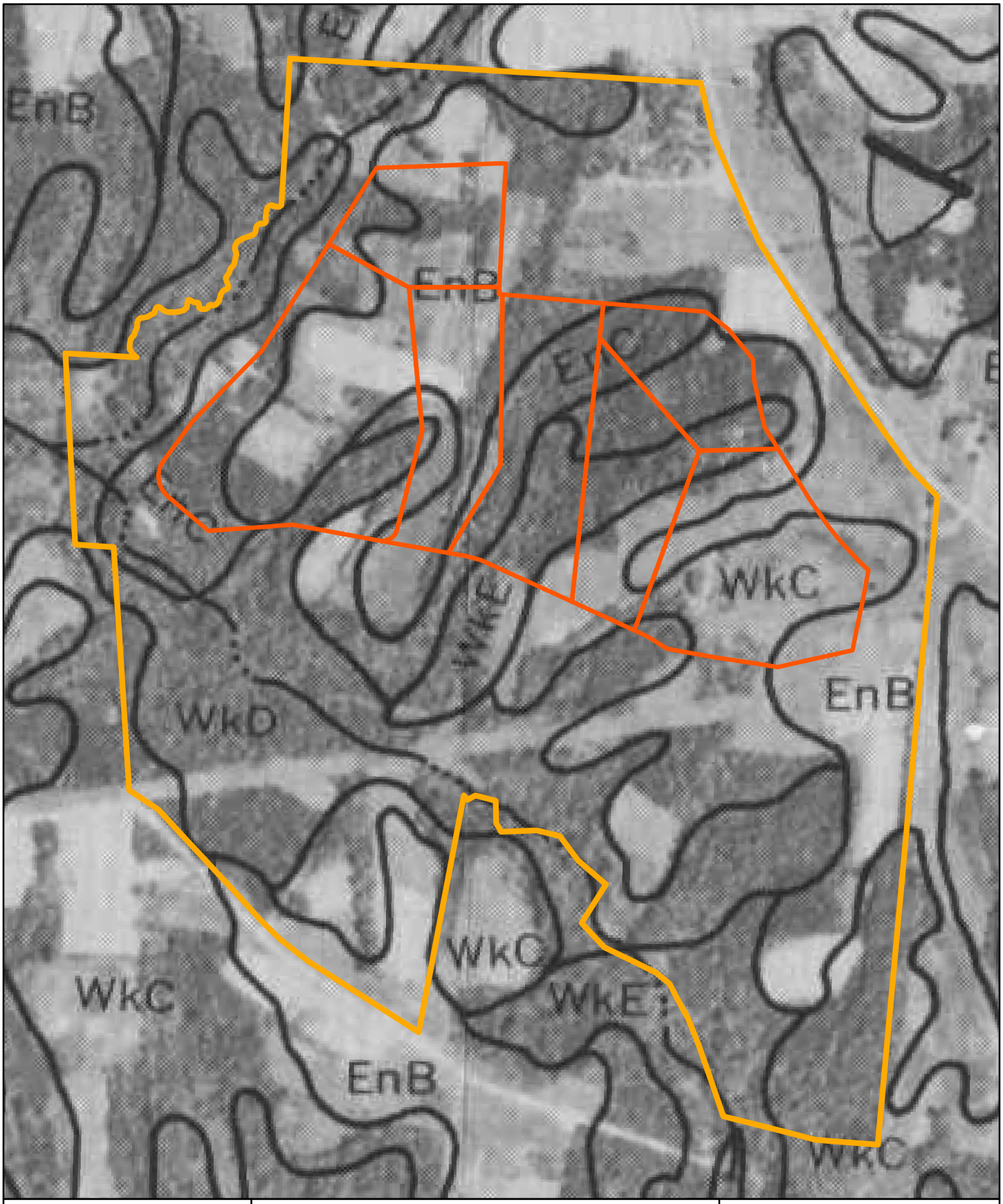
Property Boundary

Proposed Landfill Cells

High Point East (2013) USGS 1:24000 Quadrangle Map

Figure 4: USGS Map

High Point Landfill, LLC
High Point C&D Landfill
Guilford County, NC



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P: (919)-606-1065 F:(919)-585-5570

September 2015

N

Feet

0 250 500

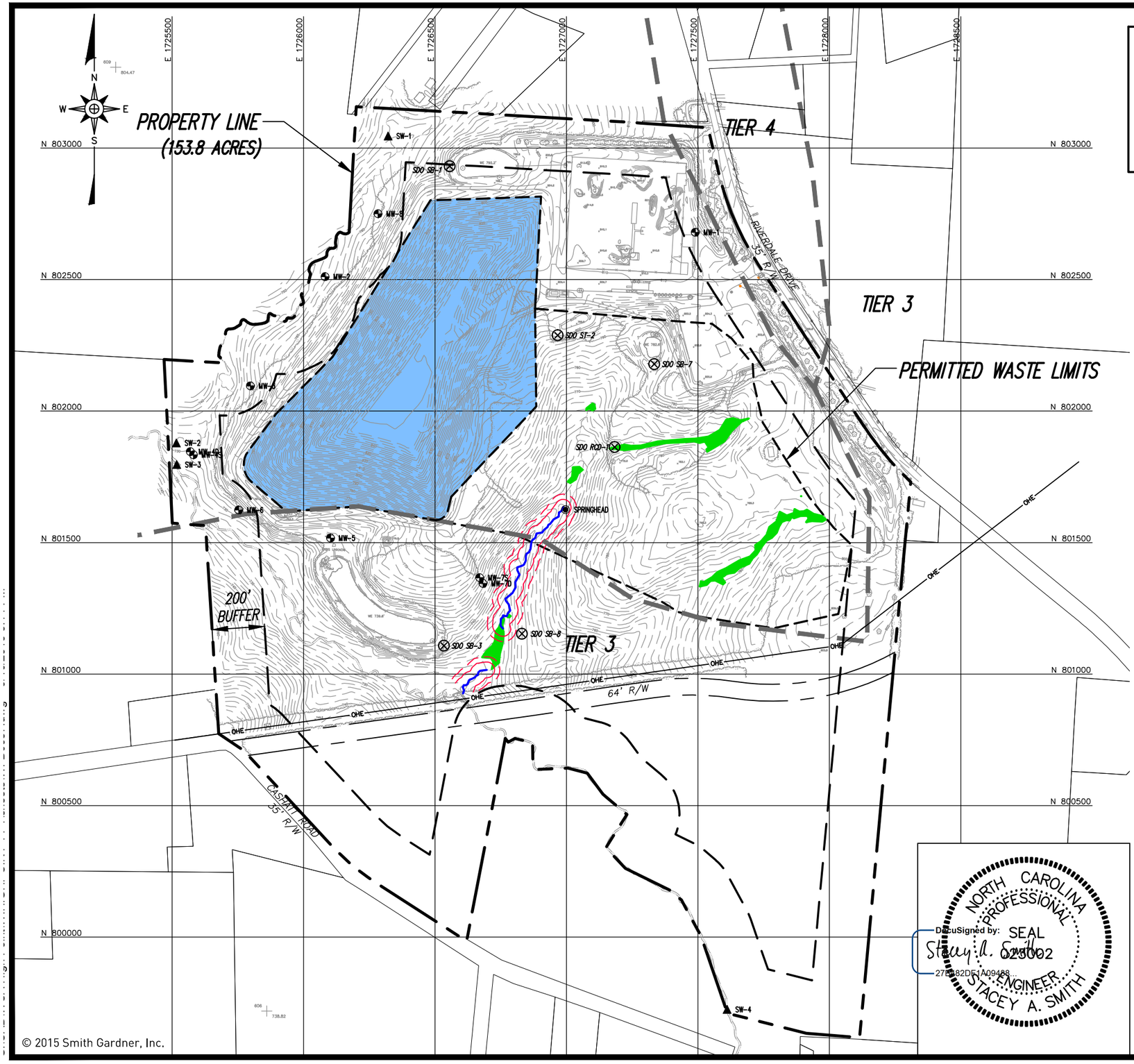
Property Boundary

Proposed Landfill Cells

Guilford County Soil Survey Sheets 44 and 38

Figure 5: NRCS Soil Survey

High Point Landfill, LLC
High Point C&D Landfill
Guilford County, NC



PRELIMINARY ISSUE

FOR MAJOR WATERSHED VARIANCE

LEGEND

- 200' PROPERTY LINE BUFFER
- DEDICATED ROADWAY EASEMENT
- PARCELS (SEE REFERENCE 6)
- ZONE 1 BUFFER
- ZONE 2 BUFFER
- RANDLEMAN WATERSHED TIERS (SEE REFERENCE 4)
- ⊗ SDO SB-1 — NPDES MONITORING LOCATION
- ⊕ MW-5 — GW MONITORING WELL
- ▲ SW-1 — SURFACE WATER MONITORING LOCATION
- LIMITS OF ACTIVE AREA

NOTES:

1. THERE ARE NO FEMA FLOOD HAZARDS WITHIN THE PROPERTY. THE CLOSEST FLOOD HAZARD ZONE IS LOCATED APPROXIMATELY 0.4 MILES FROM THE PERMITTED WASTE LIMITS.
2. THE PROPERTY IS ZONED CU-AG (PER ZONING CASE 01-19). ALL ADJOINING PROPERTIES ARE ZONED EITHER RURAL DEVELOPMENT OR HEAVY INDUSTRIAL.
3. THIS SUBMITTAL IS FOR PRELIMINARY PLANNING PURPOSES. CERTIFICATIONS WILL BE ADDED AS THEY ARE RECEIVED AND PACED ON THE FINAL ISSUE SUBMITTAL.
4. THE FACILITY IS LOCATED AT:
   5822 RIVERDALE DR., JAMESTOWN, NC
   PHONE: (336) 870-4171

REFERENCES:

1. FACILITY PROPERTY LINE REFERENCE: SURVEY BY MARK TERRY AND ASSOCIATES, INC., DATED MAY 15, 2001.
2. EXISTING TOPOGRAPHY FROM AERIAL SURVEY DATED JUNE 30, 2012 BY GEODATA CORPORATION, ZEBULON, NC. TOPOGRAPHY IN ACTIVE AREAS FROM FIELD SURVEY DATED JANUARY 13, 2015 BY SURVEYING SOLUTIONS, P.C., LOUISBURG, NC.
3. ORIGINAL GRADES FROM GOLDER AND ASSOCIATES.
4. WETLAND LOCATIONS AND RANDLEMAN WATERSHED TIERS PROVIDED BY CAROLINA ECOSYSTEMS, MARCH 2015.
5. FEMA PANELS 3710782000J AND 3710772900K.
6. PARCEL INFORMATION OBTAINED FROM GUILFORD COUNTY GIS DEPARTMENT.

0 400' 800'

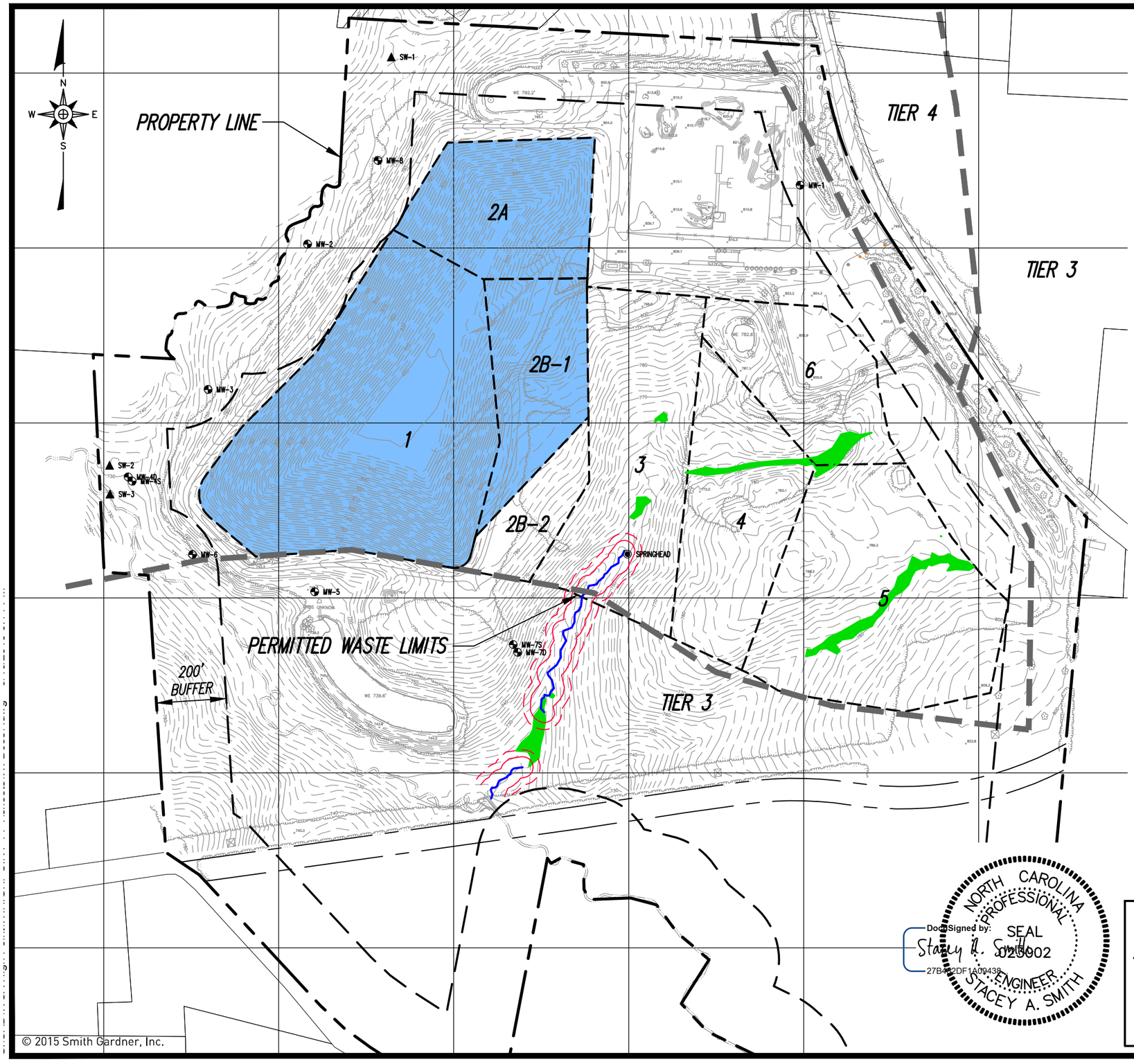
NORTH CAROLINA PROFESSIONAL SEAL 023002 ENGINEER STACEY A. SMITH

DocuSigned by: Stacy A. Smith 2715382DE1A09488...

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

FIGURE NO. 1
FILENAME: WI-B0987
SCALE: AS SHOWN
PROJECT NO: WIHIGHPOINT 14-1
APPROVED: S.A.S.
DRAWN: J.A.L.
DATE: Sep 2015

PREPARED FOR:
HIGH POINT LANDFILL, LLC
HIGH POINT C&D LANDFILL
EXISTING CONDITIONS



ESTIMATED LIFE PER PHASE	
PHASE	ESTIMATED LIFE (YEARS)
1	FILLED
2A	FILLED
2B-1	2.4
2B-2	1.2
3	4.0
4	4.0
5	4.1
6	4.5

LEGEND

- 200' PROPERTY LINE BUFFER
- DEDICATED ROADWAY EASEMENT
- ZONE 1 BUFFER
- ZONE 2 BUFFER
- RANDLEMAN WATERSHED TIERS
- MW-5 — GW MONITORING WELL
- SW-1 — SURFACE WATER MONITORING LOCATION
- LIMITS OF ACTIVE AREA

REFERENCES:

1. FACILITY PROPERTY LINE REFERENCE: SURVEY BY MARK TERRY AND ASSOCIATES, INC., DATED MAY 15, 2001.
2. EXISTING TOPOGRAPHY FROM AERIAL SURVEY DATED JUNE 30, 2012 BY GEODATA CORPORATION, ZEBULON, NC. TOPOGRAPHY IN ACTIVE AREAS FROM FIELD SURVEY DATED JANUARY 13, 2015 BY SURVEYING SOLUTIONS, P.C., LOUISBURG, NC.
3. ORIGINAL GRADES FROM GOLDER AND ASSOCIATES.

NORTH CAROLINA PROFESSIONAL SEAL 020002 ENGINEER STACEY A. SMITH

DocuSigned by: Stacey A. Smith 27B432DF1A09438...

PRELIMINARY ISSUE

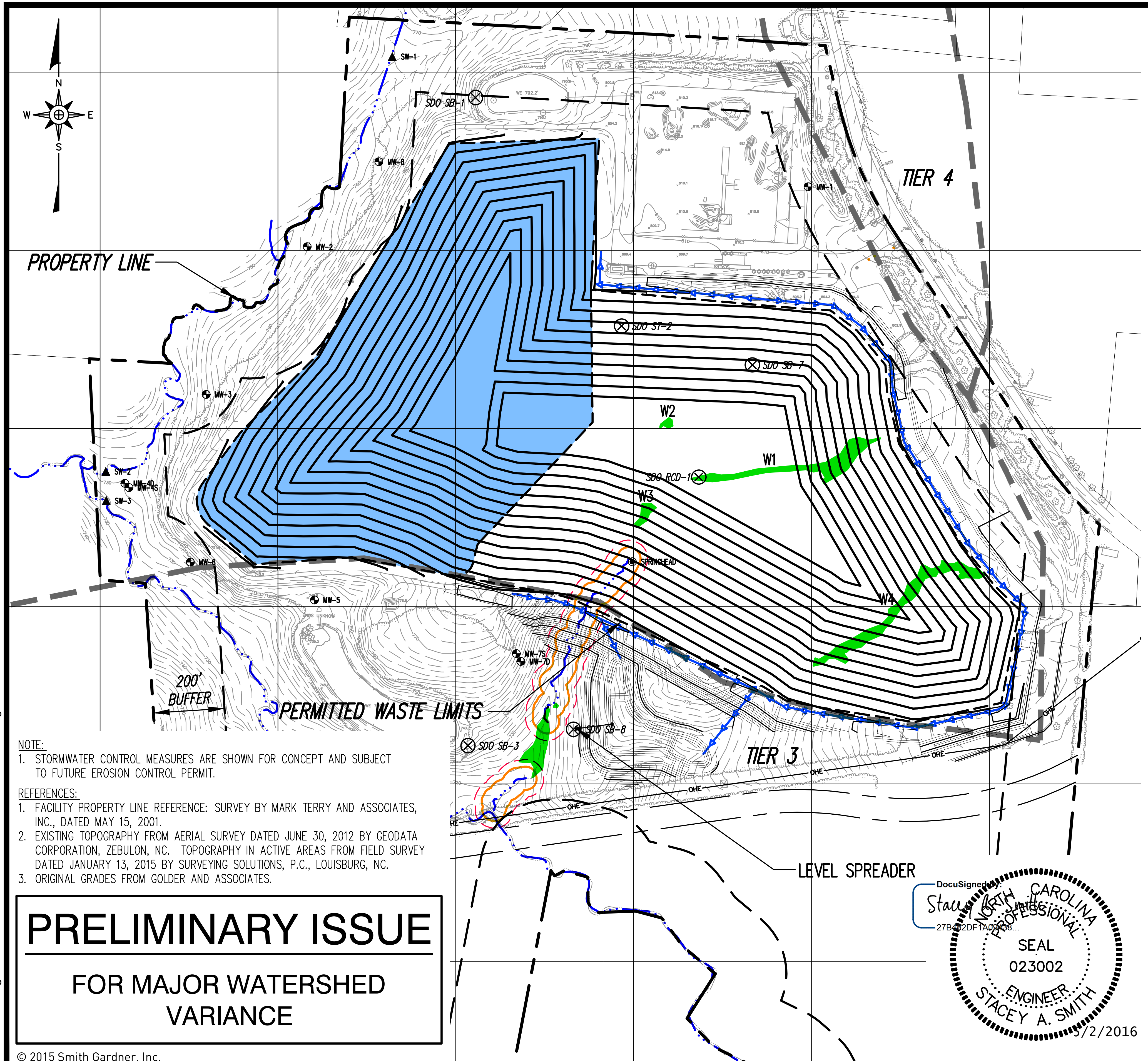
FOR MAJOR WATERSHED VARIANCE

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

FIGURE NO.: 6
FILENAME: WI-B0987
SCALE: AS SHOWN
PROJECT NO: WIHIGHPOINT 14-1
APPROVED: S.A.S.
DRAWN: T.R.S.
DATE: Sep 2015

PREPARED FOR:
HIGH POINT LANDFILL, LLC
HIGH POINT C&D LANDFILL
OVERALL SITE PLAN

DocuSign Envelope ID: CAEBD220-3D8C-41B7-B7D7-27E642B96CF8



AIRSPACE

LANDFILL VOLUME (CY)	LANDFILL AREA (ACRES)
3,301,363	46.0

IMPACTS

DESCRIPTION		QUANTITY (WITHIN LANDFILL LIMITS)
WETLANDS	W1	11,022 SQ. FT.
	W2	489 SQ. FT.
	W3	1,415 SQ. FT.
	W4	13,147 SQ. FT.
BUFFER	ZONE 1	23,484 SQ. FT.
	ZONE 2	16,111 SQ. FT.
STREAM	LANDFILL	193 LINEAR FT.
	STRUCTURAL FILL	201 LINEAR FT.
TEMPORARY IMPACTS	ZONE 1	732 SQ. FT.
	ZONE 2	491 SQ. FT.
	STREAM	10 LINEAR FT.

LEGEND

- 200' PROPERTY LINE BUFFER
- DEDICATED ROADWAY EASEMENT
- ZONE 1 BUFFER
- ZONE 2 BUFFER
- STORM WATER FLOW
- RANDLEMAN WATERSHED TIERS
- SDO SB-1 — NPDES MONITORING LOCATION
- MW-5 — GW MONITORING WELL
- SW-1 — SURFACE WATER MONITORING LOCATION
- LIMITS OF ACTIVE AREA

0 300' 600'

NOTE:
1. STORMWATER CONTROL MEASURES ARE SHOWN FOR CONCEPT AND SUBJECT TO FUTURE EROSION CONTROL PERMIT.

REFERENCES:
1. FACILITY PROPERTY LINE REFERENCE: SURVEY BY MARK TERRY AND ASSOCIATES, INC., DATED MAY 15, 2001.
2. EXISTING TOPOGRAPHY FROM AERIAL SURVEY DATED JUNE 30, 2012 BY GEODATA CORPORATION, ZEBULON, NC. TOPOGRAPHY IN ACTIVE AREAS FROM FIELD SURVEY DATED JANUARY 13, 2015 BY SURVEYING SOLUTIONS, P.C., LOUISBURG, NC.
3. ORIGINAL GRADES FROM GOLDER AND ASSOCIATES.

PRELIMINARY ISSUE

FOR MAJOR WATERSHED VARIANCE

DocuSigned by: Stacey A. Smith 27B482DF1A0D468...

NORTH CAROLINA PROFESSIONAL SEAL 023002 ENGINEER STACEY A. SMITH

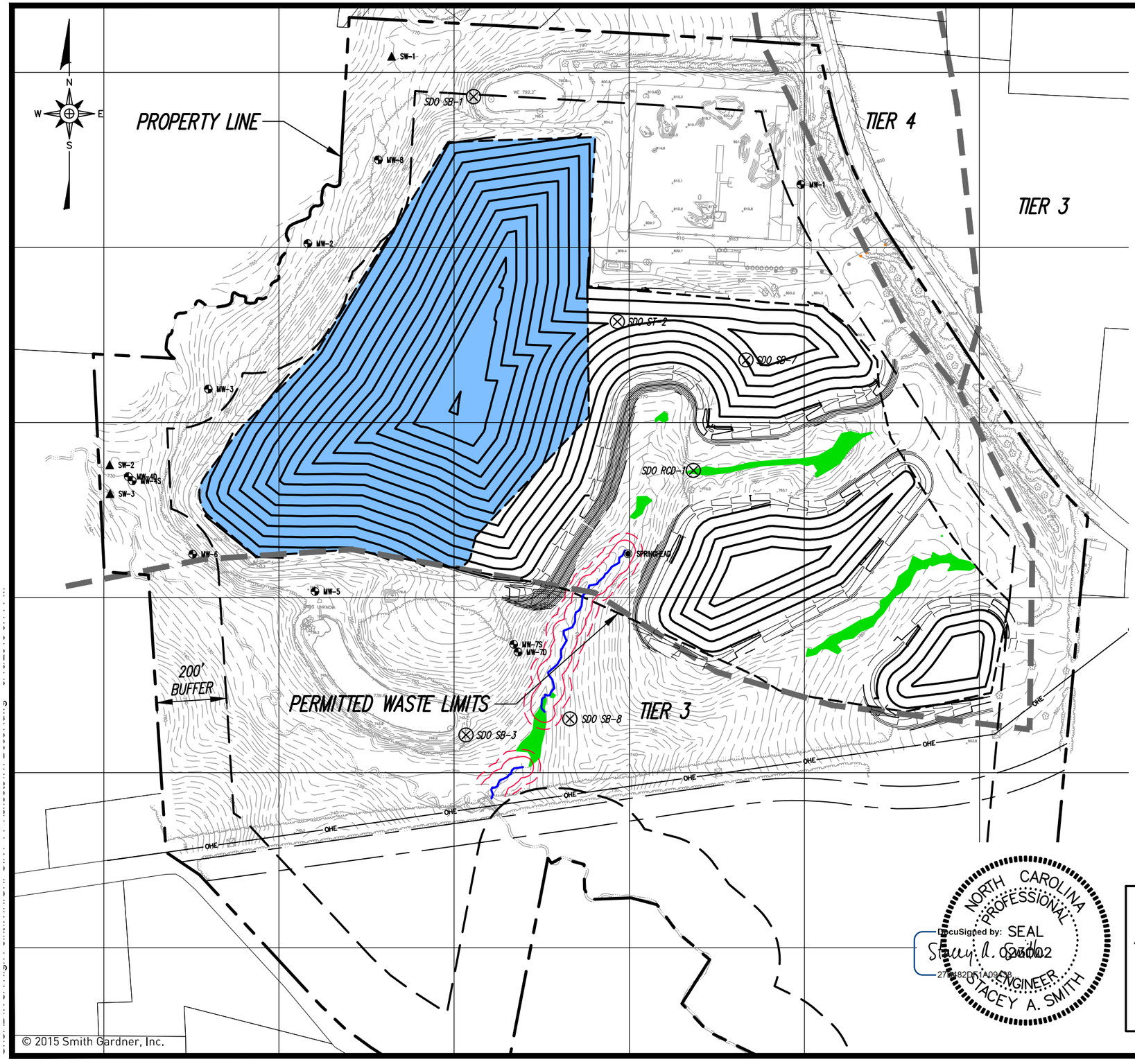
5/2/2016

G:\CADWCA High Point\WIHIGHPOINT 14-1\sheets\WI-B0987.dwg - 4/1/2016 11:03 AM

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

FIGURE NO.: 5
SCALE: AS SHOWN
APPROVED: S.A.S.
DRAWN: C.T.J.
FILENAME: WI-B0987
PROJECT NO: WIHIGHPOINT 14-1
DATE: Apr 2016

PREPARED FOR: HIGH POINT LANDFILL, LLC
HIGH POINT C&D LANDFILL
PROPOSED SITE DEVELOPMENT



AIRSPACE	
LANDFILL VOLUME (CY)	LANDFILL AREA (ACRES)
983,959	33.4

IMPACTS	
DESCRIPTION	QUANTITY (WITHIN LANDFILL LIMITS)
WETLANDS	0.0 ACRES
BUFFER	0 SQ. FT.
STREAM	0 LINEAR FT.

LEGEND

- 200' PROPERTY LINE BUFFER
- DEDICATED ROADWAY EASEMENT
- ZONE 1 BUFFER
- ZONE 2 BUFFER
- RANDLEMAN WATERSHED TIERS
- SDO SB-1 — NPDES MONITORING LOCATION
- MW-5 — GW MONITORING WELL
- SW-1 — SURFACE WATER MONITORING LOCATION
- LIMITS OF ACTIVE AREA

REFERENCES:

1. FACILITY PROPERTY LINE REFERENCE: SURVEY BY MARK TERRY AND ASSOCIATES, INC., DATED MAY 15, 2001.
2. EXISTING TOPOGRAPHY FROM AERIAL SURVEY DATED JUNE 30, 2012 BY GEODATA CORPORATION, ZEBULON, NC. TOPOGRAPHY IN ACTIVE AREAS FROM FIELD SURVEY DATED JANUARY 13, 2015 BY SURVEYING SOLUTIONS, P.C., LOUISBURG, NC.
3. ORIGINAL GRADES FROM GOLDER AND ASSOCIATES.

0 300' 600'

NORTH CAROLINA PROFESSIONAL SEAL 032002 ENGINEER STACEY A. SMITH

DocuSigned by: Stacey A. Smith 2/5/2016
27582D51409438

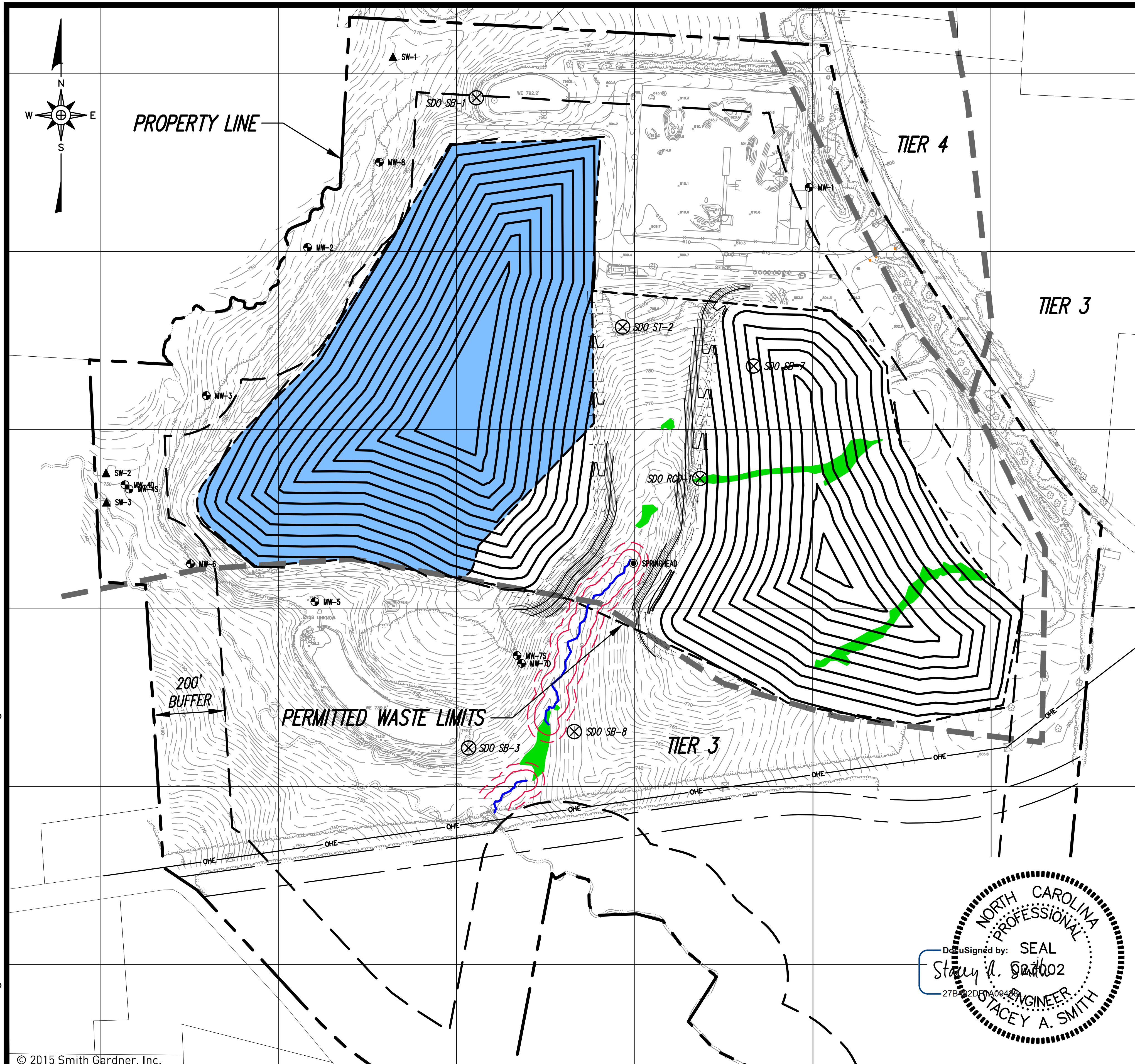
PRELIMINARY ISSUE

FOR MAJOR WATERSHED VARIANCE

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

FIGURE NO.: 2
FILENAME: WI-B0987
SCALE: AS SHOWN
PROJECT NO: WIHIGHPOINT 14-1
APPROVED: S.A.S.
DRAWN: C.T.J.
DATE: Sep 2015

PREPARED FOR:
HIGH POINT LANDFILL, LLC
HIGH POINT C&D LANDFILL
NO IMPACT OPTION



AIRSPACE	
LANDFILL VOLUME (CY)	LANDFILL AREA (ACRES)
1,810,747	40.6

IMPACTS	
DESCRIPTION	QUANTITY (WITHIN LANDFILL LIMITS)
WETLANDS	0.55 ACRES
BUFFER	0 SQ. FT.
STREAM	0 LINEAR FT.

LEGEND

- 200' PROPERTY LINE BUFFER
- DEDICATED ROADWAY EASEMENT
- ZONE 1 BUFFER
- ZONE 2 BUFFER
- RANDLEMAN WATERSHED TIERS
- SDO SB-1 — NPDES MONITORING LOCATION
- MW-5 — GW MONITORING WELL
- SW-1 — SURFACE WATER MONITORING LOCATION
- LIMITS OF ACTIVE AREA

REFERENCES:

1. FACILITY PROPERTY LINE REFERENCE: SURVEY BY MARK TERRY AND ASSOCIATES, INC., DATED MAY 15, 2001.
2. EXISTING TOPOGRAPHY FROM AERIAL SURVEY DATED JUNE 30, 2012 BY GEODATA CORPORATION, ZEBULON, NC. TOPOGRAPHY IN ACTIVE AREAS FROM FIELD SURVEY DATED JANUARY 13, 2015 BY SURVEYING SOLUTIONS, P.C., LOUISBURG, NC.
3. ORIGINAL GRADES FROM GOLDER AND ASSOCIATES.

0 300' 600'

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER STACEY A. SMITH

DocuSigned by: Stacey A. Smith

PRELIMINARY ISSUE

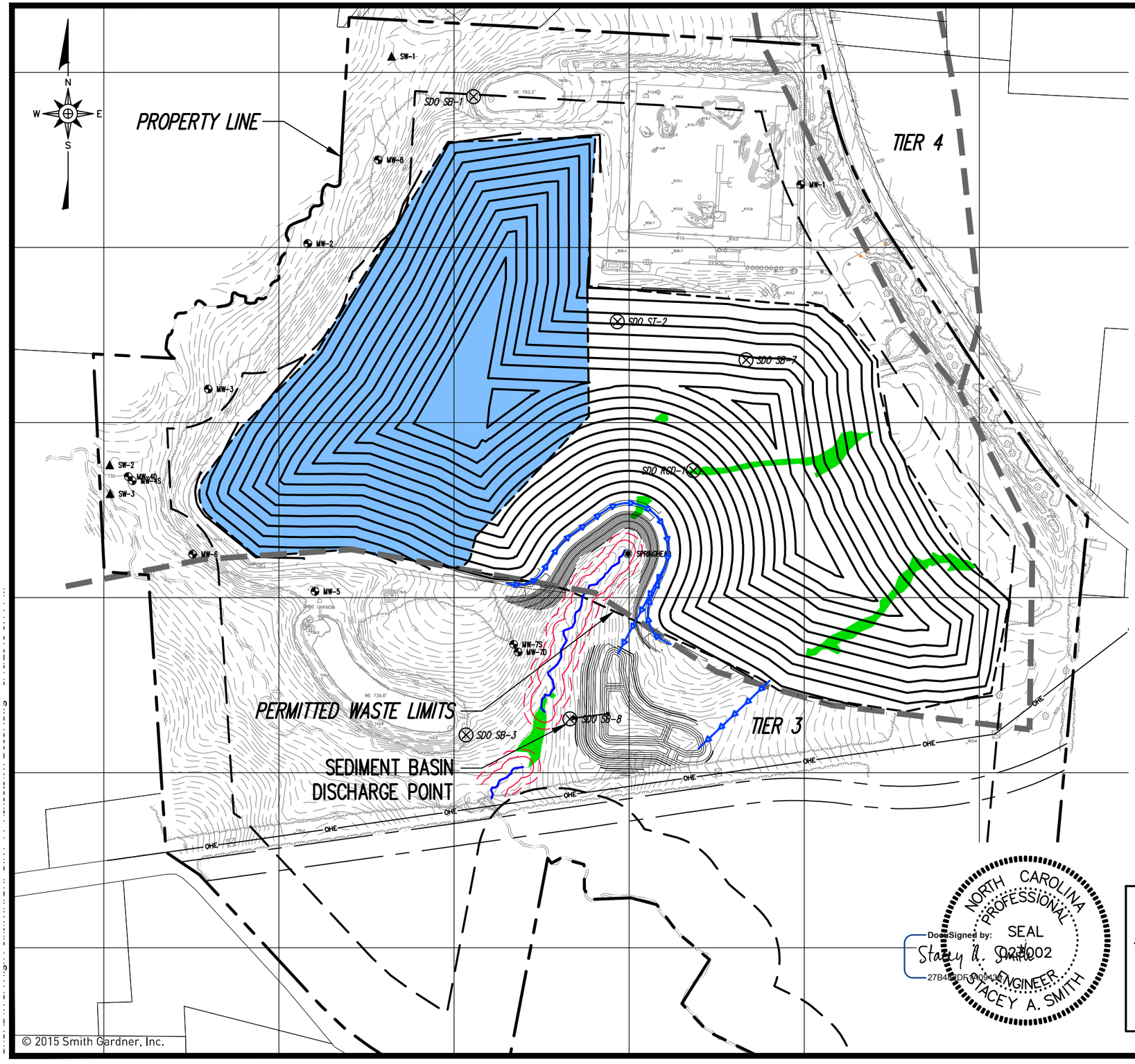
FOR MAJOR WATERSHED VARIANCE

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

FIGURE NO.	3
SCALE:	AS SHOWN
APPROVED:	S.A.S.
DRAWN:	C.T.J.
FILENAME:	WI-B0987
PROJECT NO:	WIHIGHPOINT 14-1
DATE:	Sep 2015

PREPARED FOR:

HIGH POINT LANDFILL, LLC
HIGH POINT C&D LANDFILL
MINIMIZATION OF IMPACT
OPTION 1



AIRSPACE	
LANDFILL VOLUME (CY)	LANDFILL AREA (ACRES)
2,675,918	44.0

IMPACTS	
DESCRIPTION	QUANTITY (WITHIN LANDFILL LIMITS)
WETLANDS	0.59 ACRES
BUFFER	0 SQ. FT.
STREAM	0 LINEAR FT.

LEGEND

- 200' PROPERTY LINE BUFFER
- DEDICATED ROADWAY EASEMENT
- ZONE 1 BUFFER
- ZONE 2 BUFFER
- RANDLEMAN WATERSHED TIERS
- ⊗ SDO SB-1 — NPDES MONITORING LOCATION
- ⊕ MW-5 — GW MONITORING WELL
- ▲ SW-1 — SURFACE WATER MONITORING LOCATION
- LIMITS OF ACTIVE AREA

REFERENCES:

1. FACILITY PROPERTY LINE REFERENCE: SURVEY BY MARK TERRY AND ASSOCIATES, INC., DATED MAY 15, 2001.
2. EXISTING TOPOGRAPHY FROM AERIAL SURVEY DATED JUNE 30, 2012 BY GEODATA CORPORATION, ZEBULON, NC. TOPOGRAPHY IN ACTIVE AREAS FROM FIELD SURVEY DATED JANUARY 13, 2015 BY SURVEYING SOLUTIONS, P.C., LOUISBURG, NC.
3. ORIGINAL GRADES FROM GOLDER AND ASSOCIATES.

0 300' 600'

NORTH CAROLINA PROFESSIONAL SEAL 027002 ENGINEER STACEY A. SMITH

DocuSigned by: Stacey A. Smith 27B4[illegible]

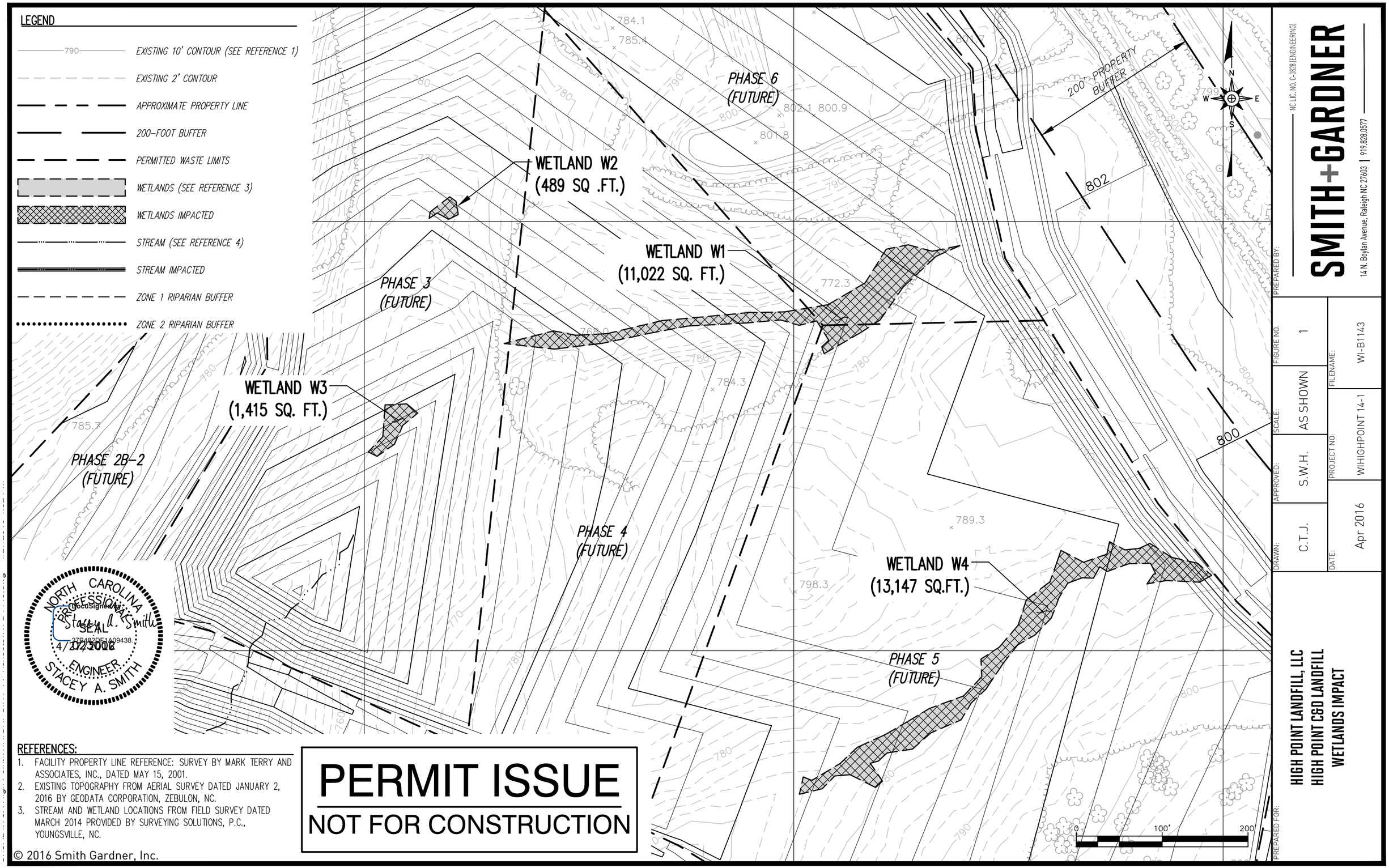
PRELIMINARY ISSUE

FOR MAJOR WATERSHED VARIANCE

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

FIGURE NO.: 4
FILENAME: WI-B0987
SCALE: AS SHOWN
PROJECT NO: WIHIGHPOINT 14-1
APPROVED: S.A.S.
DRAWN: C.T.J.
DATE: Sep 2015

PREPARED FOR:
HIGH POINT LANDFILL, LLC
HIGH POINT C&D LANDFILL
MINIMIZATION OF IMPACT
OPTION 2



NORTH CAROLINA PROFESSIONAL SEAL STACEY A. SMITH ENGINEER
Docusigned by: Stacey A. Smith
27B183DF1A09438...
4/27/2016

REFERENCES:

1. FACILITY PROPERTY LINE REFERENCE: SURVEY BY MARK TERRY AND ASSOCIATES, INC., DATED MAY 15, 2001.
2. EXISTING TOPOGRAPHY FROM AERIAL SURVEY DATED JANUARY 2, 2016 BY GEODATA CORPORATION, ZEBULON, NC.
3. STREAM AND WETLAND LOCATIONS FROM FIELD SURVEY DATED MARCH 2014 PROVIDED BY SURVEYING SOLUTIONS, P.C., YOUNGSVILLE, NC.

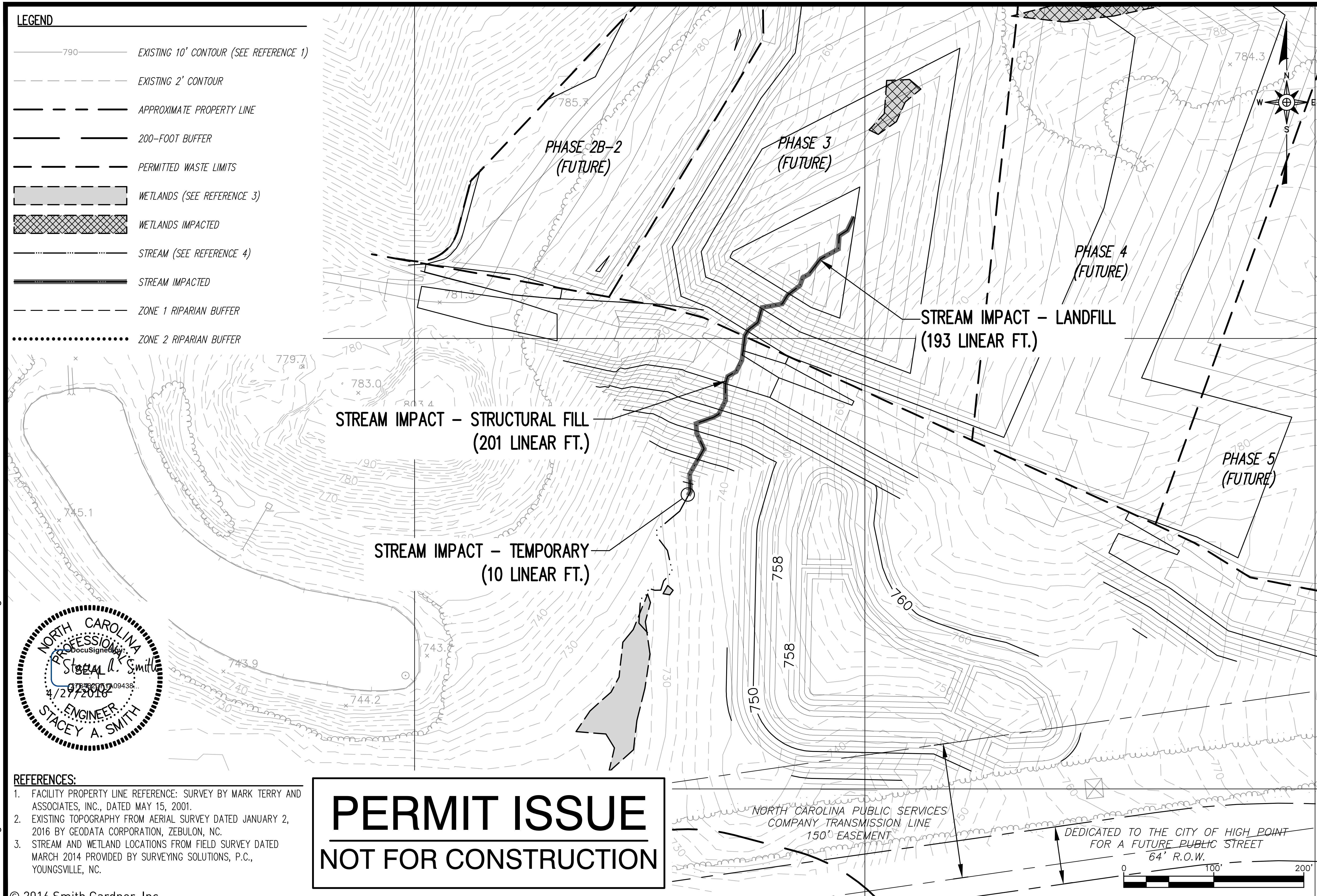
PERMIT ISSUE

NOT FOR CONSTRUCTION

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

FIGURE NO.	1
FILENAME:	WI-B1143
SCALE:	AS SHOWN
PROJECT NO:	WIHIGHPOINT 14-1
APPROVED:	S.W.H.
DRAWN:	C.T.J.
DATE:	Apr 2016

PREPARED FOR:
HIGH POINT LANDFILL, LLC
HIGH POINT C&D LANDFILL
WETLANDS IMPACT



LEGEND

- 790 EXISTING 10' CONTOUR (SEE REFERENCE 1)
- EXISTING 2' CONTOUR
- APPROXIMATE PROPERTY LINE
- 200-FOOT BUFFER
- PERMITTED WASTE LIMITS
- WETLANDS (SEE REFERENCE 3)
- WETLANDS IMPACTED
- STREAM (SEE REFERENCE 4)
- STREAM IMPACTED
- ZONE 1 RIPARIAN BUFFER
- ZONE 2 RIPARIAN BUFFER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL STACEY A. SMITH

DocuSigned by: Stacey A. Smith

4/27/2016

REFERENCES:

1. FACILITY PROPERTY LINE REFERENCE: SURVEY BY MARK TERRY AND ASSOCIATES, INC., DATED MAY 15, 2001.
2. EXISTING TOPOGRAPHY FROM AERIAL SURVEY DATED JANUARY 2, 2016 BY GEODATA CORPORATION, ZEBULON, NC.
3. STREAM AND WETLAND LOCATIONS FROM FIELD SURVEY DATED MARCH 2014 PROVIDED BY SURVEYING SOLUTIONS, P.C., YOUNGSVILLE, NC.

PERMIT ISSUE

NOT FOR CONSTRUCTION

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

FIGURE NO.	2
FILENAME:	WI-B1143
SCALE:	AS SHOWN
PROJECT NO:	WIHIGHPOINT 14-1
APPROVED:	S.W.H.
DRAWN:	C.T.J.
DATE:	Apr 2016

PREPARED FOR:

HIGH POINT LANDFILL, LLC
HIGH POINT C&D LANDFILL
STREAM IMPACTS

LEGEND

- 790 — EXISTING 10' CONTOUR (SEE REFERENCE 1)
- EXISTING 2' CONTOUR
- APPROXIMATE PROPERTY LINE
- 200-FOOT BUFFER
- PERMITTED WASTE LIMITS
- WETLANDS (SEE REFERENCE 3)
- WETLANDS IMPACTED
- STREAM (SEE REFERENCE 4)
- STREAM IMPACTED
- ZONE 1 RIPARIAN BUFFER
- ZONE 2 RIPARIAN BUFFER

PHASE 2B-2 (FUTURE)

PHASE 3 (FUTURE)

PHASE 4 (FUTURE)

PHASE 5 (FUTURE)

BUFFER IMPACT – ZONE 1
(23,484 SQ. FT.)

BUFFER IMPACT – ZONE 2
(16,111 SQ. FT.)

STREAM IMPACT – STRUCTURAL FILL
(201 LINEAR FT.)

BUFFER IMPACT – ZONE 2 TEMPORARY
(491 SQ. FT.)

BUFFER IMPACT – ZONE 1 TEMPORARY
(732 SQ. FT.)

STREAM IMPACT – TEMPORARY
(10 LINEAR FT.)

STREAM IMPACT – LANDFILL
(193 LINEAR FT.)

NORTH CAROLINA PUBLIC SERVICES COMPANY TRANSMISSION LINE 150' EASEMENT

DEDICATED TO THE CITY OF HIGH POINT FOR A FUTURE PUBLIC STREET 64' R.O.W.

0 100' 200'

NORTH CAROLINA PROFESSIONAL SEAL 027302 ENGINEER STACEY A. SMITH
DocuSigned by: Stacey A. Smith 27B4825F1A09438...
4/27/2016

REFERENCES:

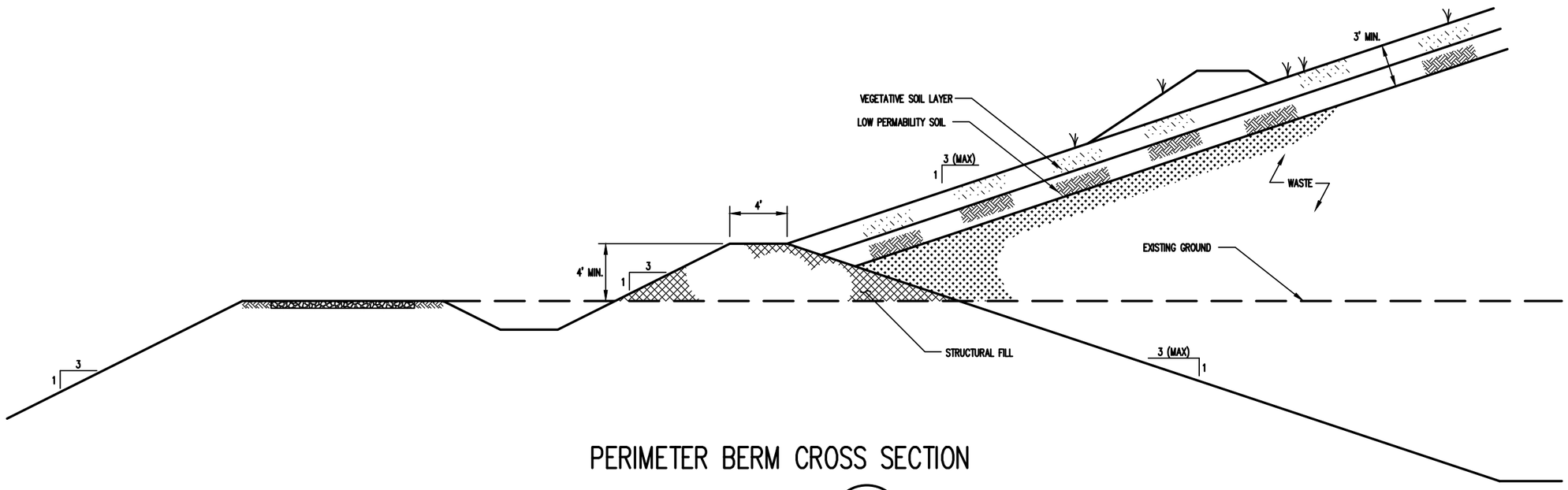
1. FACILITY PROPERTY LINE REFERENCE: SURVEY BY MARK TERRY AND ASSOCIATES, INC., DATED MAY 15, 2001.
2. EXISTING TOPOGRAPHY FROM AERIAL SURVEY DATED JANUARY 2, 2016 BY GEODATA CORPORATION, ZEBULON, NC.
3. STREAM AND WETLAND LOCATIONS FROM FIELD SURVEY DATED MARCH 2014 PROVIDED BY SURVEYING SOLUTIONS, P.C., YOUNGSVILLE, NC.

PERMIT ISSUE
NOT FOR CONSTRUCTION

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

FIGURE NO.: 3
FILENAME: WI-B1143
SCALE: AS SHOWN
PROJECT NO.: WIHIGHPOINT 14-1
APPROVED: S.W.H.
DRAWN: C.T.J.
DATE: Apr 2016

PREPARED FOR:
HIGH POINT LANDFILL, LLC
HIGH POINT C&D LANDFILL
BUFFER IMPACTS



PERIMETER BERM CROSS SECTION

DETAIL 1/5 NOT TO SCALE

NORTH CAROLINA PROFESSIONAL SEAL 023002 ENGINEER STACEY A. SMITH

DocuSigned by: Stacey A. Smith 27B482DF1A09438...

4/14/2016

PREPARED BY:

SMITH+GARDNER

NC LIC. NO. C-0828 [ENGINEERING]

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

FIGURE NO. 5		FILENAME: WI-B1060	
SCALE: AS SHOWN		PROJECT NO: WIHIGHPOINT 14-1	
APPROVED: S.A.S.			
DRAWN: T.R.S.		DATE: Apr 2016	

PREPARED FOR:

HIGH POINT LANDFILL, LLC
HIGH POINT C&D LANDFILL
DETAILS

PERMIT ISSUE

NOT FOR CONSTRUCTION

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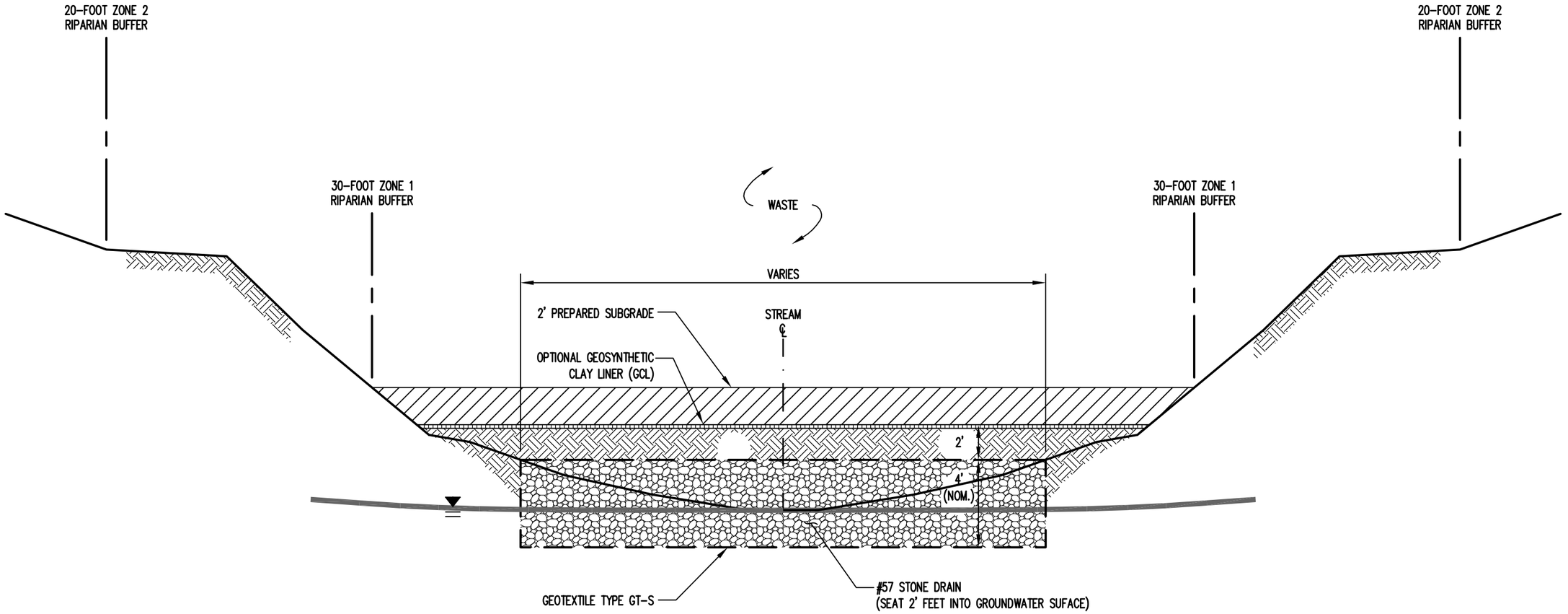

UNDERDRAIN CROSS SECTION

DETAIL 1/4
NOT TO SCALE

NORTH CAROLINA PROFESSIONAL SEAL 023002 ENGINEER STACEY A. SMITH
DocuSigned by: Stacey A. Smith
27B482DE1A09438...
4/14/2016

PERMIT ISSUE
NOT FOR CONSTRUCTION

PREPARED FOR:
HIGH POINT LANDFILL, LLC
HIGH POINT C&D LANDFILL
DETAILS

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

DRAWN:	C.T.J.
APPROVED:	S.W.H.
SCALE:	N.T.S.
DATE:	Apr 2016
PROJECT NO:	WIHIGHPOINT 14-1
FILENAME:	WI-B1143
FIGURE NO.	4

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