

March 16, 2017

Ms. Jennifer Burdette
NC DWR, 401 & Buffer Permitting Unit
1650 Mail Service Center
Raleigh, NC 27669-1650

RE: Major Buffer Variance Request
Johnston County Landfill Expansion
Smithfield, NC

Dear: Ms. Burdette,

On behalf of Johnston County, Carolina Ecosystems, Inc. and Smith Gardner Inc. have prepared an application for a Major Variance from the Neuse River Basin Protection and Maintenance of Riparian Areas Rule (15A NCAC 02B.0233) for the above referenced project. The County plans to expand the existing Municipal Solid Waste (MSW) Landfill within its existing permitted facility boundary. This expansion would involve impact to a discontinuous segment of riparian buffer subject to the above rule. As landfills are not an allowable use under the rules, a variance is requested. The items below are numbered to correspond to items on the attached Variance Application Form, and additional supplemental information is attached to this letter.

A.10 – List any permits/approvals that have been requested or obtained for this project in the past (including all prior phases).

NWP 14 – Action ID 199403772 – 0.43 acre wetland, Issued 02/27/1995
NWP 26 – Action ID 199920268 – 1.75 acres wetland, 490 feet stream, Issued 03/24/2000
NWP 33 – Action ID 200320507 – 0.22 acre wetland, Issued 03/06/2003
NC Solid Waste Permit No. 51-03, Issued 05/27/2015
NC Title V Air Quality Permit No. 08844T06, Issued 03/11/2015
NPDES General Permit (for landfills) No. 120087

B. 1a - PROJECT DESCRIPTION

The Johnston County MSW Landfill (Site) is located at 680 County Home Road, Smithfield NC, in Johnston County (Figure 1). It lies within the NC Neuse River Basin (USGS HUC: 03020201).

The Site includes four parcels in Johnston County (Parcel IDs 15I08028, 15I09033, 15I08028C, 15I09001) and comprises 1,153 acres (1,140 based on County GIS) between Middle Creek and NC Highway 210. The subject buffer impact related to the landfill expansion is located in Parcel

ID 15I08028. In the center of the Site, the North Carolina Department of Transportation owns a borrow site (Parcel ID 15I08028B). This 47.4 acre tract is not part of the landfill property or solid waste permit. Existing development on the Site includes a scale house and office, a recycling center, 1.6 Mw gas-to-electricity facility, maintenance building and parking/storage area, the existing landfill, and the future landfill cell areas that are currently borrow area, irrigation fields, scrub, and forest. Of the 1,153 acres, 529.4 acres are within the approved Solid Waste Facility Boundary, and therefore available for use as a landfill (Figure 4).

The proposed project would expand the existing MSW landfill west from the existing Phase 5 cell. Work would include grading to establish base elevations (including a 4 foot separation from ground water and bedrock) and construction of a base liner system which will include soil and geomembrane liners (Engineering Figure 1). The cells would be expanded laterally from Cell 5, in the following order: Cell 9, 6, 7, 8, and 10. This sequence is most practical from an engineering and construction perspective, and preferred by the NC Division of Waste Management (NCDWM) if other approvals are acquired, including this Variance and Clean Water Act permits. Each cell would be filled to capacity and capped with a final cover system including a geomembrane and vegetative soil cover as shown in Engineering Figure 1.

Waste accepted at this facility is restricted to MSW and does not include hazardous materials as shown in Attachment 3. Significant environmental protections are already in place, including a detailed Water Quality Monitoring Plan, which includes ground and surface water. The current monitoring point locations are shown in Engineering Figure 2. Additional monitoring would be provided in appropriate locations surrounding the proposed expansion cells, subject to NCDWM approval. This plan would be implemented, as it is currently for the existing facility, and would continue for a minimum of 30 years post-closure. The monitoring plan would include at least 15 inorganic constituents and 47 organics (see Attachment 4), which would be monitored on a semi-annual basis. If any significant difference occurs from background concentrations, a step-wise increase in protection would be initiated including increasing the number of constituents monitored, providing an assessment of corrective measures, and if required a corrective action plan. The landfill cap, slopes, and Best Management Practices (BMPs) would be monitored and also maintained for at least 30 years post-closure. This would ensure proper function of the drainage system and stormwater measures. Post-closure monitoring and maintenance is required by North Carolina State law, and proof of financial assurance for these activities must be provided.

Proposed Impacts

The proposed expansion would involve impacts to the upper reaches of the site's western-most drainage. Stream and wetland resources on the site (Figures 5 and 6) are unnamed tributaries of Middle Creek (27-43-15-(4)), which carries a NC Division of Water Resources (NCDWR) classification of C;NSW. In 2012, field verification by the US Army Corps of Engineers and NC Division of Water Resources determined that the stream in question has a short segment of perennial channel that drained to an ephemeral feature. No official documentation of that visit was produced by the USACE, but NCDWR did provide documentation of their riparian buffer determinations based on stream calls made during that visit (NBRRO# 12-206; July 10, 2013,

Attachment 1). The perennial reach of stream is therefore under the jurisdiction of the Neuse Buffer Rules per this determination.

The stream in question has been altered several times since the 1970s. As can be seen in Figure 7, USGS 7.5 minute topographic quadrangle maps from 1976, 1982, 1999, and 2013 show multiple changes in the hydrology of this drainage. These maps reflect the history of the site, although due to incremental updates by USGS, the dates are not accurate. The pond was drained in the mid-1990's.

The 2013 USGS map (Figure 7) contours also reflect adjacent land use changes. To the east of this area and extending to the 250-foot contour is the MSW Phase 5 lined landfill cell. Extending around the base of this cell are stormwater collection facilities (ditches and basins) that discharge to several locations along the subject drainage. To the west of the proposed impact area, the surface contours reflect prior borrow activity to support construction and daily operations of the facility.

These activities have resulted in a stream with a unique hydrologic regime which does not exhibit the geomorphologic, hydrologic, or biologic indicators expected of a stream in this ecoregion and landscape position (Attachment 6). Today, the stream begins as a short perennial segment and then transitions to an intermittent and then ephemeral channel before disappearing entirely within the old pond bed. The intermittent reach exhibits minimal biology and experiences extensive periods with no flow. It is our opinion that the flow regime of the upper segment is sustained by upslope land irrigation by Johnston County. This irrigation is reclaimed water from the County Wastewater Treatment Facility (Permit No. WQ0019632) and has been regularly discharged on the land forming the upper watershed of the subject channel since the mid-1990s. Downstream of the proposed impact area, north of an existing culverted road crossing, the channel reforms as a perennial stream before a confluence with another stream entering the Middle Creek flood plain.

D. 1 – Provide a description of how diffuse flow will be maintained through the protected riparian buffers.

The amount of impervious area associated with this project is minimal (less than 5%). This is below regulatory thresholds for stormwater BMPs and also below NC Department of Environmental Quality (NCDEQ) recommended limitations for the protection of sensitive aquatic environments. The landfill final cover system will include a vegetated cover that allows infiltration of precipitation before it is collected and drained to a BMP. The final cover system (see **Engineering Figure 1**) would provide detention and some treatment of stormwater prior to entering the BMP. During the typical two year event, there would be minimal discharge from the BMPs. Diffuse flow would be achieved via small level spreaders or energy dissipators. Regular maintenance and monitoring requirements would protect water quality as described below.

D. 2 – Provide a description of all BMPs that will be used to minimize disturbance and control the discharge of nutrients and sediments from stormwater.

BMPs including extended dry detention basins in the approximate locations shown on the attached Engineering Drawings, along with grassed swales and other measures appropriate for control of discharges. State solid waste regulations require more conservative design standards than the Rule including controlling peak runoff from a 25 year-24 hour storm event. A detailed plan will be developed during the final design of the facility and submitted to NCDWR to review during the 404/401 permitting process. Due to the extensive solid waste regulatory buffers required from property lines and other features, there is more than sufficient room to implement adequately sized BMPs in the proposed locations.

E.1 - Explain how complying with the provisions of the applicable rule would prevent you from securing a reasonable return from or make reasonable use of your property. Merely proving that the variance would permit a greater profit from the property shall not be considered adequate justification for a variance. The Division will consider whether the variance is the minimum possible deviation from the terms of the applicable Buffer Rule that shall make reasonable use of the property possible.

Compliance with the rule would impact solid waste services in the County and surrounding area in the future. The County purchased this property in order to provide this service to the public for the foreseeable future, and has operated on this site since the early 1970s. Prohibiting the proposed landfill expansion in this area alters the use of this property as it was intended more than 40 years ago, and results in hardships to Johnston County through significant reduction in solid waste disposal capacity which could result in higher costs being passed along to the public, and possible negative impacts on future growth in the County.

Due to the rapid growth in Johnston County and surrounding areas, there is a continuous demand for both municipal and construction/demolition waste disposal. As can be seen in Figure 8, there are a limited number of MSW facilities in the area. Within Johnston, Wake, Franklin, Nash, Wilson, Wayne, Sampson, and Harnett counties, only three other active MSW landfills exist. Therefore there is a significant need for MSW disposal capacity in the area.

Compliance with the Rule would reduce landfill capacity by approximately 67% as landfill expansion would be limited to Option 1, described below. The Johnston County Landfill property was purchased in 1991 with the intent to provide a long-term solid waste disposal solution for the County residents and adjacent areas. There are 7 streams (33,527 linear feet) subject to the Rule on the property, and 5 subject streams (20,029 linear feet) within the permitted facility boundary. The proposed project would impact only 328 linear feet of stream subject to the Rule, while preserving 16,744 linear feet. This is an impact to less than 2% of the subject streams on the property. The remaining streams on the site would not be impacted, except for two minor "Allowable" road crossings to access borrow areas on the eastern side of the Site, and are contiguous stream channels with higher function and flow than the stream within the proposed impact area.

No other practical on-site expansion alternatives exist within the permitted facility boundary. The County has maximized use of the upland areas within the site and facility boundary and any

additional landfill area besides the proposed project would involve either increased stream and wetland impacts, or an expansion of the facility boundary to allow landfill in the eastern section of the property. The expansion of the facility boundary, or location of a new landfill site, would involve significant effort including public review and subject to extremely tight regulatory restrictions. This process has been proven to be very difficult to successfully negotiate, as evidenced by the fact that only one new MSW landfill has been permitted in the State in the last 10 years.

Alternative site designs within the existing facility boundary were evaluated that encompassed complete avoidance of all resources as well as minimization alternatives. Each of these is presented in **Table 1**, along with the attached engineering exhibits, and evaluated below. Intermediate alternatives between these options were considered, but not included as they did not provide significant or practical differences from the options below.

TABLE 1: Johnston County Landfill Expansion Alternatives

Alternative (see attached plans)	Waste Area (ac)	Capacity (mcy)	Impacts		
			Wetland (ac)	Stream* (lf)	Buffers (sq.ft.)* Zone 1 / Zone 2
Option 1 -No Impact	66.1	5.0	0 ac	0	0 / 0
Option 2 – Proposed Project	106.1	14.8	2.1	1,516	22,046 / 17,654
Option 3 – Full Build Out	118.0	18.2	2.1	2,314	71,829 / 52391

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

*Include permanent and temporary impacts as depicted in attached figures

Option 1 - No Impact (Engineering Figure 3)

The avoidance of all jurisdictional features (buffers, streams, and wetlands) was evaluated but deemed not practical as it results in a much smaller landfill footprint that would yield approximately 5 MCY of capacity, which is a 67% loss compared to the proposed project (Option 2). The hydrology of the subject stream would likely be affected in the long term due the reduction of area draining to the channel, including diversion of upslope drainage, discharge of stormwater from the landfill downstream of the subject buffers, and cessation of spray irrigation that may be sustaining the current flow regime. While this option would be permitted under current rules, and the County could choose to re-evaluate the stream channel status at a later date after building this option, they are choosing to propose Option 2 instead and provide reasonable mitigation to offset impacts for constructability reasons detailed below.

Option 2 – Proposed Project (Engineering Figure 4)

The proposed project provides a constructible lateral expansion of the existing lined landfill, impacting the subject stream channel described above while avoiding the lower reach below the old pond bed that is directly connected to the flood plain of Middle

Creek (see **Engineering Figure 4**). As mentioned above, avoidance of the channel would likely result in a reduction of jurisdictional channel within the proposed impact area of this option. Rather than construct Option 1, the County proposes to laterally expand through the subject drainage so that construction is more practical and easier to accomplish than returning to “fill in” the drainage at a later date. Due to the uncertainty of the exact location where the stream characteristics would be retained, and the difficulty of constructing and maintaining landfill cells around the stream, it was determined to be more practical to accept the proposed impact and provide compensatory mitigation to offset this loss.

This option provides 14.8 MCY of capacity and a waste disposal lifespan of approximately 60 years assuming an average airspace utilization factor of 0.7 tons per cubic yard and an average disposal rate of 175,000 tons per year. This 3-fold increase in capacity over Option 1 would provide the County with a reliable waste disposal alternative for the foreseeable future to support continued growth in the County. The phased construction approach would be the most practical and preferred expansion pattern according to the NC Division of Waste Management, assuming permits are acquired for stream, wetland, and buffer impacts.

The proposed Option 2 would avoid impacts to the stream segment that is contiguous with Middle Creek below the old pond. Stormwater routing for this option can be designed to discharge base flow to the remaining channel below the road crossing, therefore ensuring future hydrology of the stream is not removed.

Option 3 – Full Development (Engineering Figure 5)

Another expansion option (see **Engineering Figure 5**) was considered that included some impact downstream of the old pond bed, and a segment of the stream channel directly connected to the Middle Creek flood plain. This option results in a landfill capacity of 18.2 MCY and represents a 22% increase in capacity as compared to the proposed project. However, this option would result in increased impacts to a buffered stream channel that is directly connected to the Middle Creek flood plain, and also require relocation of existing site infrastructure including a leachate gravity line. For these reasons, it was deemed impractical due to the limited increase in capacity/lifespan to offset these issues.

The proposed project (Option 2) was chosen as the most practical expansion alternative for the landfill that minimized impacts to jurisdictional resources and improves long-range planning for the County, while also addressing potential future changes in hydrologic patterns on the site. The change between pre and post-construction drainage of Option 1 would likely result in significant loss of drainage contributing to the subject stream’s upper reaches. 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 have shown this to be a valid concern, due to the reconfiguration of on-site drainage associated with these facilities.

This, in addition to the large loss of landfill capacity, resulted in Option 2 being chosen as the Proposed Project.

E.2 - Explain how the hardship results from application of the Buffer Rule to the property rather from other factors such as deed restrictions or other hardships (e.g. zoning setbacks, floodplains, etc).

There are no other restrictions on the proposed MSW landfill that would restrict its expansion, beside the Buffer Rule and Clean Water Act (CWA) permitting. The proposed expansion is included in the approved facility plan for the site, and Johnston County would only need to modify its NCDEQ Solid Waste Permit (Permit No. 51-03). The CWA Individual Permit will be submitted after this variance application, and coordination with the USACE and NCDWR is in progress. All required solid waste buffers have been applied to the site, and do not result in the hardship being addressed in this application. The flood plain of Middle Creek has been avoided (Figure 5).

E.3 - Explain how the hardship results from physical nature of the property, such as its size, shape, or topography, which is different from that of neighboring property.

The physical nature of this site is the key constraint limiting landfill expansion alternatives and preventing reasonable use of the property. Expansion in other directions besides west of the existing lined landfill is not practical for the following reasons:

- North is Middle Creek and its extensive flood plain with bottomland hardwood wetlands.
- East are larger wetland drainages with contiguous and fully functional stream channels, as well as the NCDOT parcel that divides the County property. Much of this area is also outside the current permitted facility boundary.
- South is constrained by site infrastructure including gas to energy plant, office, scale house, maintenance facility, and public convenience center.

The drainage area of the subject stream is almost entirely contained on the Johnston County Landfill property (Figure 9). Landfill configurations that avoid the stream and buffer, described above, drastically alter the drainage on site and would likely reduce or eliminate flow in the upper reach of stream over the long term, possibly eliminating its jurisdiction under the CWA and Rule.

The site is unique in the fact that it is an existing MSW landfill with an approved facility boundary and solid waste permit. This provides for additional landfill capacity due to the ability to build off the existing landfill cell (Phase 5), and also does not require a difficult and costly siting and permitting of a new landfill site. This process is extremely difficult to successfully negotiate, as shown by the fact that only one new MSW site has been permitted in the last 10 years in NC. Attachment 5 provides the siting requirements for a new facility.

Finally, as discussed above, the hydrology of the subject stream buffer along the perennial segment is possibly sustained by the irrigation input to the watershed. This irrigation will be ceased upon construction of the other landfill cells in all options and therefore could change hydrology and remove jurisdiction on this segment of stream channel.

E.4 - Explain whether the hardship was caused by the applicant knowingly or unknowingly violating the applicable Buffer Rule.

The Site is currently in compliance with the Rule. The County purchased the property and began developing it as a solid waste site in the 1970's, well before the Buffer Rule was implemented. All prior landfill construction, borrow activities, and other site infrastructure have avoided riparian buffers on the site, with the exception of a road crossing east of the current cell 4A, which was classified as an allowable activity to access borrow areas to the east. The subject stream was shown as part of the proposed landfill footprint and is included in the approved facility plan for the site.

E.5 - For Neuse, Tar-Pamlico, Jordan Lake and Goose Creek only: Did the applicant purchase the property after the effective date of the applicable Buffer Rule and then request a variance?

No. The County purchased the portion of the property containing the subject stream in 1991, 6 years prior to the effective date of the Buffer Rule (July 22, 1997).

E.6 - Explain how the hardship is rare or unique to the applicant's property, rather than the result of conditions that are widespread.

The property contains an existing MSW landfill, which is in itself relatively rare. As seen in Figure 8, only 3 active MSW disposal sites are currently present within the adjacent counties.

Due to the need for stable side slopes and the three dimensional aspect of landfills, avoidance of the stream and buffer is magnified to a much greater extent than avoidance for a typical "two dimensional" projects, which can develop up to the edge of the buffer without being impeded through the use of retaining walls and other engineering features. This is not practical for a solid waste landfill.

The continued use of the County facility would provide a unique function in the area, including reuse, recycling, and disposal of waste streams from residential, commercial, and industrial uses. The comprehensive waste management system is more efficient co-located on one site, so waste streams can be separated and materials reused. Additionally, electricity is generated at the site using methane created from the decomposition of the disposed solid waste.

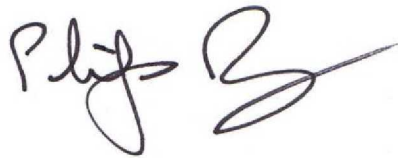
The information above and attached Variance Application Form are provided for your review of this Major Variance Request. In addition, we have included Figures, Engineering Drawings, and Attachments to supplement the information referenced in the application. We respectfully

Ms. Jennifer Burdette
March 16, 2017

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request your review of this information with the intention of receiving an Environmental Management Commission Review in May 2017. Please let us know if you have any questions or require additional information.

Sincerely,
Carolina Ecosystems, Inc.

A handwritten signature in black ink, appearing to read "Philip May". The signature is fluid and cursive, with the first name "Philip" written in a larger, more prominent script than the last name "May".

Philip May
Senior Environmental Scientist

Cc: Rick Proctor, Johnston County
Pieter Scheer, P.E., Smith Gardner Inc.

PROPERTY ACCESS AND AGENT AUTHORIZATION FORM

Property Information

Property Address
and/or Description Johnston County Landfill, 680 County Home Rd., Smithfield, NC 27577

Parcel Identification
Number(s) (PIN) 166400-93-4679, 167400-42-1564, 167300-09-6934, 166400-80-4571

City: Smithfield State: NC County: Johnston Property Size (Acres): 1,140.06

Property Owner Information

Owner: Authorized Agent*:

Name: Rick J. Hester

Title: County Manager

Street Address: 207 E. Johnston Street

City: Smithfield State: NC Zip Code: 27577

*Written proof of authorization from owner required.

Authorization

I, the undersigned, a duly authorized owner of record of the property/properties identified herein, do authorize representatives of the Wilmington District, U.S. Army Corps of Engineers (Corps) to enter upon the property herein described for the purpose of conducting on-site investigations and issuing a determination associated with Waters of the U.S. subject to Federal jurisdiction under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899.

Additionally, I hereby grant Smith Gardner, Inc. (S+G) and Carolina Ecosystems, Inc. (CEI) staff, their designated contractors and representatives, as well as other Federal, State or local authorities access to the above referenced property when necessary for the purposes of conducting on-site environmental consulting services. I also grant S+G and CEI the authority to act as authorized agent on behalf of the owner of the above listed property for the communication, submission, and/or application to relevant government entities, including local, state, and federal authorities, for the review, acceptance, concurrence, and/or approval of environmental information, documents, and/or permit requests concerning the above listed property. These services may include regulatory determinations of environmental features on my property such as issuing a determination associated with streams and wetlands. I certify that I am the legal owner or authorized agent of the legal owner of the above property and have authority to grant such access. I have made CEI aware of, and supplied all available records related to, previous environmental investigations on the subject property of which I have knowledge.

Owner/Agent (signature) _____

Date 1-13-17



15A NCAC 02B .0233 (8)(b), .0243 (8)(b), .0250 (11)(b), .0259 (8)(b), .0267 (11)(c), .0607 (e)(2)
Protection and Maintenance of Riparian Areas Rules - Variance Application
FORM: VAR 10-2013

PLEASE IDENTIFY WHICH RIPARIAN AREA PROTECTION RULE APPLIES:

- Neuse River Basin (15A NCAC 02B.0233)
 Major Variance Minor Variance
- Catawba River Basin (15A NCAC 02B.0243)
- Randleman Lake Water Supply Watershed (15A NCAC 02B.0250)
 Major Variance Minor Variance
- Tar-Pamlico River Basin (15A NCAC 02B.0259)
 Major Variance Minor Variance
- Jordan Lake Water Supply Nutrient Strategy (15A NCAC 02B.0267)
 Major Variance Minor Variance
- Goose Creek Watershed (15A NCAC 02B.0606 & 15A NCAC 02B.0607)

A. General Information

1. Applicant's Information (if other than the current property owner):

Name: _____

Title: _____

Street Address: _____

City, State & Zip: _____

Telephone: _____

Email: _____

2. Property Owner/Signing Official (person legally responsible for the property and its compliance):

Name: _____ County of Johnston – Rick Hester

Title: _____ County Manager

Street Address: _____ PO Box 1049

City, State & Zip: _____ Smithfield, NC 27577

Telephone: _____ 919-989-5100

Email: _____ rick.hester@johnstonnc.gov

3. Agent Information:

3a. Name: Phil May
Company Affiliation: Carolina Ecosystems, Inc.
Street Address: 3040 NC 42 West
City, State & Zip: Clayton, NC 27520
Telephone: (919) 606 - 1065
E-mail: phil.may@carolinaeco.com

3b. Attach a signed and dated copy of the Agent Authorization letter if the Agent has signatory authority for the owner.

4. Project Name (*Subdivision, facility, or establishment name*):

Johnston County Landfill

5. Project Location:

5a. Street Address: 680 County Home Rd
City, State & Zip: Smithfield, NC 27577
5b. County: Johnston County

5c. Site Coordinates (in decimal degrees): 35.5133 Latitude -78.4244 Longitude

5d. Attach an 8 ½ x 11 excerpt from the most recent version of the USGS topographic map indicating the location of the site.

5e. Attach an 8 ½ x 11 excerpt from the most recent version of the published County NRCS Soil Survey Map depicting the project site.

6. Property Information:

6a. Property identification number (parcel ID): 15108028

6b. Date property was purchased: 6c. July 22 1991/6d. Nov 1, 1991

6c. Deed book 1215 and page number 747

6d. Map book 1228 and page number 652

6e. Attach a copy of the recorded map that indicates when the lot was last platted.

7. Is your project in one of the 20 Coastal Counties covered under the Coastal Area Management Act (CAMA)?

YES NO

7a. If you answered yes above, in which AEC do you fall (30 ft or 75 ft)? N/A

7b. If you answered yes above, what is the total percent of impervious cover that you have proposed within the AEC? N/A

8. Directions to site from nearest major intersection:

Take Exit 319 from I-40. Turn onto NC-210 E. Go 8 miles and turn left onto County Home Rd. Go 0.5 mile to reach the landfill.

9. Stream associated with riparian buffer to be impacted by the proposed activity:

Name	Water Quality Classification
UT to Middle Creek	C;NSW

9a. **For Goose Creek only:** Is the buffer in the 100-year floodplain? YES NO

10. List any permits/approvals that have been requested or obtained for this project in the past (including all prior phases).

Date Applied:	Date Received:	Permit Type:
<u>See attached list</u>	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

B. Proposed Activity

1. Project Description

1a. Provide a detailed description of the proposed activity including its purpose:

**See attached Variance application cover letter

1b. Attach a site plan showing the following items as applicable to the project:

- ◇ Development/Project name
- ◇ Revision number & date
- ◇ North arrow
- ◇ Scale (1" = 50' is preferred)
- ◇ Property/project boundary with dimensions
- ◇ Adjacent streets and roads labeled with names and/or NC State Road numbers
- ◇ Original contours and proposed contours
- ◇ Perennial and intermittent streams, ponds, lakes, rivers and estuaries
- ◇ Mean high water line (if applicable)
- ◇ Wetlands delineated, or a note on plans that none exist
- ◇ Location of forest vegetation along the streams, ponds, lakes, rivers and estuaries
- ◇ Extent of riparian buffers on the land including Zone 1 and Zone where applicable

- ◇ Location and dimension of the proposed buffer impact (label the area of buffer impact in ft² on the plan)
- ◇ Details of roads, parking areas, cul-de-sacs, sidewalks, and curb and gutter systems
- ◇ Footprint of any proposed buildings or other structures
- ◇ Discharge points of gutters on existing structures and proposed buildings
- ◇ Existing drainage (including off-site), drainage easements, and pipe dimensions
- ◇ Drainage areas delineated

C. Proposed Impacts and Mitigation

1. Individually list the square footage of each proposed impact to the protected riparian buffers:

Buffer Impact Number ¹ – Permanent (P) or Temporary (T)	Reason for Impact	Buffer Mitigation Required	Zone 1 Impact (square feet)	Zone 2 Impact (square feet)
B1 - <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Landfill expansion	X Yes <input type="checkbox"/> No	22,046	17,654
B2 - <input type="checkbox"/> P <input type="checkbox"/> T		<input type="checkbox"/> Yes <input type="checkbox"/> No		
B3 - <input type="checkbox"/> P <input type="checkbox"/> T		<input type="checkbox"/> Yes <input type="checkbox"/> No		
Total Buffer Impacts			39,700	

¹Label on site plan

2. Identify the square feet of impact to each zone of the riparian buffer that requires mitigation from the table above. Calculate the amount of mitigation required.

Zone	Total Impact (square feet)	Multiplier	Required Mitigation (square feet)
Zone 1 ¹	18,129	3 (2 for Catawba only)	54,387
Zone 2	14,380	1.5	21570
Total Buffer Mitigation Required:			75,957

¹For projects in the Goose Creek Watershed, list all riparian buffer impacts as Zone 1 and use Zone 1 multiplier.

3. Provide a description of how mitigation will be achieved at your site pursuant to the mitigation requirements of the applicable river basin/watershed.

Buffer mitigation will be provided by the NC Division of Mitigation Services

3a. Is buffer restoration or enhancement proposed? Yes No

If yes, attach a **detailed planting plan** to include plant type, date of plantings, the date of the one-time fertilization in the protected riparian buffers, and a plan sheet showing the proposed location of the plantings.

3b. Is payment into a buffer restoration fund proposed? Yes No

If yes, attach an **acceptance letter** from the mitigation bank you propose to use or the NC Ecosystem Enhancement Program stating they have the mitigation credits available for the mitigation requested.

D. Stormwater

1. Provide a description of how diffuse flow will be maintained through the protected riparian buffers (e.g., re-planting vegetation or enhancement of existing vegetation, gutter splash pads, level spreader to control of runoff from impervious surfaces, etc.).

**See attached Variance cover letter

- 1a. Show the location of diffuse flow measure(s) on your site plan.
- 1b. Attach a completed **Level Spreader Supplement Form** or **BMP Supplement Form** with all required items for each proposed measure.
- 1c. Attach an **Operation and Maintenance (O&M) Form** for each proposed level spreader or BMP.

2. **For Major, Catawba, and Goose Creek variance requests**, provide a description of all best management practices (BMPs) that will be used to minimize disturbance and control the discharge of nutrients and sediments from stormwater.

**See attached Variance cover letter

- 2a. Show the location of BMPs on your site plan.
- 2b. Attach a **Supplement Form** for each structural BMP proposed.
- 2c. Attach an **Operation and Maintenance (O&M) Form** for each structural BMP proposed.

E. Demonstration of Need for a Variance

The variance provision of the riparian buffer rules allows the Division or the Environmental Management Commission to grant a variance when there are practical difficulties or unnecessary hardships that prevent compliance with the strict letter of riparian buffer protection.

1. Explain how complying with the provisions of the applicable rule would prevent you from securing a reasonable return from or make reasonable use of your property. Merely proving that the variance would permit a greater profit from the property shall not be considered adequate justification for a variance. The Division will consider whether the variance is the minimum possible deviation from the terms of the applicable Buffer Rule that shall make reasonable use of the property possible.

**See attached Variance cover letter

How the hardship results from application of the Buffer Rule to the property rather from other factors such as deed restrictions or other hardships (e.g. zoning setbacks, floodplains, etc).

**See attached Variance cover letter

3. Explain how the hardship results from physical nature of the property, such as its size, shape, or topography, which is different from that of neighboring property.

**See attached Variance cover letter

4. Explain whether the hardship was caused by the applicant knowingly or unknowingly violating the applicable Buffer Rule.

**See attached Variance cover letter

5. **For Neuse, Tar-Pamlico, Jordan Lake and Goose Creek only:** Did the applicant purchase the property after the effective date of the applicable Buffer Rule and then request a variance?

No

6. Explain how the hardship is rare or unique to the applicant's property, rather than the result of conditions that are widespread.

See attached Variance cover letter

F. Deed Restrictions

By your signature in Section G of this application, you certify that all structural stormwater BMPs required by this variance shall be located in recorded drainage easements, that the easements will run with the land, that the easements cannot be changed or deleted without concurrence from the State, and that the easements will be recorded prior to the sale of any lot.

G. Applicant's Certification

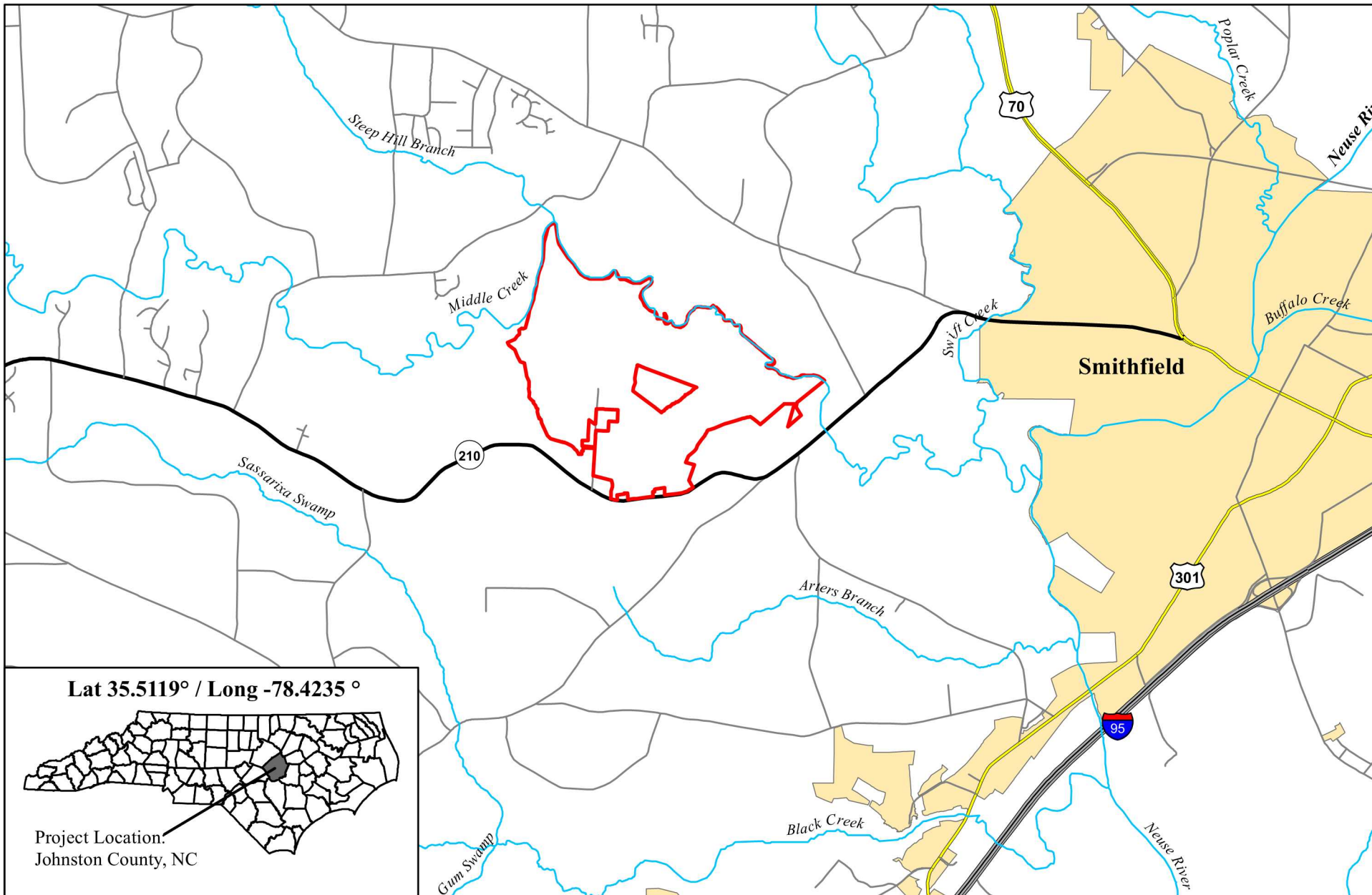
I, Rick Hester (print or type name of person listed in Section A, Item 2), certify that the information included on this permit application form is correct, that the project will be constructed in conformance with the approved plans and that the deed restrictions in accordance with Section F of this form will be recorded with all required permit conditions.

Signature:

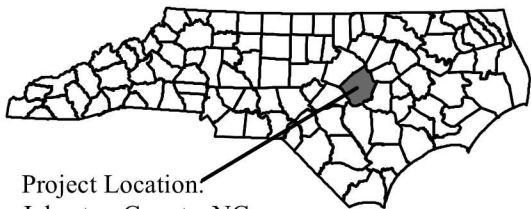
Rick Hester

Date:

3/17/19



Lat 35.5119° / Long -78.4235 °



Project Location.
Johnston County, NC

**CAROLINA
ECOSYSTEMS, INC.**

March 2017



0 0.5 1 Miles



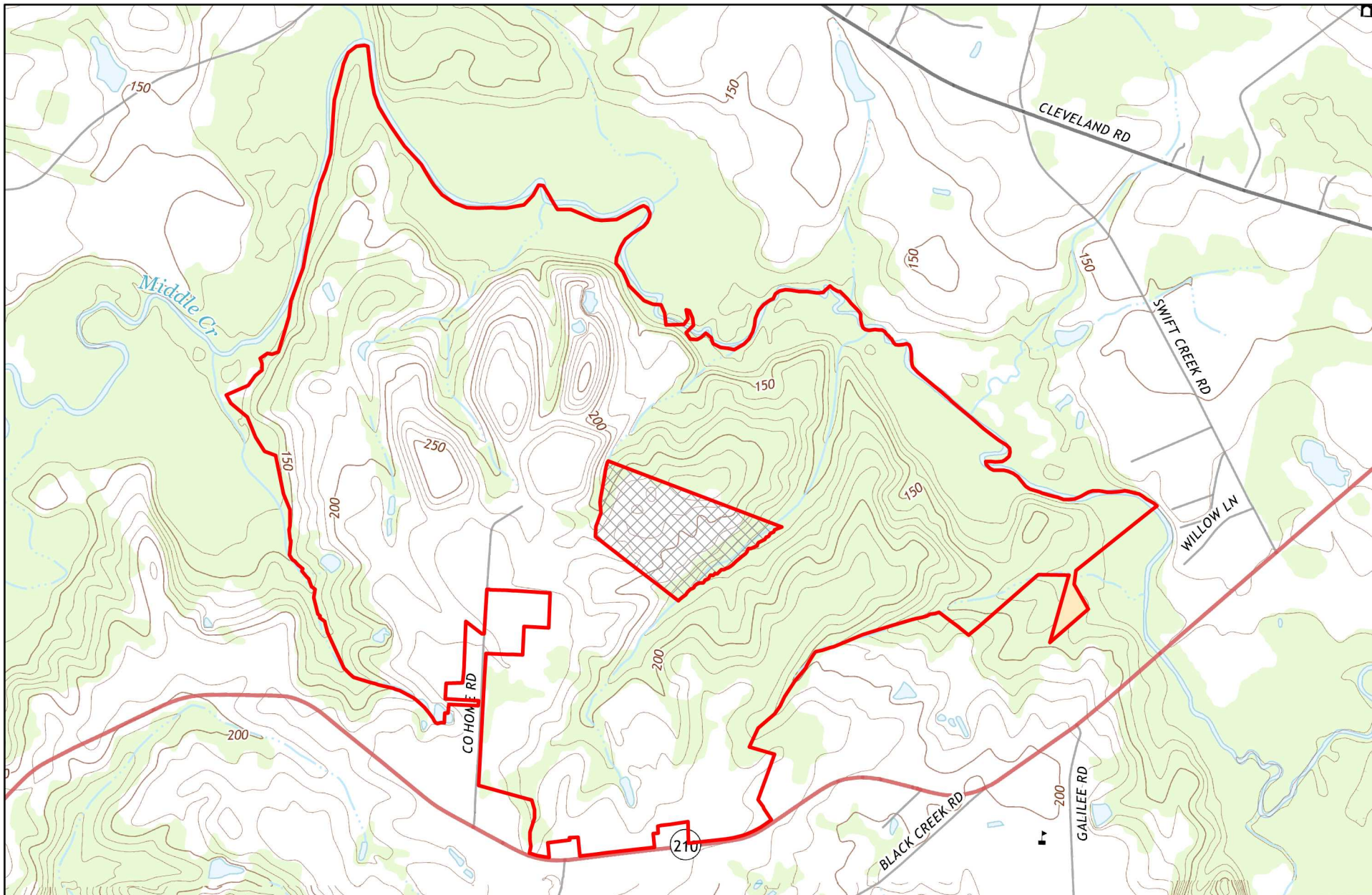
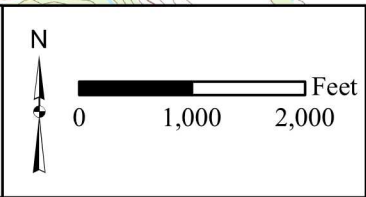
 Property Boundary
 USGS Named Streams

Figure 1: Project Vicinity

**Johnston County Landfill
Phases 6-10
Johnston County, NC**



**CAROLINA
ECOSYSTEMS**



Property Boundary
 Property Not Studied
 NCDOT Borrow Pit
 Powhatan (2013) USGS 1:24,000 Quadrangle Map

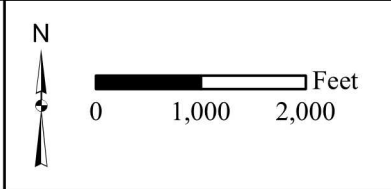
Map Date: March 2017
Revised:
Revised:
Revised:

Figure 2: USGS Map

**Johnston County Landfill
Phases 6-10
Johnston County, NC**



UcB (Joins sheet 10) MaB 2 180 000 FEET



Property Boundary
 Property Not Studied
 NCDOT Borrow Pit
 Johnston County NRCS Soil Survey Map 6

Map Date: **March 2017**
 Revised:
 Revised:
 Revised:

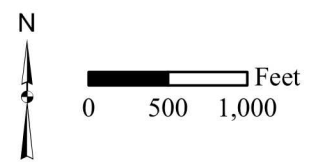
Figure 3: NRCS Map
Johnston County Landfill
Phases 6-10
Johnston County, NC

**** SEE ENGINEERING DRAWING FIG. 2 FOR DETAILS ON SITE INFRASTRUCTURE**



NC OneMap, NC Center for Geographic Information and Analysis, NC 911 Board

CAROLINA ECOSYSTEMS

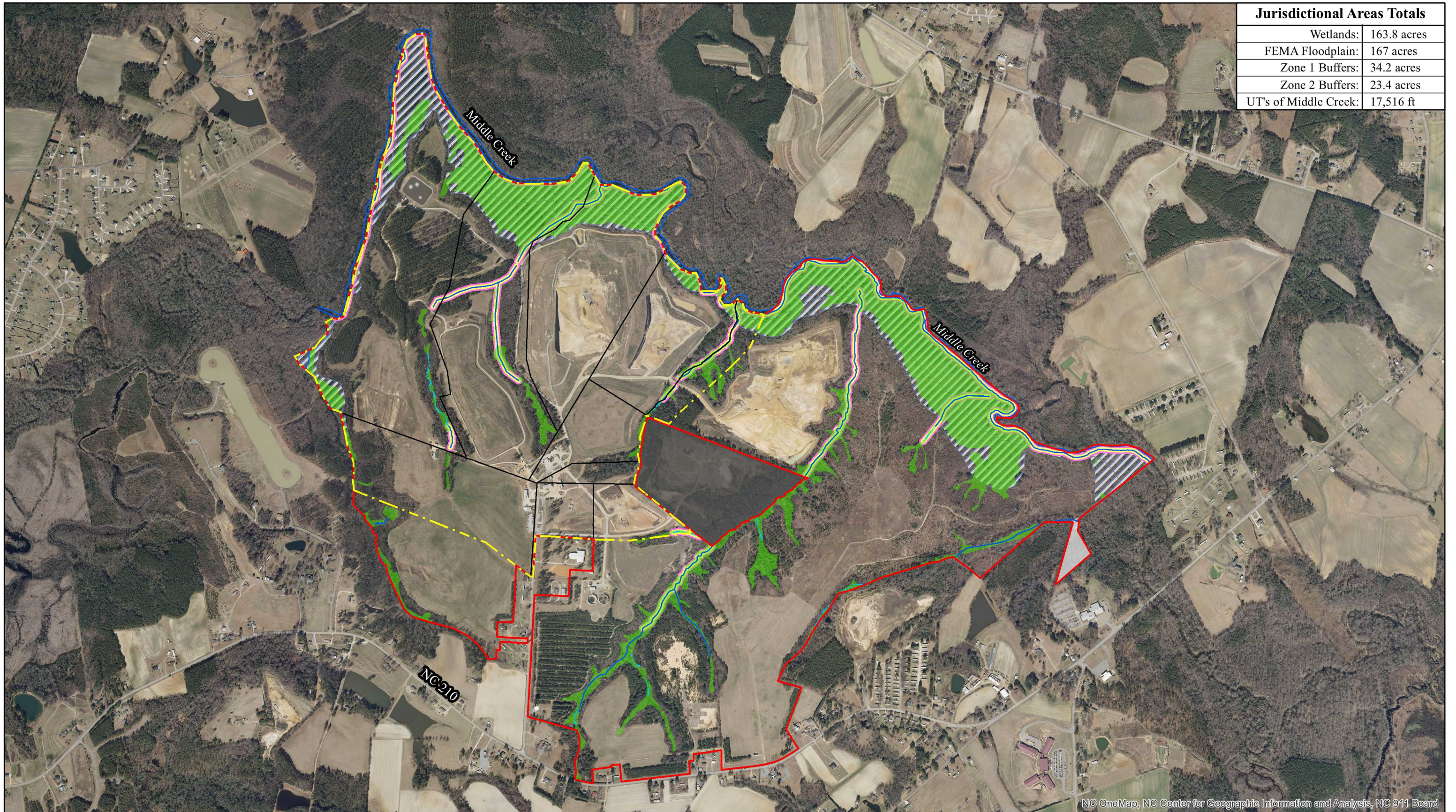


- Property Boundary
- Facility Boundary
- NCDOT Parcel
- Deed Breakouts
- ~ Streams
- Property Not Studied

2013 NC Statewide Aerial Photography

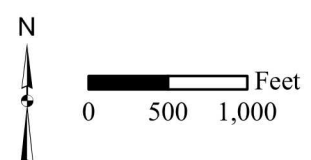
Map Date: March 2017
Revised:
Revised:
Revised:

Figure 4: Site Overview
Johnston County Landfill
Phases 6-10
Johnston County, NC



NC OneMap, NC Center for Geographic Information and Analysis, NC 911 Board

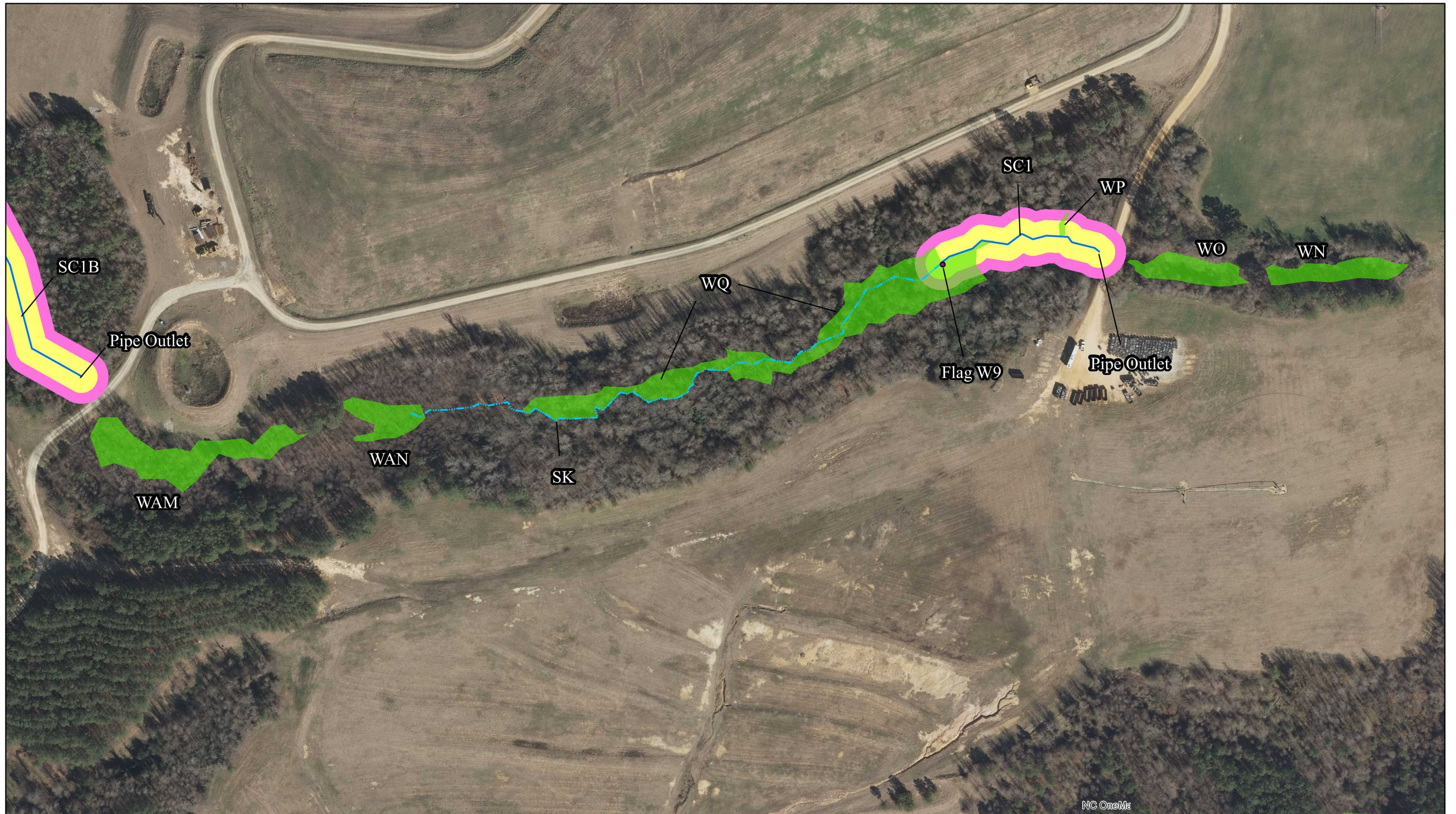
CAROLINA ECOSYSTEMS



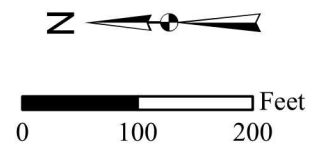
- Property Boundary
 - Facility Boundary
 - Deed Breakouts
 - NCDOT Parcel
 - Property Not Studied
 - Wetlands
 - FEMA 100 Year Floodplain
 - Zone 1 (30' Buffer)
 - Zone 2 (20' Buffer)
 - ~ Intermittent
 - ~ Perennial
- 2013 NC Statewide Aerial Photography

Map Date: March 2017
Revised:
Revised:
Revised:

Figure 5: Jurisdictional Areas
Johnston County Landfill
Phases 6-10
Johnston County, NC



**CAROLINA
ECOSYSTEMS**

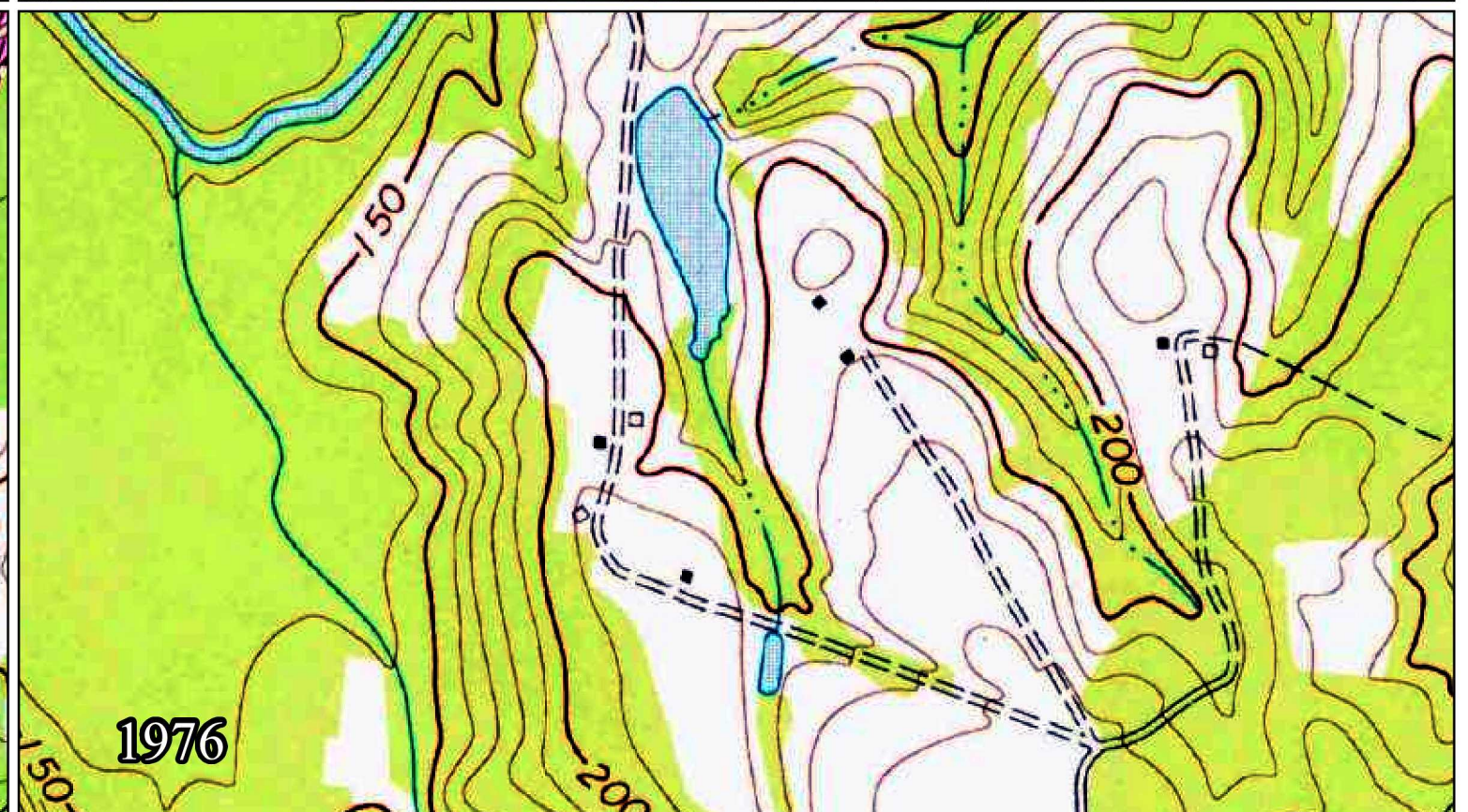
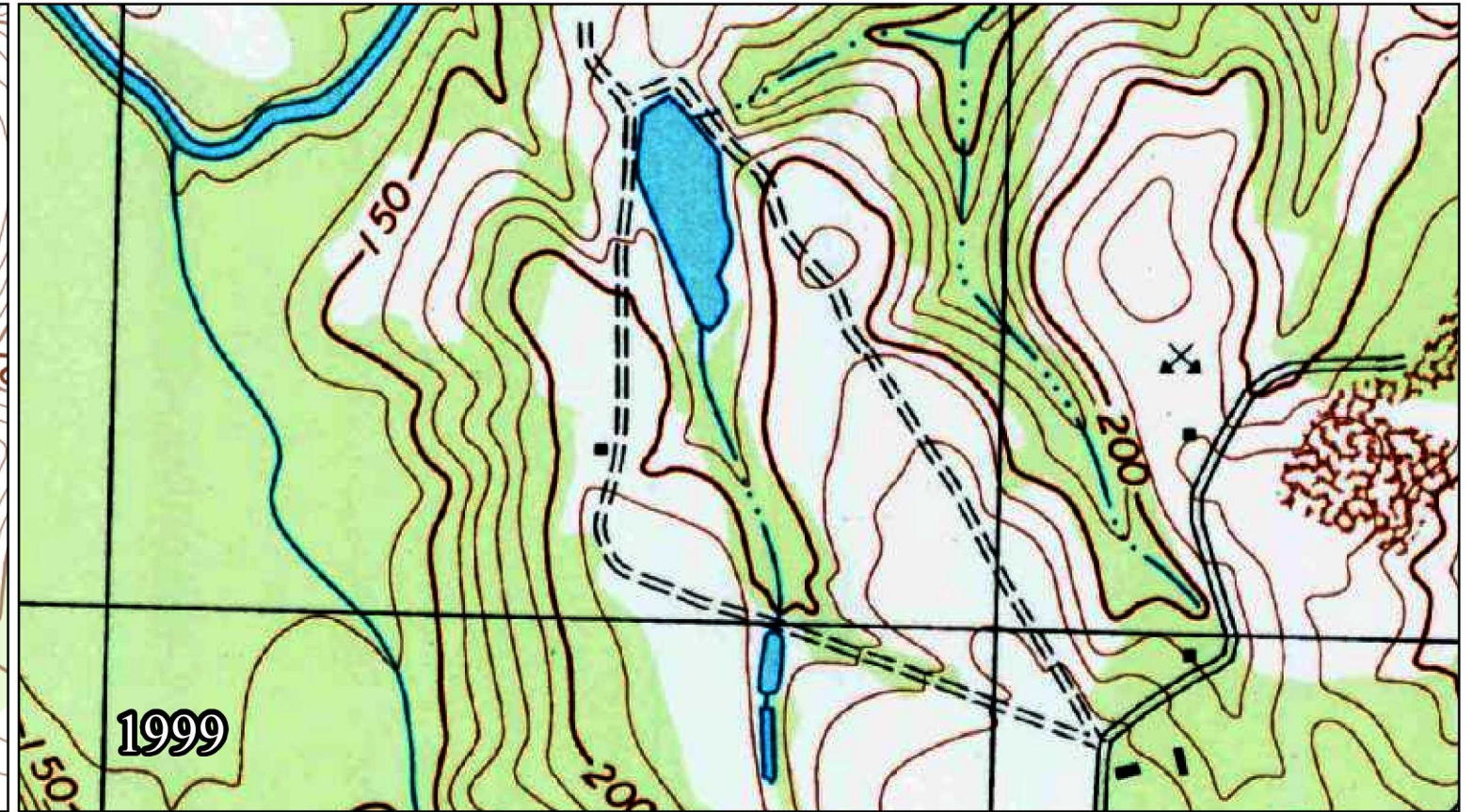
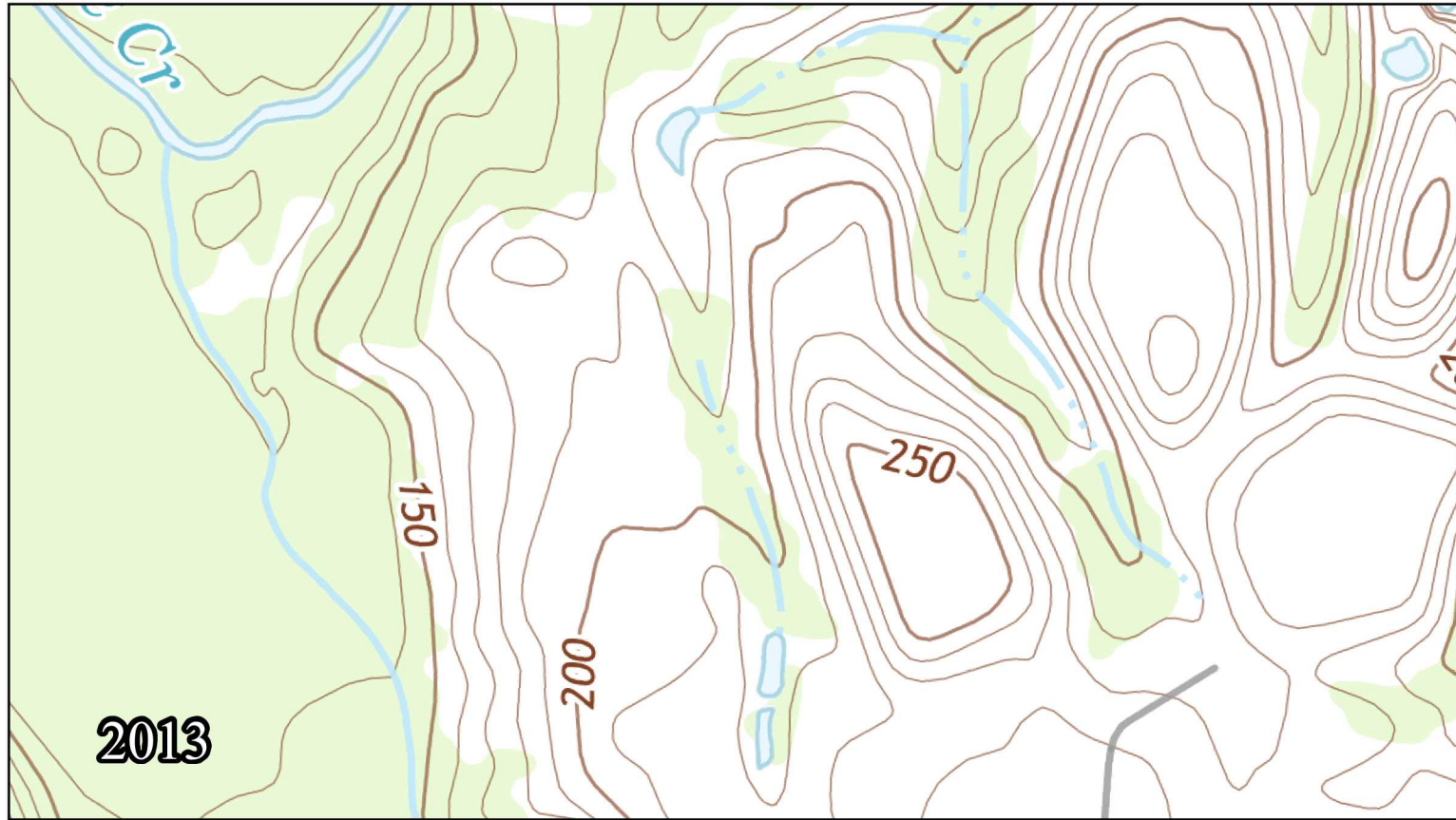


- Zone 1 (30' Buffer)
- Zone 2 (20' Buffer)
- Intermittent
- Perennial
- Wetlands

2013 NC Statewide Aerial Photography

Map Date: March 2017
Revised:
Revised:
Revised:

Figure 6: Proposed Impact Area
Johnston County Landfill
Phases 6-10
Johnston County, NC



**CAROLINA
ECOSYSTEMS**



0 500 1,000 Feet

**Powhatan (1976, 1982, 1999, 2013)
USGS 1:24,000 Quagrange Map**

Map Date: March 2017

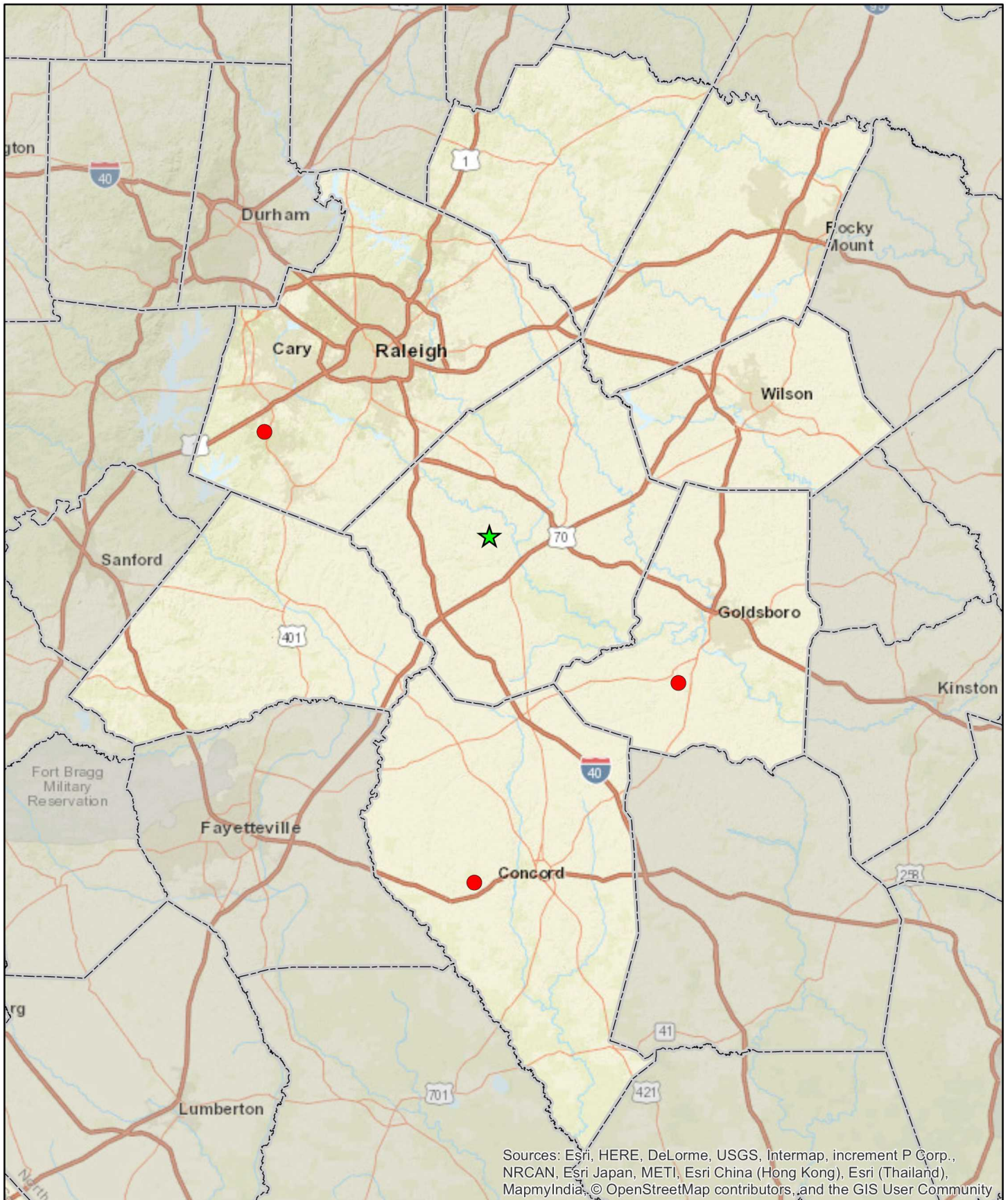
Revised:

Revised:

Revised:

Figure 7 : USGS History

**Johnston County Landfill
Phases 6-10
Johnston County, NC**



**CAROLINA
ECOSYSTEMS**

March 2017



Johnston County Landfill



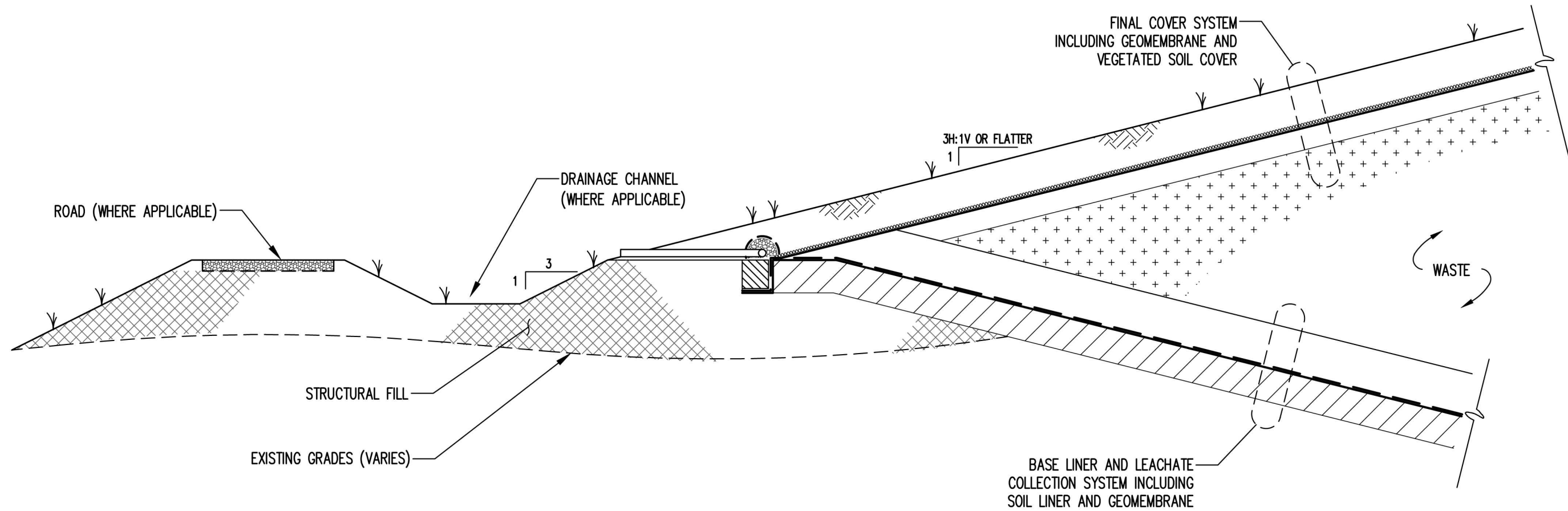
Surrounding MSW Landfills

0 10
Miles

**Figure 8: Active Permitted
MSW Landfills**

**Johnston County Landfill
Phases 6-10
Johnston County, NC**

G:\CAD\Johnston\John 15-5\sheets\JOHN-B0729.dwg - 3/16/2017 11:52 AM

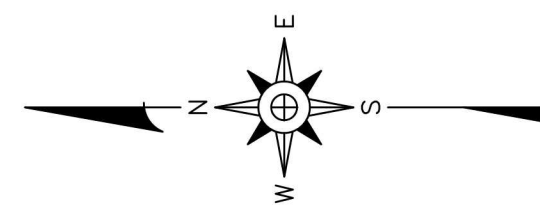


PERIMETER BERM CROSS SECTION

DETAIL 1
 NOT TO SCALE 5

PRELIMINARY
 NOT FOR CONSTRUCTION

PREPARED BY: _____ NC LIC. NO. F-1370 (ENGINEERING)		SMITH+GARDNER 14 N. Boylan Avenue, Raleigh NC 27603 919.828.0577	
DRAWING TITLE:	JOHNSTON COUNTY LANDFILL PHASES 6-10 DETAILS		
APPROVED:	P. K.S.	PROJECT NO.:	JOHN 15-5
DRAWN:	C. T. J.	DATE:	Mar 2017
SCALE:	NOT TO SCALE	FILENAME:	JOHN-B0729
FIGURE NO.:	1		



**PRELIMINARY
NOT FOR CONSTRUCTION**

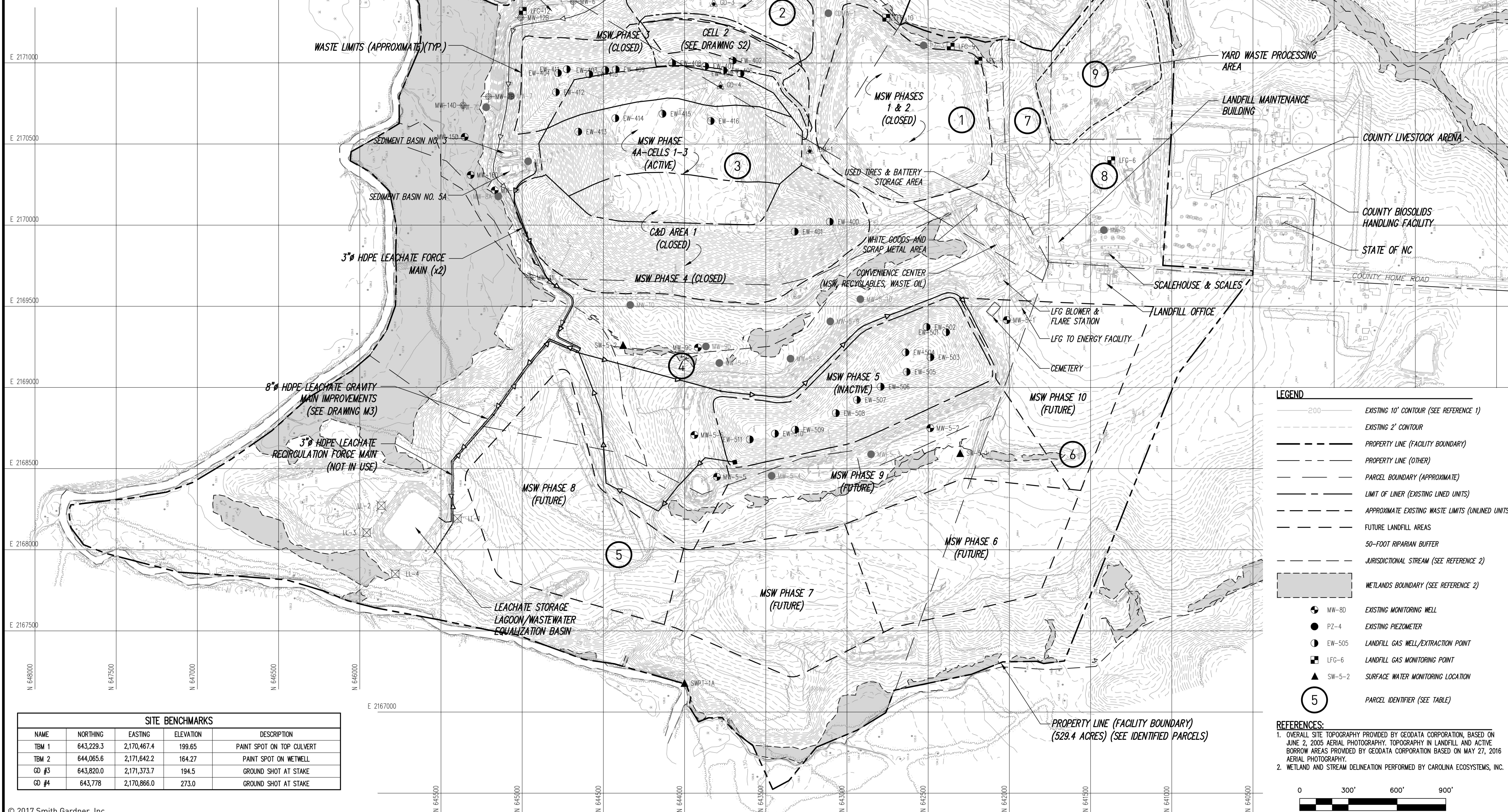
PREPARED FOR:
**JOHNSTON COUNTY
NORTH CAROLINA
DEPARTMENT OF
SOLID WASTE SERVICES**

PREPARED BY:
NC LIC. NO. F-1370 (ENGINEERING)

**SMITH+
GARDNER**
ENGINEERS
14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

PARCEL REFERENCES	
PARCEL	COUNTY REFERENCE
1	D.B. 775, PG. 410 (PERMIT); TRACT 6 LAND BOOK E, PG. 305
2	D.B. 952, PG. 374 (PERMIT); TRACT 6 LAND BOOK E, PG. 305
3	D.B. 763, PG. 525; D.B. 952, PG. 374 (PERMIT)
4	D.B. 1228, PG. 652 - SECOND TRACT; LAND BOOK E, PG. 305
5	D.B. 1228, PG. 652 - FIRST TRACT; LAND BOOK E, PG. 305
6	D.B. 1215, PG. 747
7	NO DEED REFERENCE
8	NO DEED REFERENCE
9	D.B. E-3, PG. 1
10	D.B. 2109, PG 599; D.B. 58, PG. 449-450

NOTE: PROPERTY INFORMATION FROM RECOMBINATION MAP FOR "COUNTY OF JOHNSTON JOHNSTON COUNTY LANDFILL" PREPARED BY JERRY BALL LAND SURVEYING, PC.



LEGEND

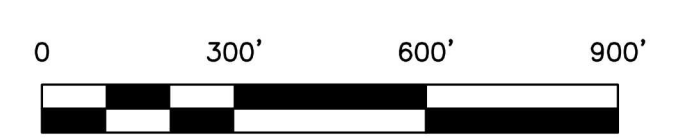
- EXISTING 10' CONTOUR (SEE REFERENCE 1)
- EXISTING 2' CONTOUR
- PROPERTY LINE (FACILITY BOUNDARY)
- PROPERTY LINE (OTHER)
- PARCEL BOUNDARY (APPROXIMATE)
- LIMIT OF LINER (EXISTING LINED UNITS)
- APPROXIMATE EXISTING WASTE LIMITS (UNLINED UNITS)
- FUTURE LANDFILL AREAS
- 50-FOOT RIPARIAN BUFFER
- JURISDICTIONAL STREAM (SEE REFERENCE 2)
- WETLANDS BOUNDARY (SEE REFERENCE 2)
- MW-80 EXISTING MONITORING WELL
- PZ-4 EXISTING PIEZOMETER
- EW-505 LANDFILL GAS WELL/EXTRACTION POINT
- LFG-6 LANDFILL GAS MONITORING POINT
- SW-5-2 SURFACE WATER MONITORING LOCATION
- PARCEL IDENTIFIER (SEE TABLE)

REFERENCES:

- OVERALL SITE TOPOGRAPHY PROVIDED BY GEODATA CORPORATION, BASED ON JUNE 2, 2005 AERIAL PHOTOGRAPHY. TOPOGRAPHY IN LANDFILL AND ACTIVE BORROW AREAS PROVIDED BY GEODATA CORPORATION BASED ON MAY 27, 2016 AERIAL PHOTOGRAPHY.
- WETLAND AND STREAM DELINEATION PERFORMED BY CAROLINA ECOSYSTEMS, INC.

SITE BENCHMARKS

NAME	NORTHING	EASTING	ELEVATION	DESCRIPTION
TBM 1	643,229.3	2,170,467.4	199.65	PAINT SPOT ON TOP CULVERT
TBM 2	644,065.6	2,171,642.2	164.27	PAINT SPOT ON WETWELL
GD #3	643,820.0	2,171,373.7	194.5	GROUND SHOT AT STAKE
GD #4	643,778	2,170,866.0	273.0	GROUND SHOT AT STAKE



SEAL

SEAL

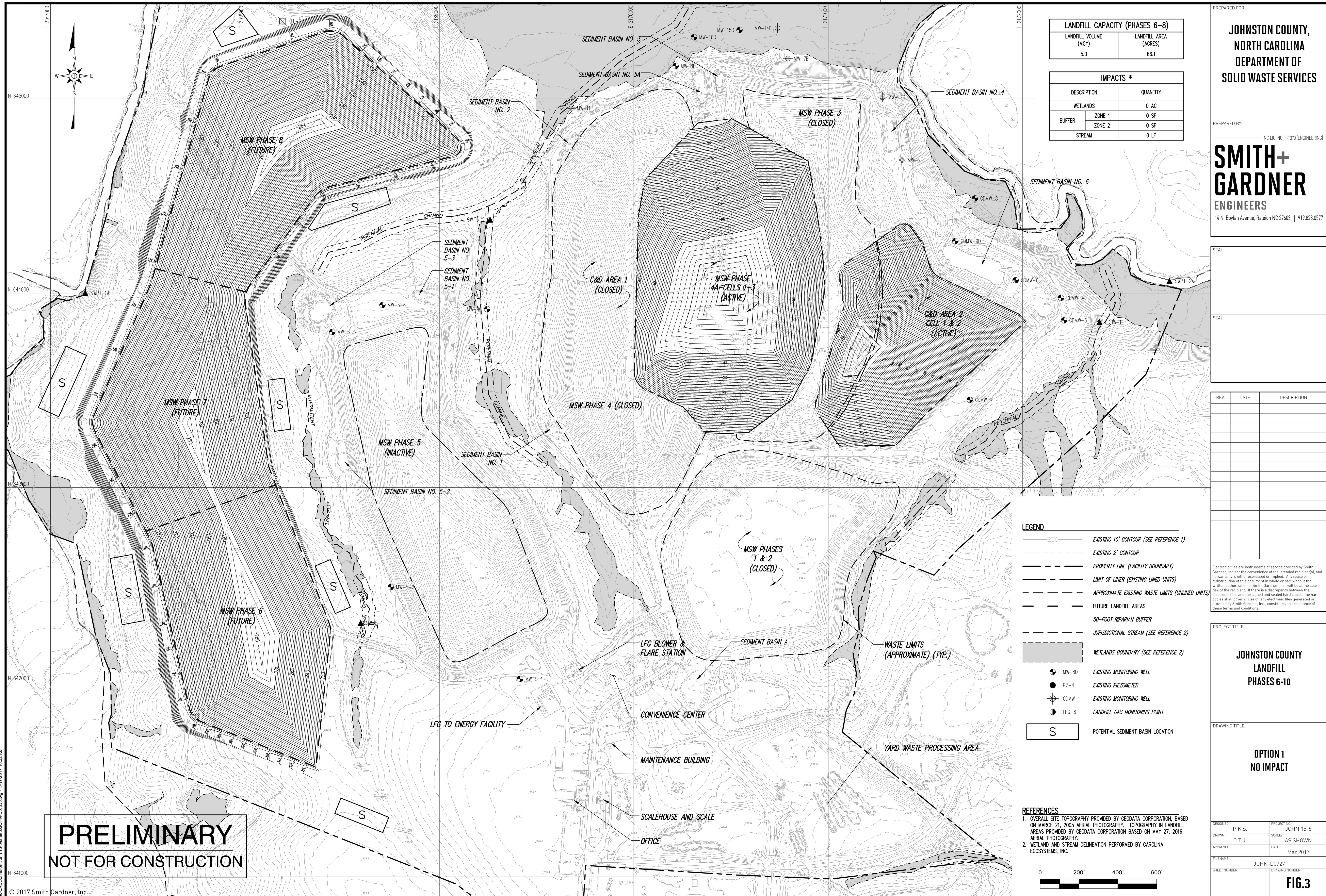
REV.	DATE	DESCRIPTION

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PROJECT TITLE:
**JOHNSTON COUNTY
LANDFILL
PHASES 6-10**

DRAWING TITLE:
EXISTING CONDITIONS

DESIGNED	P.K.S.	PROJECT NO.	JOHN 15-5
DRAWN	C.T.J.	SCALE	AS SHOWN
APPROVED		DATE	MAR. 2017
FILENAME	JOHN-D0728		
SHEET NUMBER	DRAWING NUMBER		
	FIG.2		



LANDFILL CAPACITY (PHASES 6-8)	
LANDFILL VOLUME (MCY)	LANDFILL AREA (ACRES)
5.0	66.1

IMPACTS *		
DESCRIPTION	QUANTITY	
WETLANDS	0 AC	
BUFFER	ZONE 1	0 SF
	ZONE 2	0 SF
STREAM	0 LF	

PREPARED FOR:
**JOHNSTON COUNTY,
 NORTH CAROLINA
 DEPARTMENT OF
 SOLID WASTE SERVICES**

PREPARED BY:
 NC LIC. NO. F-1370 (ENGINEERING)
**SMITH+
 GARDNER**
 ENGINEERS
 14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

SEAL
 SEAL

REV.	DATE	DESCRIPTION

PROJECT TITLE:
**JOHNSTON COUNTY
 LANDFILL
 PHASES 6-10**

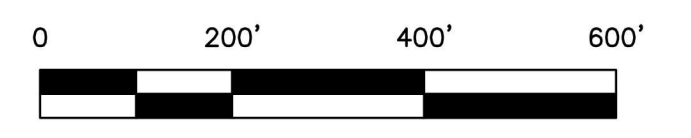
DRAWING TITLE:
**OPTION 1
 NO IMPACT**

DESIGNED: P.K.S.	PROJECT NO: JOHN 15-5
DRAWN: C.T.J.	SCALE: AS SHOWN
APPROVED:	DATE: Mar 2017
TITLENAME: JOHN-D0727	SHEET NUMBER: 1
FIG.3	

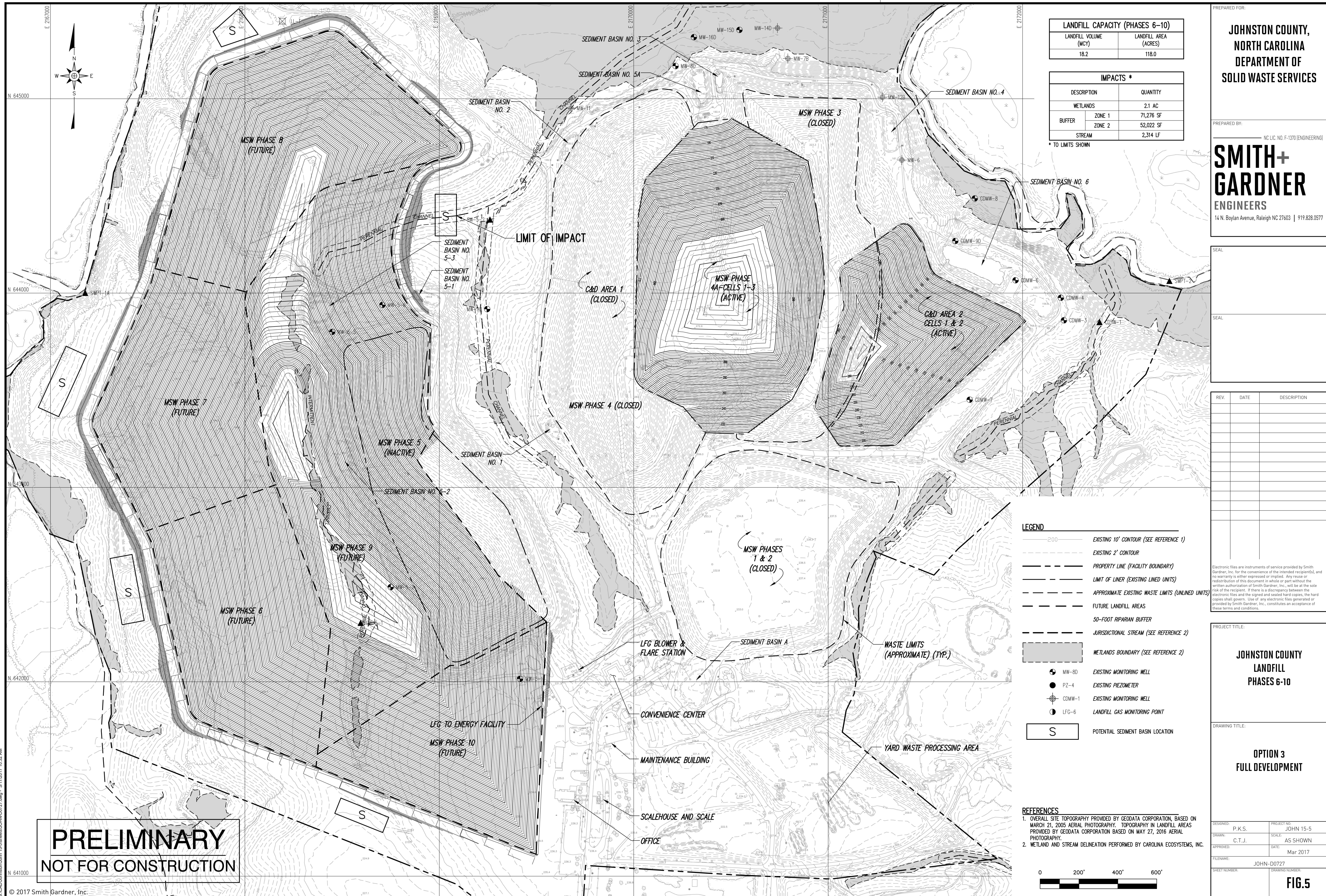
- LEGEND**
- - - - - 200' EXISTING 10' CONTOUR (SEE REFERENCE 1)
 - - - - - EXISTING 2' CONTOUR
 - — — — — PROPERTY LINE (FACILITY BOUNDARY)
 - — — — — LIMIT OF LINER (EXISTING LINED UNITS)
 - - - - - APPROXIMATE EXISTING WASTE LIMITS (UNLINED UNITS)
 - - - - - FUTURE LANDFILL AREAS
 - - - - - 50-FOOT RIPARIAN BUFFER
 - - - - - JURISDICTIONAL STREAM (SEE REFERENCE 2)
 - WETLANDS BOUNDARY (SEE REFERENCE 2)
 - MW-80 EXISTING MONITORING WELL
 - PZ-4 EXISTING PIEZOMETER
 - CDMW-1 EXISTING MONITORING WELL
 - LFC-6 LANDFILL GAS MONITORING POINT
 - S POTENTIAL SEDIMENT BASIN LOCATION

- REFERENCES**
- OVERALL SITE TOPOGRAPHY PROVIDED BY GEODATA CORPORATION, BASED ON MARCH 21, 2005 AERIAL PHOTOGRAPHY. TOPOGRAPHY IN LANDFILL AREAS PROVIDED BY GEODATA CORPORATION BASED ON MAY 27, 2016 AERIAL PHOTOGRAPHY.
 - WETLAND AND STREAM DELINEATION PERFORMED BY CAROLINA ECOSYSTEMS, INC.

**PRELIMINARY
 NOT FOR CONSTRUCTION**



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LANDFILL CAPACITY (PHASES 6-10)	
LANDFILL VOLUME (MCY)	LANDFILL AREA (ACRES)
18.2	118.0

IMPACTS *		
DESCRIPTION	QUANTITY	
WETLANDS	2.1 AC	
BUFFER	ZONE 1	71,276 SF
	ZONE 2	52,022 SF
STREAM	2,314 LF	

* TO LIMITS SHOWN

PREPARED FOR:
**JOHNSTON COUNTY,
 NORTH CAROLINA
 DEPARTMENT OF
 SOLID WASTE SERVICES**

PREPARED BY:
 NC LIC. NO. F-1370 (ENGINEERING)
**SMITH+
 GARDNER**
 ENGINEERS
 14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

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REV.	DATE	DESCRIPTION

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PROJECT TITLE:
**JOHNSTON COUNTY
 LANDFILL
 PHASES 6-10**

DRAWING TITLE:
**OPTION 3
 FULL DEVELOPMENT**

DESIGNED: P.K.S.	PROJECT NO: JOHN 15-5
DRAWN: C.T.J.	SCALE: AS SHOWN
APPROVED:	DATE: Mar 2017
TITLE NAME: JOHN-D0727	
SHEET NUMBER:	DRAWING NUMBER: FIG.5

- LEGEND**
- 200 — EXISTING 10' CONTOUR (SEE REFERENCE 1)
 - — — EXISTING 2' CONTOUR
 - — — PROPERTY LINE (FACILITY BOUNDARY)
 - — — LIMIT OF LINER (EXISTING LINED UNITS)
 - — — APPROXIMATE EXISTING WASTE LIMITS (UNLINED UNITS)
 - — — FUTURE LANDFILL AREAS
 - — — 50-FOOT RIPARIAN BUFFER
 - — — JURISDICTIONAL STREAM (SEE REFERENCE 2)
 - — — WETLANDS BOUNDARY (SEE REFERENCE 2)
 - MW-80 EXISTING MONITORING WELL
 - PZ-4 EXISTING PIEZOMETER
 - CDMW-1 EXISTING MONITORING WELL
 - LFC-6 LANDFILL GAS MONITORING POINT
 - S POTENTIAL SEDIMENT BASIN LOCATION

- REFERENCES**
- OVERALL SITE TOPOGRAPHY PROVIDED BY GEODATA CORPORATION, BASED ON MARCH 21, 2005 AERIAL PHOTOGRAPHY. TOPOGRAPHY IN LANDFILL AREAS PROVIDED BY GEODATA CORPORATION BASED ON MAY 27, 2016 AERIAL PHOTOGRAPHY.
 - WETLAND AND STREAM DELINEATION PERFORMED BY CAROLINA ECOSYSTEMS, INC.



**PRELIMINARY
 NOT FOR CONSTRUCTION**

ATTACHMENT 1

BUFFER DETERMINATION



North Carolina Department of Environment and Natural Resources
Division of Water Quality

Pat McCrory
Governor

Thomas A. Reeder
Acting Director

John E. Skvarla, III
Secretary

July 10, 2013

Phil May
Carolina Ecosystems
3040 NC 42 West
Clayton, NC 27520

Subject: Surface Water Determination Letter
NBRRO#12-206
Johnston County

Determination Type:	
Buffer Call	Isolated or EIP Call
<input checked="" type="checkbox"/> Neuse (15A NCAC 2B .0233) <input type="checkbox"/> Tar-Pamlico (15A NCAC 2B .0259) <input type="checkbox"/> Jordan (15A NCAC 2B .0267)	<input type="checkbox"/> Ephemeral/Intermittent/Perennial Determination <input type="checkbox"/> Isolated Wetland Determination

Project Name: Johnston County Landfill

Location/Directions: Subject property is current use landfill on Hwy 210 in Johnston County.

Subject Stream: UT to and Middle Creek

Determination Date: Aug 16, 2012

Staff: Martin Richmond

Feature	E/I/P*	Not Subject	Subject	Start@	Stop@	Soil Survey	USGS Topo
SC1	P		X	Pipe Outlet	Flag W9	X	X
SC1B	I		X	Road Crossing		X	X
SC2	I		X	Flag Start Ch 2		X	X
SC3	P		X	Flag Start Ch 3		X	X
SC4	I		X	Flag Start Ch4		X	
SC5	P		X	Flag Start Ch5		X	X
SC6		X				X	X
SC7		X				X	
SC8 (offsite)	I		X	Flag Start Ch8		X	

*E/I/P = Ephemeral/Intermittent/Perennial



Explanation: The feature(s) listed above has or have been located on the Soil Survey of Johnston County, North Carolina or the most recent copy of the USGS Topographic map at a 1:24,000 scale. Each feature that is checked "Not Subject" has been determined not to be a stream or is not present on the property. Features that are checked "Subject" have been located on the property and possess characteristics that qualify it to be a stream. There may be other streams located on your property that do not show up on the maps referenced above but, still may be considered jurisdictional according to the US Army Corps of Engineers and/or to the Division of Water Quality.

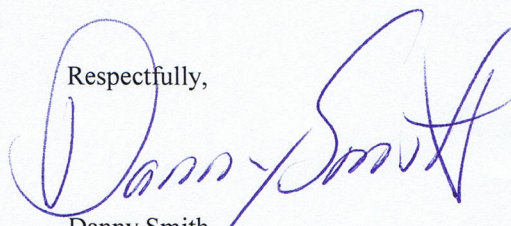
This on-site determination shall expire five (5) years from the date of this letter. Landowners or affected parties that dispute a determination made by the DWQ or Delegated Local Authority may request a determination by the Director. An appeal request must be made within sixty (60) days of date of this letter or from the date the affected party (including downstream and/or adjacent owners) is notified of this letter. A request for a determination by the Director shall be referred to the Director in writing c/o Karen Higgins, DWQ WeBSCaPe Unit, 1650 Mail Service Center, Raleigh, NC 27699.

This determination is final and binding unless, as detailed above, you ask for a hearing or appeal within sixty (60) days.

The owner/future owners should notify the Division of Water Quality (including any other Local, State, and Federal Agencies) of this decision concerning any future correspondences regarding the subject property (stated above). This project may require a Section 404/401 Permit for the proposed activity. Any inquiries should be directed to the Division of Water Quality (Central Office) at (919)-807-6300, and the US Army Corp of Engineers (Raleigh Regulatory Field Office) at (919)-554-4884.

If you have questions regarding this determination, please feel free to contact Martin Richmond at (919) 791-4200.

Respectfully,



Danny Smith
Regional Supervisor

cc: RRO/SWP File Copy

NBARO # 12-206

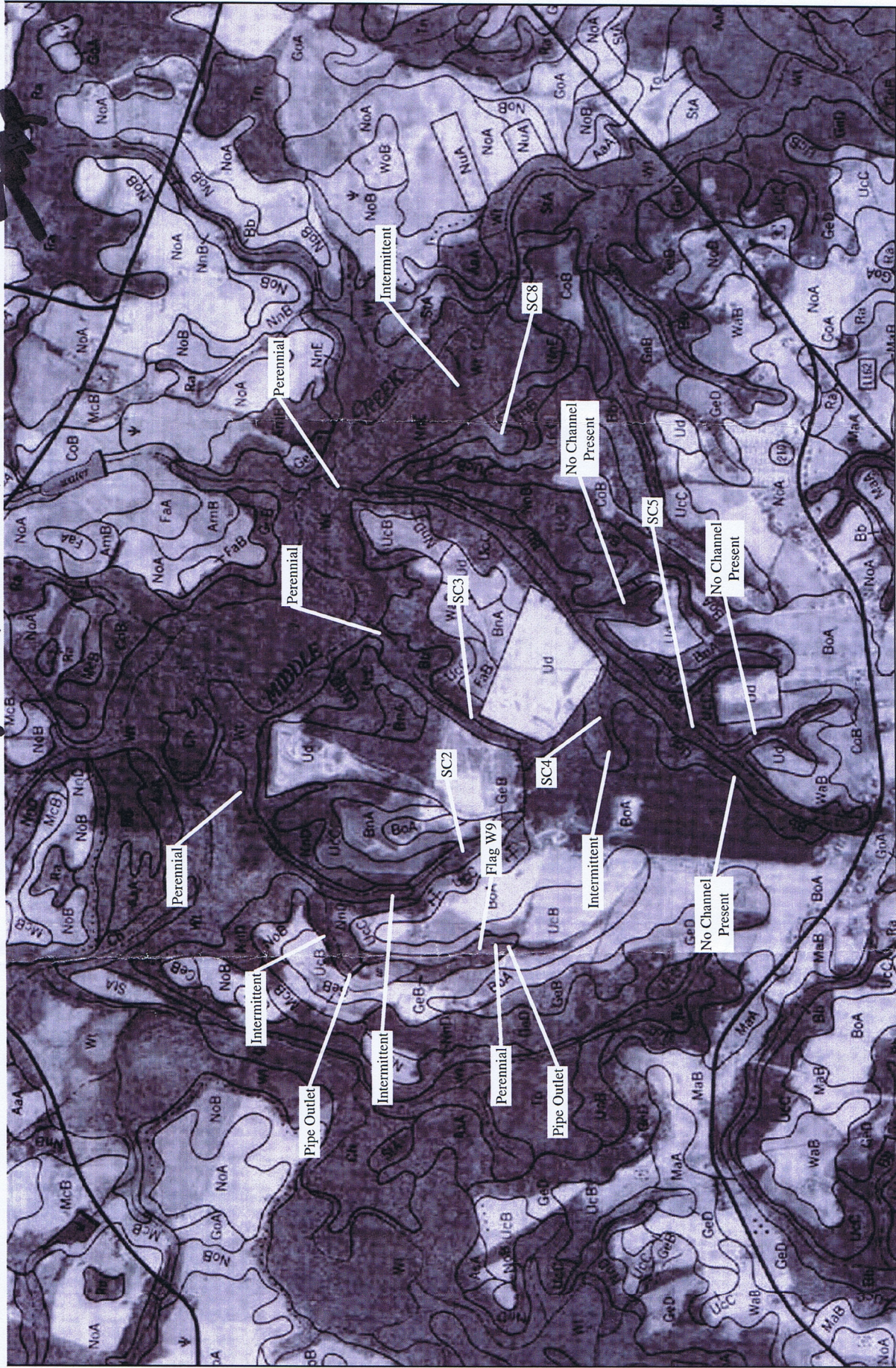


Figure 5: Soil Survey
Johnston County
Landfill

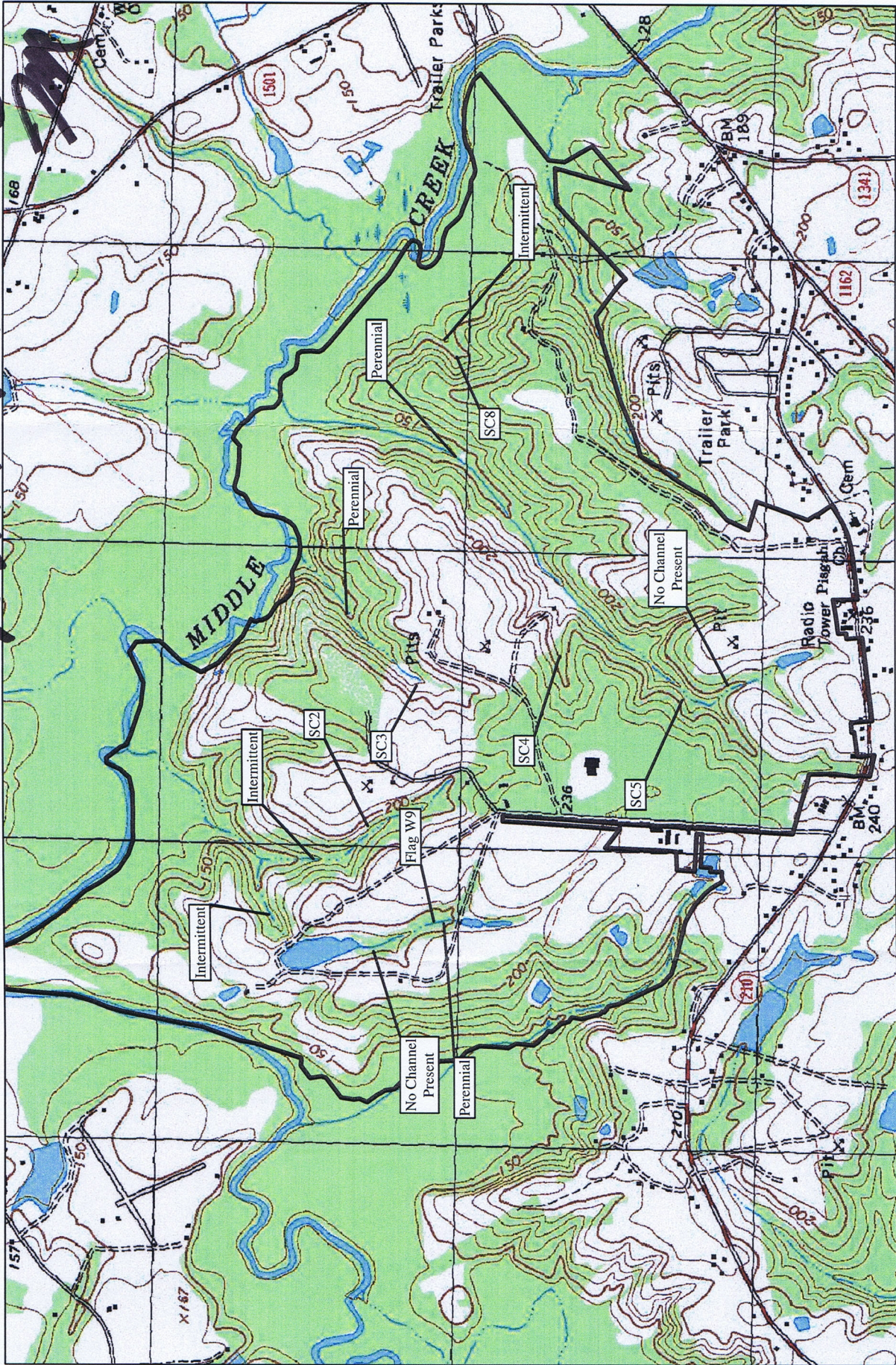
Johnston County Soil Survey 1994
Map 6



CAROLINA ECOSYSTEMS, INC.
3040 NC-42 West; Clayton, NC 27520
P: (919)-606-9145 F:(919)-585-5570

Date: August 2012

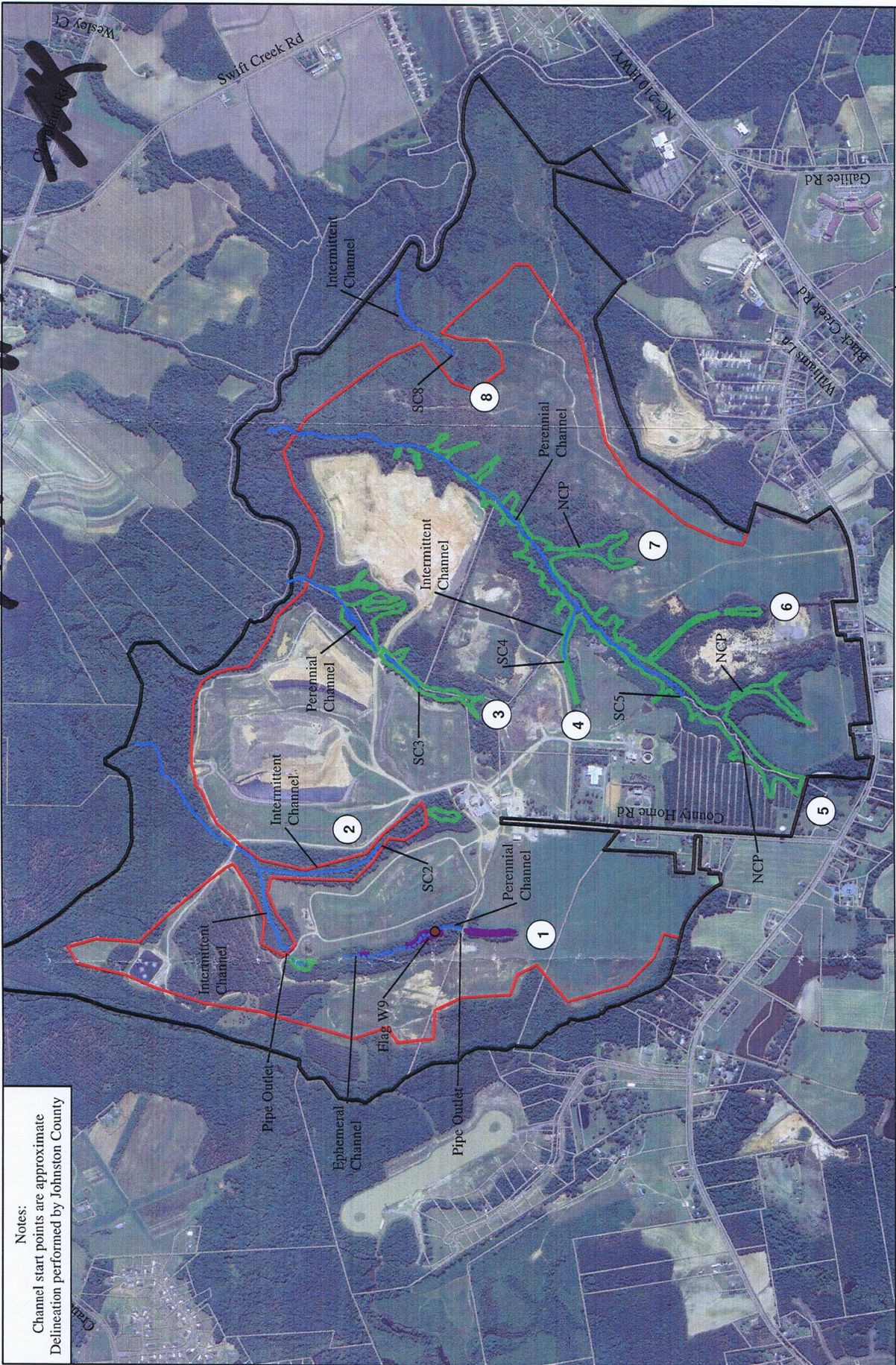
MAP # 13-206



<p>Figure 4: USGS Map</p> <p>Johnston County Landfill</p>	<p>Property Boundary</p> <p>USGS Powhatan Quad</p>	<p>CAROLINA ECOSYSTEMS, INC. 3040 NC 42 West; Clayton, NC 27520 P: (919)-606-9145 F: (919)-585-5570</p>
<p>Scale: 0, 1,500, 3,000 Feet</p> <p>North Arrow</p>		<p>Date: August 2012</p>

NRAC # 12-206

[Handwritten signature]



Notes:
Channel start points are approximate
Delineation performed by Johnston County

Figure 2: Wetlands and Streams

Johnston County Landfill

Drainage Number 0

NCP = No Channel Present
 SC = Start Channel

Streams
 Isolated Wetlands
 Wetlands

Property Boundary
 Study Area
 Parcels 2012

0 750 1,500 Feet

CAROLINA ECOSYSTEMS, INC.
 3040 NC 42 West, Clayton, NC 27520
 P: (919)-606-9145 F: (919)-585-5570

Date: August 2012

ATTACHMENT 2

DMS MITIGATION ACCEPTANCE



March 16, 2017

Rick Hester
Johnston County manager
PO Box 1049
Smithfield, NC 27577

Expiration of Acceptance: September 16, 2017

Project: Johnston County Landfill

County: Johnston

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 on the DMS website.

Based on the information supplied by you in your request to use the DMS, the impacts for which you are requesting compensatory mitigation credit 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.

Impact	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		
Impact	Neuse	03020201	0	0	0	0	0	0	18,129	14,380

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: Phil May, agent

ATTACHMENT 3

ACCEPTED WASTES

(EXCERPT FROM OPERATIONS MANUAL)

Operations Manual

Johnston County Landfill Facility Smithfield, North Carolina

Prepared for:

**Johnston County Department of Solid Waste Services
Smithfield, North Carolina**

**December 2013
Revised: May 2015**

NC LIC. NO. C-0828 (ENGINEERING)

SMITH+GARDNER

14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577



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Johnston County Landfill Facility Smithfield, North Carolina

Operations Manual

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Appendix A	Fire Occurrence Notification Form
Appendix B	Paint Filter Liquids Test
Appendix C	Waste Screening Form
Appendix D	Cell Activation Forms
Appendix E	Reclaimed Wastewater Training Information

2.0 WASTE HANDLING OPERATIONS

This section describes the required waste handling operations for the Johnston County Landfill facility. In addition to the MSW and C&D waste disposed of at this facility, the County also processes wood/yard waste, recyclables, scrap tires, and white goods. These materials are stored at the landfill facility until there are sufficient quantities for pick up by various recycling contractors.

2.1 Acceptable Wastes

2.1.1 MSW Landfill Unit

Non-hazardous solid waste as defined by NCGS 130A-290(a)(35) generated within the approved service area may be disposed of in the MSW landfill unit. In addition, the special wastes described in **Section 2.4.4** may also be disposed of in the MSW landfill unit.

2.1.2 C&D Landfill Unit

Only the following wastes generated within the approved service area may be disposed of in the C&D landfill unit:

- Construction and Demolition (C&D) Solid Waste: as defined in 15A NCAC 13B.0532(8) means solid waste resulting solely from construction, remodeling, repair, or demolition operations on pavement and buildings or structures. C&D waste does not include municipal and industrial wastes that may be generated by the on-going operations at buildings or structures.
- Inert Debris: as defined in 15A NCAC 13B.0101(22) means concrete, brick, concrete block, uncontaminated soil, gravel and rock, and untreated and unpainted wood.
- Land Clearing Waste: as defined in 15A NCAC 13B.0101(23) means solid waste which is generated solely from land-clearing activities, limited to stumps, trees, limbs, brush, grass, and other naturally occurring vegetative material.
- Asphalt: in accordance with NCGS 130A-294(m).
- Industrial solid waste that is generated by mobile or modular home manufacturers and asphalt shingle manufacturers. The waste must be separated at the manufacturing site to exclude municipal solid waste, hazardous waste, and other waste prohibited from disposal in a Construction and Demolition Landfill.
- Other Wastes as Approved by the Solid Waste Section of the Division of Waste Management.

In addition, the special wastes (asbestos only) described in **Section 2.4.4** may also be disposed of in the C&D landfill unit.

2.2 Prohibited Wastes

2.2.1 MSW Landfill Unit

The following wastes are prohibited from disposal within the MSW landfill unit:

- Used Oil and Motor Vehicle Oil Filters;
- Yard Waste;
- White Goods;
- Antifreeze (ethylene glycol);
- Aluminum Cans;
- Whole Scrap Tires;
- Lead Acid Batteries;
- Certain Recyclable Rigid Plastic Containers (per NCGS 130A-309.10(f)(11));
- Wooden Pallets;
- Oyster Shells;
- Discarded Computer Equipment and Televisions;
- Construction and Demolition Debris (C&D) (Except when allowed by the County).

In addition, operating criteria prohibit other materials from disposal within the MSW landfill unit. These materials include:

- Hazardous waste as defined by NCGS 130A-290(a)(8), including hazardous waste from conditionally exempt small quantity generators.
- Polychlorinated biphenyls (PCB) wastes as defined in 40 CFR 761 with the exception of trace amounts found in materials such as consumer electronics.
- Bulk or non-containerized liquid wastes unless the waste is household waste other than septic waste and waste oil; or the waste is leachate or gas condensate derived from the MSW landfill unit. A liquid determination will be performed by the paint filter test (see **Appendix B** for apparatus and procedure).
- Containers holding liquid wastes unless the waste is household waste.

2.2.2 C&D Landfill Unit

Only wastes as defined in **Section 2.1.2** above may be accepted for disposal in the C&D landfill unit. Prohibited wastes include waste exclusions listed in 15A NCAC 13B 0.0542 as follows:

ATTACHMENT 4

MONITORING REQUIREMENTS

**Constituents for Detection Monitoring
(40 CFR 258, Appendix I)**

Common name	CAS RN
Antimony	(Total)
Arsenic	(Total)
Barium	(Total)
Beryllium	(Total)
Cadmium	(Total)
Chromium	(Total)
Cobalt	(Total)
Copper	(Total)
Lead	(Total)
Nickel	(Total)
Selenium	(Total)
Silver	(Total)
Thallium	(Total)
Vanadium	(Total)
Zinc	(Total)
Acetone	67-64-1
Acrylonitrile	107-13-1
Benzene	71-43-2
Bromochloromethane	74-97-5
Bromodichloromethane	75-27-4
Bromoform; Tribromomethane	75-25-2
Carbon disulfide	75-15-0
Carbon tetrachloride	56-23-5
Chlorobenzene	108-90-7
Chloroethane; Ethyl chloride	75-00-3
Chloroform; Trichloromethane	67-66-3
Dibromochloromethane; Chlorodibromomethane	124-48-1
1,2-Dibromo-3-chloropropane; DBCP	96-12-8
1,2-Dibromoethane; Ethylene dibromide; EDB	106-93-4
o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1
p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7
trans-1,4-Dichloro-2-butene	110-57-6
1,1-Dichloroethane; Ethylidene chloride	75-34-3
1,2-Dichloroethane; Ethylene dichloride	107-06-2
1,1-Dichloroethylene; 1-1-Dichloroethene; Vinylidene chloride	75-35-4
cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2
trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene	156-60-5
1,2-Dichloropropane; Propylene dichloride	78-87-5
cis-1,3-Dichloropropene	10061-01-5
trans-1,3-Dichloropropene	10061-02-6
Ethylbenzene	100-41-4
2-hexanone; Methyl butyl ketone	591-78-6
Methyl bromide; Bromomethane	74-83-9
Methyl chloride; Chloromethane	74-87-3
Methylene bromide Dibromomethane	74-95-3
Methylene chloride; Dichloromethane	75-09-2
Methyl ethyl ketone; MEK; 2-Butanone	78-93-3
Methyl iodide; Iodomethane	74-88-4
4-Methyl-2-pentanone; Methyl isobutyl isobutyl ketone	108-10-1
Styrene	100-42-5
1,1,1,2-Tetrachloroethane	630-20-6
1,1,2,2-Tetrachloroethane	79-34-5
Tetrachloroethylene; Tetrachloroethene; Perchloroethylene	127-18-4
Toluene	108-88-3
1,1,1-Trichloroethane; Methylchloroform	71-55-6
1,1,2-Trichloroethane	79-00-5
Trichloroethylene; Trichloroethene	79-01-6
Trichlorofluoromethane; CFC-11	75-69-4
1,2,3-Trichloropropane	96-18-4
Vinyl acetate	108-05-4
Vinyl chloride	75-01-4
Xylenes	1330-20-7

ATTACHMENT 5

LOCATION RESTRICTIONS

15A NCAC 13B .1622 LOCATION RESTRICTIONS FOR MSWLF FACILITY SITING

MSWLF units shall comply with the siting criteria set forth in this Rule. In order to demonstrate compliance with specific criteria, documentation or approval by agencies other than the Division of Solid Waste Management may be required. The scope of demonstrations including design and construction performance shall be discussed in a site study and completed in the permit application.

- (1) Airport Safety.
 - (a) A new MSWLF unit shall be located no closer than 5,000 feet from any airport runway used only by piston-powered aircraft and no closer than 10,000 feet from any runway used by turbine-powered aircraft.
 - (b) Owners or operators proposing to site a new MSWLF unit or lateral expansion within a five-mile radius of any airport runway used by turbine-powered or piston-powered aircraft shall notify the affected airport and the Federal Aviation Administration prior to submitting a permit application to the Division.
 - (c) The permittee of any existing MSWLF unit or a lateral expansion located within 5,000 feet from any airport runway used by only piston-powered aircraft or within 10,000 feet from any runway used by turbine-powered aircraft shall demonstrate that the existing MSWLF unit does not pose a bird hazard to aircraft. The owner or operator shall place the demonstration in the operating record and notify the Division that it has been placed in the operating record.
 - (d) For purposes of this Paragraph:
 - (i) Airport means a public-use airport open to the public without prior permission and without restrictions within the physical capacities of the available facilities.
 - (ii) Bird hazard means an increase in the likelihood of bird/aircraft collisions that may cause damage to the aircraft or injury to its occupants.
- (2) Floodplains.
 - (a) New MSWLF units, existing MSWLF units, and lateral expansions shall not be located in 100-year floodplains unless the owners or operators demonstrate that the unit will not restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste so as to pose a hazard to human health and the environment.
 - (b) For purposes of this Paragraph:
 - (i) "Floodplain" means the lowland and relatively flat areas adjoining inland and coastal waters, including flood-prone areas of offshore islands, that are inundated by the 100-year flood.
 - (ii) "100-year flood" means a flood that has a 1-percent or greater chance of recurring in any given year or a flood of a magnitude equalled or exceeded once in 100 years on the average over a significantly long period.
 - (iii) "Washout" means the carrying away of solid waste by waters of the base flood.
- (3) Wetlands.
 - (a) New MSWLF units and lateral expansions shall not be located in wetlands, unless the owner or operator can make the following demonstrations to the Division:
 - (i) Where applicable under Section 404 of the Clean Water Act or applicable State wetlands laws, the presumption that a practicable alternative to the proposed landfill facility is available which does not involve wetlands is clearly rebutted.
 - (ii) The construction and operation of the MSWLF unit will not:
 - (A) Cause or contribute to violations of any applicable State water quality standard;
 - (B) Violate any applicable toxic effluent standard or prohibition under Section 307 of the Clean Water Act;
 - (C) Jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of a critical habitat, protected under the Federal Endangered Species Act of 1973; and
 - (D) Violate any requirement under the Marine Protection, Research, and Sanctuaries Act of 1972 for the protection of a marine sanctuary.
 - (iii) The MSWLF unit will not cause or contribute to significant degradation of wetlands. The owner or operator shall demonstrate the integrity of the MSWLF unit and its ability to protect ecological resources by addressing the following factors:
 - (A) Erosion, stability, and migration potential of native wetland soils, muds and deposits used to support the MSWLF unit;
 - (B) Erosion, stability, and migration potential of dredged and fill materials used to support the MSWLF unit;
 - (C) The volume and chemical nature of the waste managed in the MSWLF unit;
 - (D) Impacts on fish, wildlife, and other aquatic resources and their habitat from release of the solid waste;
 - (E) The potential effects of catastrophic release of waste to the wetland and the resulting impacts on the environment; and
 - (F) Any additional factors, as necessary, to demonstrate that ecological resources in the wetland are sufficiently protected.

- (iv) To the extent required under Section 404 of the Clean Water Act or applicable State wetlands laws, steps have been taken to attempt to achieve no net loss of wetlands (as defined by acreage and function) by first avoiding impacts to wetlands to the maximum extent practicable as required by Subitem (3)(a)(i) of this Rule, then minimizing unavoidable impacts to the maximum extent practicable, and finally offsetting remaining unavoidable wetland impacts through all appropriate and practicable compensatory mitigation actions (e.g., restoration of existing degraded wetlands or creation of man-made wetlands); and
 - (v) Sufficient information is available to make a reasonable determination with respect to these demonstrations.
- (b) For purposes of this Item, wetlands means those areas that are defined in 40 CFR 232.2(r).
- (4) Fault Areas.
- (a) New MSWLF units and lateral expansions shall not be located within 200 feet (60 meters) of a fault that has had displacement in Holocene time unless the owner or operator demonstrates to the Division that an alternative setback distance of less than 200 feet (60 meters) will prevent damage to the structural integrity of the MSWLF unit and will be protective of human health and the environment.
 - (b) For the purposes of this Item:
 - (i) "Fault" means a fracture or a zone of fractures in any material along which strata on one side have been displaced with respect to that on the other side.
 - (ii) "Displacement" means the relative movement of any two sides of a fault measured in any direction.
 - (iii) "Holocene" means the most recent epoch of the Quaternary period, extending from the end of the Pleistocene Epoch to the present.
- (5) Seismic Impact Zones.
- (a) New MSWLF units and lateral expansions shall not be located in seismic impact zones, unless the owner or operator demonstrates to the Division that all containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site.
 - (b) For the purposes of this Item:
 - (i) "Seismic impact zone" means an area with a ten percent or greater probability that the maximum horizontal acceleration in lithified earth material, expressed as a percentage of the earth's gravitational pull (g), will exceed 0.10g in 250 years.
 - (ii) "Maximum horizontal acceleration in lithified earth material" means the maximum expected horizontal acceleration depicted on a seismic hazard map, with a 90 percent or greater probability that the acceleration will not be exceeded in 250 years, or the maximum expected horizontal acceleration based on a site-specific seismic risk assessment.
 - (iii) "Lithified earth material" means all rock, including all naturally occurring and naturally formed aggregates or masses of minerals or small particles of older rock that formed by crystallization of magma or by induration of loose sediments. This term does not include man-made materials, such as fill, concrete, and asphalt, or unconsolidated earth materials, soil, or regolith lying at or near the earth surface.
- (6) Unstable Areas.
- (a) Owners or operators of new MSWLF units, existing MSWLF units, and lateral expansions located in an unstable area shall demonstrate that engineering measures have been incorporated into the MSWLF unit's design to ensure that the integrity of the structural components of the MSWLF unit will not be disrupted. The owner or operator shall consider the following factors, at a minimum, when determining whether an area is unstable:
 - (i) On-site or local soil conditions that may result in significant differential settling;
 - (ii) On-site or local geologic or geomorphologic features; and
 - (iii) On-site or local human-made features or events (both surface and subsurface).
 - (b) For purposes of this Item:
 - (i) "Unstable area" means a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity of some or all of the landfill structural components responsible for preventing releases from a landfill. Unstable areas can include poor foundation conditions, areas susceptible to mass movements, and Karst terranes.
 - (ii) "Structural components" means liners, leachate collection systems, final covers, run-on or run-off systems, and any other component used in the construction and operation of the MSWLF that is necessary for protection of human health and the environment.
 - (iii) "Poor foundation conditions" means those areas where features exist which indicate that a natural or man-induced event may result in inadequate foundation support for the structural components of an MSWLF unit.

- (iv) "Areas susceptible to mass movement" means those areas of influence (i.e., areas characterized as having an active or substantial possibility of mass movement) where the movement of earth material at, beneath, or adjacent to the MSWLF unit, because of natural or man-induced events, results in the downslope transport of soil and rock material by means of gravitational influence. Areas of mass movement include, but are not limited to, landslides, avalanches, debris slides and flows, soil fluction, block sliding, and rock fall.
 - (v) "Karst terranes" means areas where karst topography, with its characteristic surface and subterranean features, is developed as the result of dissolution of limestone, dolomite, or other soluble rock. Characteristic physiographic features present in karst terranes include, but are not limited to, sinkholes, sinking streams, caves, large springs, and blind valleys.
- (7) Cultural Resources. A new MSWLF unit or lateral expansion shall not damage or destroy an archaeological or historical property. The Department of Cultural Resources shall determine archeological or historical significance. To aid in making a determination as to whether the property is of archeological or historical significance, the Department of Cultural Resources may request the owner or operator to perform a site-specific survey which shall be included in the Site Study.
 - (8) State Nature and Historic Preserve. A new MSWLF unit or lateral expansion shall not have an adverse impact on any lands included in the State Nature and Historic Preserve.
 - (9) Water Supply Watersheds.
 - (a) A new MSWLF unit or lateral expansion shall not be located in the critical area of a water supply watershed or in the watershed for a stream segment classified as WS-I, in accordance with the rules codified at 15A NCAC 2B .0200 - "Classifications and Water Quality Standards Applicable To Surface Waters Of North Carolina."
 - (b) Any new MSWLF unit or lateral expansion, which shall discharge leachate to surface waters at the landfill facility and must obtain a National Pollution Discharge Elimination System (NPDES) Permit from the Division of Environmental Management pursuant to Section 402 of the United States Clean Water Act, shall not be located within watersheds classified as WS-II or WS-III, in accordance with the rules codified at 15A NCAC 2B .0200 - "Classifications and Water Quality Standards Applicable To Surface Waters Of North Carolina."
 - (10) Endangered and Threatened Species. A new MSWLF unit or lateral expansion shall not jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of a critical habitat, protected under the Federal Endangered Species Act of 1973.

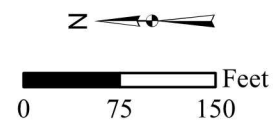
*History Note: Authority G.S. 130A-294;
Eff. October 9, 1993.*

ATTACHMENT 6

STREAM PHOTOS & NCSAM FORMS



**CAROLINA
ECOSYSTEMS**



★ Photo Locations
 Streams

2013 NC Statewide Aerial Photography

Map Date: December 2016

Revised:

Revised:

Revised:

**Johnston County Landfill
Johnston County**

Figure : Photo Locations



Photo 1: Looking north inside old pond bed.



Photo 2: Looking south inside old pond bed.



Photo 3: Looking south within old pond bed.



Photo 4: View of channel inside old pond bed.

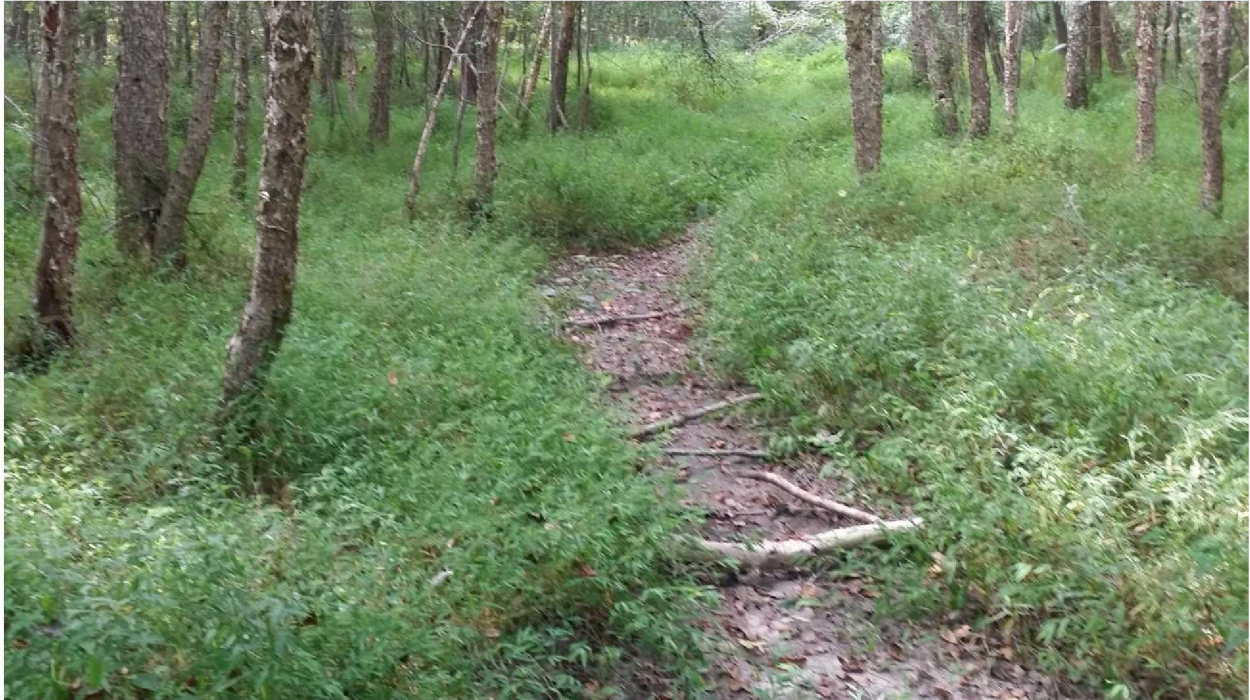


Photo 5: Looking south within old pond bed.

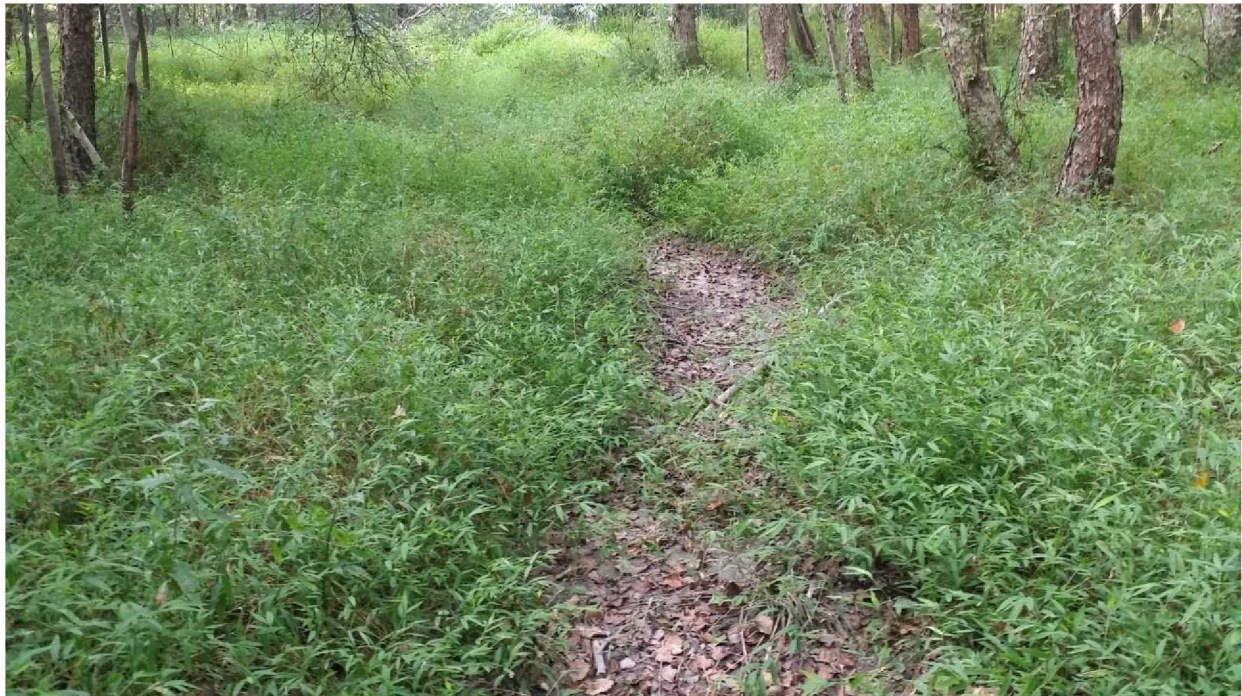


Photo 6: Looking south within old pond bed (~100' south of photo 5)



Photo 7: View of channel inside old pond bed.



Photo 8: Channel inside forest above old pond / NCSAM location "Middle Reach".



Photo 9: Looking south (upstream) inside forest.



Photo 10: Looking south (upstream) inside forest.



Photo 11: Looking north (downstream) inside forest.



Photo 12: View of channel inside forest, near wet/dry transition.



Photo 13: Looking south (upstream) inside forest. Intermittent reach.



Photo 14: Looking south (upstream) inside forest. Intermittent reach.



Photo 15: View of channel oriented southeast (upstream) at subsurface break in flow.



Photo 16: View of channel oriented down/south in intermittent reach.



Photo 17: View of channel looking downstream, inside intermittent reach.

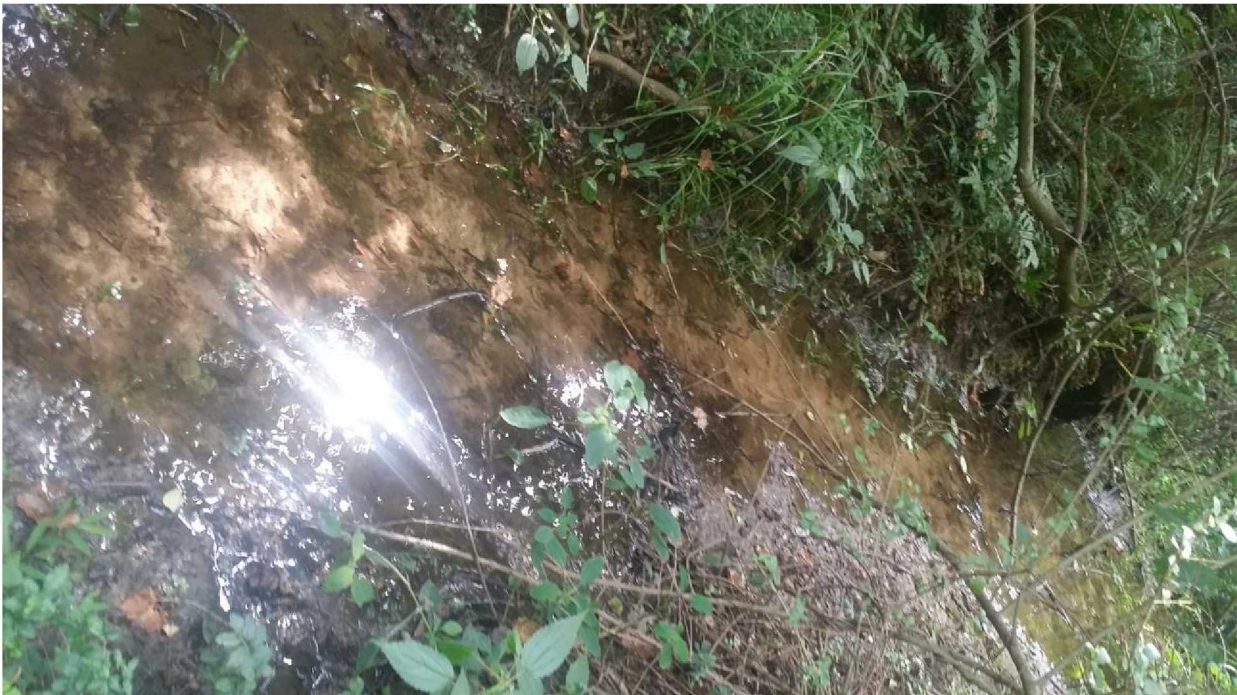


Photo 18: View of channel oriented southeast (upstream) inside perennial reach.



Photo 19: View of channel looking downstream inside perennial reach.



Photo 20: View of channel looking south (upstream)/ NCSAM site "Upper Reach".

NC SAM FIELD ASSESSMENT FORM
Accompanies User Manual Version 2.1

USACE AID #:	NCDWR #:
<p>INSTRUCTIONS: Attach a sketch of the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic quadrangle, and circle the location of the stream reach under evaluation. If multiple stream reaches will be evaluated on the same property, identify and number all reaches on the attached map, and include a separate form for each reach. See the NC SAM User Manual for detailed descriptions and explanations of requested information. Record in the "Notes/Sketch" section if any supplementary measurements were performed. See the NC SAM User Manual for examples of additional measurements that may be relevant.</p> <p>NOTE EVIDENCE OF STRESSORS AFFECTING THE ASSESSMENT AREA (do not need to be within the assessment area).</p>	
PROJECT / SITE INFORMATION:	
1. Project name (if any):	Johnston County Landfill
2. Date of evaluation:	July 22, 2016
3. Applicant/owner name:	Johnston County
4. Assessor name/organization:	C. Hopper, P. May, G. Price
5. County:	Johnston
6. Nearest named water body	
7. River Basin:	Neuse
8. Site coordinates (decimal degrees, at lower end of assessment reach):	on USGS 7.5-minute quad: Middle Creek
STREAM INFORMATION: (depth and width can be approximations)	
9. Site number (show on attached map):	Mid-Reach
10. Length of assessment reach evaluated (feet):	200
11. Channel depth from bed (in riffle, if present) to top of bank (feet):	0.5 <input type="checkbox"/> Unable to assess channel depth.
12. Channel width at top of bank (feet):	4
13. Is assessment reach a swamp stream?	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No
14. Feature type:	<input checked="" type="checkbox"/> Perennial flow <input checked="" type="checkbox"/> Intermittent flow <input type="checkbox"/> Tidal Marsh Stream
STREAM RATING INFORMATION:	
15. NC SAM Zone:	<input type="checkbox"/> Mountains (M) <input type="checkbox"/> Piedmont (P) <input checked="" type="checkbox"/> Inner Coastal Plain (I) <input type="checkbox"/> Outer Coastal Plain (O)
16. Estimated geomorphic valley shape (skip for Tidal Marsh Stream):	<input checked="" type="checkbox"/> a (more sinuous stream, flatter valley slope) <input type="checkbox"/> b (less sinuous stream, steeper valley slope)
17. Watershed size: (skip for Tidal Marsh Stream)	<input type="checkbox"/> Size 1 (< 0.1 mi ²) <input checked="" type="checkbox"/> Size 2 (0.1 to < 0.5 mi ²) <input type="checkbox"/> Size 3 (0.5 to < 5 mi ²) <input type="checkbox"/> Size 4 (≥ 5 mi ²)
ADDITIONAL INFORMATION:	
18. Were regulatory considerations evaluated? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If Yes, check all that apply to the assessment area.	
<input type="checkbox"/> Section 10 water <input type="checkbox"/> Classified Trout Waters <input type="checkbox"/> Water Supply Watershed (<input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> III <input type="checkbox"/> IV <input type="checkbox"/> V) <input type="checkbox"/> Essential Fish Habitat <input type="checkbox"/> Primary Nursery Area <input type="checkbox"/> High Quality Waters/Outstanding Resource Waters <input type="checkbox"/> Publicly owned property <input type="checkbox"/> NCDWR riparian buffer rule in effect <input checked="" type="checkbox"/> Nutrient Sensitive Waters <input type="checkbox"/> Anadromous fish <input type="checkbox"/> 303(d) List <input type="checkbox"/> CAMA Area of Environmental Concern (AEC) <input type="checkbox"/> Documented presence of a federal and/or state listed protected species within the assessment area. List species: _____ <input type="checkbox"/> Designated Critical Habitat (list species): _____	
19. Are additional stream information/supplementary measurements included in "Notes/Sketch" section or attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

1. **Channel Water – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams)**
 - A Water throughout assessment reach.
 - B No flow, water in pools only.
 - C No water in assessment reach.
2. **Evidence of Flow Restriction – assessment reach metric**
 - A At least 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the point of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within the assessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates).
 - B Not A
3. **Feature Pattern – assessment reach metric**
 - A A majority of the assessment reach has altered pattern (examples: straightening, modification above or below culvert).
 - B Not A.
4. **Feature Longitudinal Profile – assessment reach metric**
 - A Majority of assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, over widening, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of these disturbances).
 - B Not A
5. **Signs of Active Instability – assessment reach metric**
Consider only current instability, not past events from which the stream has currently recovered. Examples of instability include active bank failure, active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).
 - A < 10% of channel unstable
 - B 10 to 25% of channel unstable
 - C > 25% of channel unstable
6. **Streamside Area Interaction – streamside area metric**
Consider for the Left Bank (LB) and the Right Bank (RB).

LB	RB	
<input checked="" type="checkbox"/> A	<input type="checkbox"/> A	Little or no evidence of conditions that adversely affect reference interaction
<input type="checkbox"/> B	<input checked="" type="checkbox"/> B	Moderate evidence of conditions (examples: berms, levees, down-cutting, aggradation, dredging) that adversely affect reference interaction (examples: limited streamside area access, disruption of flood flows through streamside area, leaky or intermittent bulkheads, causeways with floodplain constriction, minor ditching [including mosquito ditching])
<input type="checkbox"/> C	<input type="checkbox"/> C	Extensive evidence of conditions that adversely affect reference interaction (little to no floodplain/intertidal zone access [examples: causeways with floodplain and channel constriction, bulkheads, retaining walls, fill, stream incision, disruption of flood flows through streamside area] or too much floodplain/intertidal zone access [examples: impoundments, intensive mosquito ditching]) or floodplain/intertidal zone unnaturally absent or assessment reach is a man-made feature on an interstream divide
7. **Water Quality Stressors – assessment reach/intertidal zone metric**
Check all that apply.
 - A Discolored water in stream or intertidal zone (milky white, blue, unnatural water discoloration, oil sheen, stream foam)
 - B Excessive sedimentation (burying of stream features or intertidal zone)

- C Noticeable evidence of pollutant discharges entering the assessment reach and causing a water quality problem
- D Odor (not including natural sulfide odors)
- E Current published or collected data indicating degraded water quality in the assessment reach. Cite source in the "Notes/Sketch" section.
- F Livestock with access to stream or intertidal zone
- G Excessive algae in stream or intertidal zone
- H Degraded marsh vegetation in the intertidal zone (removal, burning, regular mowing, destruction, etc.)
- I Other: _____ (explain in "Notes/Sketch" section)
- J Little to no stressors

8. Recent Weather – watershed metric

For Size 1 or 2 streams, D1 drought or higher is considered a drought; for Size 3 or 4 streams, D2 drought or higher is considered a drought.

- A Drought conditions and no rainfall or rainfall not exceeding 1 inch within the last 48 hours
- B Drought conditions and rainfall exceeding 1 inch within the last 48 hours
- C No drought conditions

9 Large or Dangerous Stream – assessment reach metric

Yes No Is stream is too large or dangerous to assess? **If Yes, skip to Metric 13 (Streamside Area Ground Surface Condition).**

10. Natural In-stream Habitat Types – assessment reach metric

10a. Yes No Degraded in-stream habitat over majority of the assessment reach (examples of stressors include excessive sedimentation, mining, excavation, in-stream hardening [for example, rip-rap], recent dredging, and snagging) **(evaluate for size 4 Coastal Plain streams only, then skip to Metric 12)**

10b. **Check all that occur** (occurs if > 5% coverage of assessment reach) **(skip for Size 4 Coastal Plain streams)**

- | | | |
|---|------------------------------------|---|
| <ul style="list-style-type: none"> <input type="checkbox"/> A Multiple aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) <input checked="" type="checkbox"/> B Multiple sticks and/or leaf packs and/or emergent vegetation <input checked="" type="checkbox"/> C Multiple snags and logs (including lap trees) <input type="checkbox"/> D 5% undercut banks and/or root mats and/or roots in banks extend to the normal wetted perimeter <input type="checkbox"/> E Little or no habitat | Check for Tidal Marsh Streams only | <ul style="list-style-type: none"> <input type="checkbox"/> F 5% oysters or other natural hard bottoms <input type="checkbox"/> G Submerged aquatic vegetation <input type="checkbox"/> H Low-tide refugia (pools) <input type="checkbox"/> I Sand bottom <input type="checkbox"/> J 5% vertical bank along the marsh <input type="checkbox"/> K Little or no habitat |
|---|------------------------------------|---|

*****REMAINING QUESTIONS ARE NOT APPLICABLE FOR TIDAL MARSH STREAMS*****

11. Bedform and Substrate – assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)

11a. Yes No Is assessment reach in a natural sand-bed stream? **(skip for Coastal Plain streams)**

11b. Bedform evaluated. **Check the appropriate box(es).**

- A Riffle-run section (evaluate 11c)
- B Pool-glide section (evaluate 11d)
- C Natural bedform absent **(skip to Metric 12, Aquatic Life)**

11c. In riffles sections, check all that occur below the normal wetted perimeter of the assessment reach – whether or not submerged. **Check at least one box in each row (skip for Size 4 Coastal Plain Streams and Tidal Marsh Streams).** Not Present (NP) = absent, Rare (R) = present but ≤ 10%, Common (C) = > 10-40%, Abundant (A) = > 40-70%, Predominant (P) = > 70%. Cumulative percentages should not exceed 100% for each assessment reach.

NP	R	C	A	P	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bedrock/saprolite
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Boulder (256 – 4096 mm)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cobble (64 – 256 mm)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gravel (2 – 64 mm)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sand (.062 – 2 mm)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Silt/clay (< 0.062 mm)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Detritus
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Artificial (rip-rap, concrete, etc.)

11d. Yes No Are pools filled with sediment? **(skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)**

12. Aquatic Life – assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)

12a. Yes No Was an in-stream aquatic life assessment performed as described in the User Manual?

If No, select one of the following reasons and skip to Metric 13. No Water Other: _____

12b. Yes No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.

1 >1 Numbers over columns refer to "individuals" for size 1 and 2 streams and "taxa" for size 3 and 4 streams.

- | | |
|---|--|
| <ul style="list-style-type: none"> <input type="checkbox"/> 1 Adult frogs <input type="checkbox"/> 1 Aquatic reptiles <input type="checkbox"/> 1 Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) <input type="checkbox"/> 1 Beetles (including water pennies) <input type="checkbox"/> 1 Caddisfly larvae (Trichoptera [T]) <input type="checkbox"/> 1 Asian clam (<i>Corbicula</i>) <input type="checkbox"/> 1 Crustacean (isopod/amphipod/crayfish/shrimp) <input type="checkbox"/> 1 Damselfly and dragonfly larvae <input type="checkbox"/> 1 Dipterans (true flies) <input type="checkbox"/> 1 Mayfly larvae (Ephemeroptera [E]) <input type="checkbox"/> 1 Megaloptera (alderfly, fishfly, dobsonfly larvae) <input type="checkbox"/> 1 Midges/mosquito larvae <input type="checkbox"/> 1 Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>) <input type="checkbox"/> 1 Mussels/Clams (not <i>Corbicula</i>) <input type="checkbox"/> 1 Other fish <input type="checkbox"/> 1 Salamanders/tadpoles <input type="checkbox"/> 1 Snails <input type="checkbox"/> 1 Stonefly larvae (Plecoptera [P]) <input type="checkbox"/> 1 Tipulid larvae | <ul style="list-style-type: none"> <input type="checkbox"/> >1 |
|---|--|

Worms/leeches

13. **Streamside Area Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types)**
Consider for the Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.

LB	RB		
<input checked="" type="checkbox"/> A	<input type="checkbox"/> A	Little or no alteration to water storage capacity over a majority of the streamside area	
<input type="checkbox"/> B	<input checked="" type="checkbox"/> B	Moderate alteration to water storage capacity over a majority of the streamside area	
<input type="checkbox"/> C	<input type="checkbox"/> C	Severe alteration to water storage capacity over a majority of the streamside area (examples include: ditches, fill, soil, compaction, livestock disturbance, buildings, man-made levees, drainage pipes)	

14. **Streamside Area Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types)**
Consider for the Left Bank (LB) and the Right Bank (RB) of the streamside area.

LB	RB		
<input type="checkbox"/> A	<input checked="" type="checkbox"/> A	Majority of streamside area with depressions able to pond water \geq 6 inches deep	
<input type="checkbox"/> B	<input type="checkbox"/> B	Majority of streamside area with depressions able to pond water 3 to 6 inches deep	
<input type="checkbox"/> C	<input checked="" type="checkbox"/> C	Majority of streamside area with depressions able to pond water < 3 inches deep	

15. **Wetland Presence – streamside area metric (skip for Tidal Marsh Streams)**

Consider for the Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal wetted perimeter of assessment reach.

LB	RB		
<input checked="" type="checkbox"/> Y	<input checked="" type="checkbox"/> Y	Are wetlands present in the streamside area?	
<input type="checkbox"/> N	<input type="checkbox"/> N		

16. **Baseflow Contributors – assessment reach metric (skip for size 4 streams and Tidal Marsh Streams)**

Check all contributors within the assessment reach or within view of and draining to the assessment reach.

A Streams and/or springs (jurisdictional discharges)
 B Ponds (include wet detention basins; do not include sediment basins or dry detention basins)
 C Obstruction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam)
 D Evidence of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage)
 E Stream bed or bank soil reduced (dig through deposited sediment if present)
 F None of the above

17. **Baseflow Detractors – assessment area metric (skip for Tidal Marsh Streams)**

Check all that apply.

A Evidence of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)
 B Obstruction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit)
 C Urban stream (\geq 24% impervious surface for watershed)
 D Evidence that the stream-side area has been modified resulting in accelerated drainage into the assessment reach
 E Assessment reach relocated to valley edge
 F None of the above

18. **Shading – assessment reach metric (skip for Tidal Marsh Streams)**

Consider aspect. Consider "leaf-on" condition.

A Stream shading is appropriate for stream category (may include gaps associated with natural processes)
 B Degraded (example: scattered trees)
 C Stream shading is gone or largely absent

19. **Buffer Width – streamside area metric (skip for Tidal Marsh Streams)**

Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break.

Vegetated		Wooded		
LB	RB	LB	RB	
<input checked="" type="checkbox"/> A	<input checked="" type="checkbox"/> A	<input checked="" type="checkbox"/> A	<input checked="" type="checkbox"/> A	\geq 100-feet wide or extends to the edge of the watershed
<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B	From 50 to < 100-feet wide
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C	From 30 to < 50-feet wide
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 30-feet wide
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E	< 10-feet wide or no trees

20. **Buffer Structure – streamside area metric (skip for Tidal Marsh Streams)**

Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width).

LB	RB		
<input checked="" type="checkbox"/> A	<input type="checkbox"/> A	Mature forest	
<input type="checkbox"/> B	<input checked="" type="checkbox"/> B	Non-mature woody vegetation or modified vegetation structure	
<input type="checkbox"/> C	<input type="checkbox"/> C	Herbaceous vegetation with or without a strip of trees < 10 feet wide	
<input type="checkbox"/> D	<input type="checkbox"/> D	Maintained shrubs	
<input type="checkbox"/> E	<input type="checkbox"/> E	Little or no vegetation	

21. **Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams)**

Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet).

If none of the following stressors occurs on either bank, check here and skip to Metric 22:

Abuts		< 30 feet		30-50 feet		
LB	RB	LB	RB	LB	RB	
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A	Row crops
<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B	Maintained turf
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C	Pasture (no livestock)/commercial horticulture
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D	Pasture (active livestock use)

22. **Stem Density – streamside area metric (skip for Tidal Marsh Streams)**

Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width).

LB	RB		
<input checked="" type="checkbox"/> A	<input type="checkbox"/> A	Medium to high stem density	
<input type="checkbox"/> B	<input type="checkbox"/> B	Low stem density	
<input type="checkbox"/> C	<input type="checkbox"/> C	No wooded riparian buffer or predominantly herbaceous species or bare ground	

23. **Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams)**

Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10-feet wide.

LB RB

- A A The total length of buffer breaks is < 25 percent.
 B B The total length of buffer breaks is between 25 and 50 percent.
 C C The total length of buffer breaks is > 50 percent.

24. Vegetative Composition – First 100 feet of streamside area metric (skip for Tidal Marsh Streams)

Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat.

LB RB

- A A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse.
 B B Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.
 C C Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.

25. Conductivity – assessment reach metric (skip for all Coastal Plain streams)

25a. Yes No Was a conductivity measurement recorded?

If No, select one of the following reasons. No Water Other: No conductivity meter

25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter).

- A <46 B 46 to < 67 C 67 to < 79 D 79 to < 230 E ≥ 230

Notes/Sketch:

NC SAM Stream Rating Sheet
Accompanies User Manual Version 2.1

Stream Site Name Johnston County Landfill
 Stream Category Ia2

Date of Evaluation July 22, 2016
 Assessor Name/Organization C. Hopper, P. May, G. Price

Notes of Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) YES
 Additional stream information/supplementary measurements included (Y/N) NO
 NC SAM feature type (perennial, intermittent, Tidal Marsh Stream) Intermittent

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	MEDIUM	HIGH
(2) Baseflow	LOW	HIGH
(2) Flood Flow	HIGH	HIGH
(3) Streamside Area Attenuation	HIGH	HIGH
(4) Floodplain Access	HIGH	HIGH
(4) Wooded Riparian Buffer	HIGH	HIGH
(4) Microtopography	LOW	LOW
(3) Stream Stability	HIGH	HIGH
(4) Channel Stability	HIGH	HIGH
(4) Sediment Transport	LOW	LOW
(4) Stream Geomorphology	HIGH	HIGH
(2) Stream/Intertidal Zone Interaction	NA	NA
(2) Longitudinal Tidal Flow	NA	NA
(2) Tidal Marsh Stream Stability	NA	NA
(3) Tidal Marsh Channel Stability	NA	NA
(3) Tidal Marsh Stream Geomorphology	NA	NA
(1) Water Quality	LOW	MEDIUM
(2) Baseflow	LOW	HIGH
(2) Streamside Area Vegetation	HIGH	HIGH
(3) Upland Pollutant Filtration	HIGH	HIGH
(3) Thermoregulation	HIGH	HIGH
(2) Indicators of Stressors	NO	NO
(2) Aquatic Life Tolerance	LOW	NA
(2) Intertidal Zone Filtration	NA	NA
(1) Habitat	LOW	HIGH
(2) In-stream Habitat	LOW	MEDIUM
(3) Baseflow	LOW	HIGH
(3) Substrate	LOW	LOW
(3) Stream Stability	HIGH	HIGH
(3) In-stream Habitat	MEDIUM	HIGH
(2) Stream-side Habitat	HIGH	HIGH
(3) Stream-side Habitat	HIGH	HIGH
(3) Thermoregulation	HIGH	HIGH
(2) Tidal Marsh In-stream Habitat	NA	NA
(3) Flow Restriction	NA	NA
(3) Tidal Marsh Stream Stability	NA	NA
(4) Tidal Marsh Channel Stability	NA	NA
(4) Tidal Marsh Stream Geomorphology	NA	NA
(3) Tidal Marsh In-stream Habitat	NA	NA
(2) Intertidal Zone Habitat	NA	NA
Overall	LOW	HIGH

NC SAM FIELD ASSESSMENT FORM
Accompanies User Manual Version 2.1

USACE AID #:	NCDWR #:
<p>INSTRUCTIONS: Attach a sketch of the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic quadrangle, and circle the location of the stream reach under evaluation. If multiple stream reaches will be evaluated on the same property, identify and number all reaches on the attached map, and include a separate form for each reach. See the NC SAM User Manual for detailed descriptions and explanations of requested information. Record in the "Notes/Sketch" section if any supplementary measurements were performed. See the NC SAM User Manual for examples of additional measurements that may be relevant.</p> <p>NOTE EVIDENCE OF STRESSORS AFFECTING THE ASSESSMENT AREA (do not need to be within the assessment area).</p>	
PROJECT / SITE INFORMATION:	
1. Project name (if any): <u>Johnston County Landfill</u>	2. Date of evaluation: <u>July 22, 2016</u>
3. Applicant/owner name: <u>Johnston County</u>	4. Assessor name/organization: <u>C. Hopper, P. May, G. Price</u>
5. County: <u>Johnston</u>	6. Nearest named water body: _____
7. River Basin: <u>Neuse</u>	on USGS 7.5-minute quad: <u>Middle Creek</u>
8. Site coordinates (decimal degrees, at lower end of assessment reach): _____	
STREAM INFORMATION: (depth and width can be approximations)	
9. Site number (show on attached map): <u>Upper Reach</u>	10. Length of assessment reach evaluated (feet): <u>200</u>
11. Channel depth from bed (in riffle, if present) to top of bank (feet): <u>0.5</u>	<input type="checkbox"/> Unable to assess channel depth.
12. Channel width at top of bank (feet): <u>0.8</u>	13. Is assessment reach a swamp stream? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
14. Feature type: <input checked="" type="checkbox"/> Perennial flow <input type="checkbox"/> Intermittent flow <input type="checkbox"/> Tidal Marsh Stream	
STREAM RATING INFORMATION:	
15. NC SAM Zone: <input type="checkbox"/> Mountains (M) <input type="checkbox"/> Piedmont (P) <input checked="" type="checkbox"/> Inner Coastal Plain (I) <input type="checkbox"/> Outer Coastal Plain (O)	
16. Estimated geomorphic valley shape (skip for Tidal Marsh Stream): <input checked="" type="checkbox"/> a (more sinuous stream, flatter valley slope) <input type="checkbox"/> b (less sinuous stream, steeper valley slope)	
17. Watershed size: (skip for Tidal Marsh Stream) <input type="checkbox"/> Size 1 (< 0.1 mi ²) <input checked="" type="checkbox"/> Size 2 (0.1 to < 0.5 mi ²) <input type="checkbox"/> Size 3 (0.5 to < 5 mi ²) <input type="checkbox"/> Size 4 (≥ 5 mi ²)	
ADDITIONAL INFORMATION:	
18. Were regulatory considerations evaluated? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If Yes, check all that apply to the assessment area.	
<input type="checkbox"/> Section 10 water	<input type="checkbox"/> Classified Trout Waters
<input type="checkbox"/> Essential Fish Habitat	<input type="checkbox"/> Primary Nursery Area
<input type="checkbox"/> Publicly owned property	<input type="checkbox"/> NCDWR riparian buffer rule in effect
<input type="checkbox"/> Anadromous fish	<input type="checkbox"/> 303(d) List
<input type="checkbox"/> Documented presence of a federal and/or state listed protected species within the assessment area.	<input type="checkbox"/> CAMA Area of Environmental Concern (AEC)
List species: _____	
<input type="checkbox"/> Designated Critical Habitat (list species): _____	
19. Are additional stream information/supplementary measurements included in "Notes/Sketch" section or attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

1. **Channel Water – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams)**
 - A Water throughout assessment reach.
 - B No flow, water in pools only.
 - C No water in assessment reach.
2. **Evidence of Flow Restriction – assessment reach metric**
 - A At least 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the point of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within the assessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates).
 - B Not A
3. **Feature Pattern – assessment reach metric**
 - A A majority of the assessment reach has altered pattern (examples: straightening, modification above or below culvert).
 - B Not A.
4. **Feature Longitudinal Profile – assessment reach metric**
 - A Majority of assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, over widening, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of these disturbances).
 - B Not A
5. **Signs of Active Instability – assessment reach metric**
Consider only current instability, not past events from which the stream has currently recovered. Examples of instability include active bank failure, active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).
 - A < 10% of channel unstable
 - B 10 to 25% of channel unstable
 - C > 25% of channel unstable
6. **Streamside Area Interaction – streamside area metric**
Consider for the Left Bank (LB) and the Right Bank (RB).

LB	RB	
<input type="checkbox"/> A	<input type="checkbox"/> A	Little or no evidence of conditions that adversely affect reference interaction
<input type="checkbox"/> B	<input type="checkbox"/> B	Moderate evidence of conditions (examples: berms, levees, down-cutting, aggradation, dredging) that adversely affect reference interaction (examples: limited streamside area access, disruption of flood flows through streamside area, leaky or intermittent bulkheads, causeways with floodplain constriction, minor ditching [including mosquito ditching])
<input type="checkbox"/> C	<input type="checkbox"/> C	Extensive evidence of conditions that adversely affect reference interaction (little to no floodplain/intertidal zone access [examples: causeways with floodplain and channel constriction, bulkheads, retaining walls, fill, stream incision, disruption of flood flows through streamside area] or too much floodplain/intertidal zone access [examples: impoundments, intensive mosquito ditching]) or floodplain/intertidal zone unnaturally absent or assessment reach is a man-made feature on an interstream divide
7. **Water Quality Stressors – assessment reach/intertidal zone metric**
Check all that apply.
 - A Discolored water in stream or intertidal zone (milky white, blue, unnatural water discoloration, oil sheen, stream foam)
 - B Excessive sedimentation (burying of stream features or intertidal zone)

- C Noticeable evidence of pollutant discharges entering the assessment reach and causing a water quality problem
- D Odor (not including natural sulfide odors)
- E Current published or collected data indicating degraded water quality in the assessment reach. Cite source in the "Notes/Sketch" section.
- F Livestock with access to stream or intertidal zone
- G Excessive algae in stream or intertidal zone
- H Degraded marsh vegetation in the intertidal zone (removal, burning, regular mowing, destruction, etc.)
- I Other: _____ (explain in "Notes/Sketch" section)
- J Little to no stressors

8. Recent Weather – watershed metric

For Size 1 or 2 streams, D1 drought or higher is considered a drought; for Size 3 or 4 streams, D2 drought or higher is considered a drought.

- A Drought conditions and no rainfall or rainfall not exceeding 1 inch within the last 48 hours
- B Drought conditions and rainfall exceeding 1 inch within the last 48 hours
- C No drought conditions

9 Large or Dangerous Stream – assessment reach metric

Yes No Is stream is too large or dangerous to assess? **If Yes, skip to Metric 13 (Streamside Area Ground Surface Condition).**

10. Natural In-stream Habitat Types – assessment reach metric

10a. Yes No Degraded in-stream habitat over majority of the assessment reach (examples of stressors include excessive sedimentation, mining, excavation, in-stream hardening [for example, rip-rap], recent dredging, and snagging) **(evaluate for size 4 Coastal Plain streams only, then skip to Metric 12)**

10b. **Check all that occur** (occurs if > 5% coverage of assessment reach) **(skip for Size 4 Coastal Plain streams)**

- | | | |
|--|------------------------------------|---|
| <ul style="list-style-type: none"> <input type="checkbox"/> A Multiple aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) <input checked="" type="checkbox"/> B Multiple sticks and/or leaf packs and/or emergent vegetation <input checked="" type="checkbox"/> C Multiple snags and logs (including lap trees) <input checked="" type="checkbox"/> D 5% undercut banks and/or root mats and/or roots in banks extend to the normal wetted perimeter <input type="checkbox"/> E Little or no habitat | Check for Tidal Marsh Streams only | <ul style="list-style-type: none"> <input type="checkbox"/> F 5% oysters or other natural hard bottoms <input type="checkbox"/> G Submerged aquatic vegetation <input type="checkbox"/> H Low-tide refugia (pools) <input type="checkbox"/> I Sand bottom <input type="checkbox"/> J 5% vertical bank along the marsh <input type="checkbox"/> K Little or no habitat |
|--|------------------------------------|---|

*****REMAINING QUESTIONS ARE NOT APPLICABLE FOR TIDAL MARSH STREAMS*****

11. Bedform and Substrate – assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)

11a. Yes No Is assessment reach in a natural sand-bed stream? **(skip for Coastal Plain streams)**

11b. Bedform evaluated. **Check the appropriate box(es).**

- A Riffle-run section (evaluate 11c)
- B Pool-glide section (evaluate 11d)
- C Natural bedform absent **(skip to Metric 12, Aquatic Life)**

11c. In riffles sections, check all that occur below the normal wetted perimeter of the assessment reach – whether or not submerged. **Check at least one box in each row (skip for Size 4 Coastal Plain Streams and Tidal Marsh Streams).** Not Present (NP) = absent, Rare (R) = present but ≤ 10%, Common (C) = > 10-40%, Abundant (A) = > 40-70%, Predominant (P) = > 70%. Cumulative percentages should not exceed 100% for each assessment reach.

NP	R	C	A	P	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bedrock/saprolite
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Boulder (256 – 4096 mm)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cobble (64 – 256 mm)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gravel (2 – 64 mm)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sand (.062 – 2 mm)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Silt/clay (< 0.062 mm)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Detritus
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Artificial (rip-rap, concrete, etc.)

11d. Yes No Are pools filled with sediment? **(skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)**

12. Aquatic Life – assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)

12a. Yes No Was an in-stream aquatic life assessment performed as described in the User Manual?

If No, select one of the following reasons and skip to Metric 13. No Water Other: _____

12b. Yes No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.

1 >1 Numbers over columns refer to "individuals" for size 1 and 2 streams and "taxa" for size 3 and 4 streams.

- Adult frogs
- Aquatic reptiles
- Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)
- Beetles (including water pennies)
- Caddisfly larvae (Trichoptera [T])
- Asian clam (*Corbicula*)
- Crustacean (isopod/amphipod/crayfish/shrimp)
- Damselfly and dragonfly larvae
- Dipterans (true flies)
- Mayfly larvae (Ephemeroptera [E])
- Megaloptera (alderfly, fishfly, dobsonfly larvae)
- Midges/mosquito larvae
- Mosquito fish (*Gambusia*) or mud minnows (*Umbra pygmaea*)
- Mussels/Clams (not *Corbicula*)
- Other fish
- Salamanders/tadpoles
- Snails
- Stonefly larvae (Plecoptera [P])
- Tipulid larvae

Worms/leeches

13. **Streamside Area Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types)**
Consider for the Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.

LB	RB		
<input type="checkbox"/> A	<input type="checkbox"/> A	Little or no alteration to water storage capacity over a majority of the streamside area	
<input type="checkbox"/> B	<input type="checkbox"/> B	Moderate alteration to water storage capacity over a majority of the streamside area	
<input type="checkbox"/> C	<input type="checkbox"/> C	Severe alteration to water storage capacity over a majority of the streamside area (examples include: ditches, fill, soil, compaction, livestock disturbance, buildings, man-made levees, drainage pipes)	

14. **Streamside Area Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types)**
Consider for the Left Bank (LB) and the Right Bank (RB) of the streamside area.

LB	RB		
<input type="checkbox"/> A	<input type="checkbox"/> A	Majority of streamside area with depressions able to pond water \geq 6 inches deep	
<input type="checkbox"/> B	<input type="checkbox"/> B	Majority of streamside area with depressions able to pond water 3 to 6 inches deep	
<input type="checkbox"/> C	<input type="checkbox"/> C	Majority of streamside area with depressions able to pond water < 3 inches deep	

15. **Wetland Presence – streamside area metric (skip for Tidal Marsh Streams)**

Consider for the Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal wetted perimeter of assessment reach.

LB	RB		
<input type="checkbox"/> Y	<input type="checkbox"/> Y	Are wetlands present in the streamside area?	
<input type="checkbox"/> N	<input type="checkbox"/> N		

16. **Baseflow Contributors – assessment reach metric (skip for size 4 streams and Tidal Marsh Streams)**

Check all contributors within the assessment reach or within view of and draining to the assessment reach.

A Streams and/or springs (jurisdictional discharges)
 B Ponds (include wet detention basins; do not include sediment basins or dry detention basins)
 C Obstruction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam)
 D Evidence of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage)
 E Stream bed or bank soil reduced (dig through deposited sediment if present)
 F None of the above

17. **Baseflow Detractors – assessment area metric (skip for Tidal Marsh Streams)**

Check all that apply.

A Evidence of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)
 B Obstruction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit)
 C Urban stream (\geq 24% impervious surface for watershed)
 D Evidence that the stream-side area has been modified resulting in accelerated drainage into the assessment reach
 E Assessment reach relocated to valley edge
 F None of the above

18. **Shading – assessment reach metric (skip for Tidal Marsh Streams)**

Consider aspect. Consider "leaf-on" condition.

A Stream shading is appropriate for stream category (may include gaps associated with natural processes)
 B Degraded (example: scattered trees)
 C Stream shading is gone or largely absent

19. **Buffer Width – streamside area metric (skip for Tidal Marsh Streams)**

Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break.

Vegetated		Wooded		
LB	RB	LB	RB	
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A	\geq 100-feet wide or extends to the edge of the watershed
<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B	From 50 to < 100-feet wide
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C	From 30 to < 50-feet wide
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 30-feet wide
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E	< 10-feet wide or no trees

20. **Buffer Structure – streamside area metric (skip for Tidal Marsh Streams)**

Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width).

LB	RB		
<input type="checkbox"/> A	<input type="checkbox"/> A	Mature forest	
<input type="checkbox"/> B	<input type="checkbox"/> B	Non-mature woody vegetation or modified vegetation structure	
<input type="checkbox"/> C	<input type="checkbox"/> C	Herbaceous vegetation with or without a strip of trees < 10 feet wide	
<input type="checkbox"/> D	<input type="checkbox"/> D	Maintained shrubs	
<input type="checkbox"/> E	<input type="checkbox"/> E	Little or no vegetation	

21. **Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams)**

Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet).

If none of the following stressors occurs on either bank, check here and skip to Metric 22:

Abuts		< 30 feet		30-50 feet		
LB	RB	LB	RB	LB	RB	
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A	Row crops
<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B	Maintained turf
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C	Pasture (no livestock)/commercial horticulture
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D	Pasture (active livestock use)

22. **Stem Density – streamside area metric (skip for Tidal Marsh Streams)**

Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width).

LB	RB		
<input type="checkbox"/> A	<input type="checkbox"/> A	Medium to high stem density	
<input type="checkbox"/> B	<input type="checkbox"/> B	Low stem density	
<input type="checkbox"/> C	<input type="checkbox"/> C	No wooded riparian buffer or predominantly herbaceous species or bare ground	

23. **Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams)**

Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10-feet wide.

LB RB

- A A The total length of buffer breaks is < 25 percent.
 B B The total length of buffer breaks is between 25 and 50 percent.
 C C The total length of buffer breaks is > 50 percent.

24. Vegetative Composition – First 100 feet of streamside area metric (skip for Tidal Marsh Streams)

Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat.

LB RB

- A A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse.
 B B Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.
 C C Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.

25. Conductivity – assessment reach metric (skip for all Coastal Plain streams)

25a. Yes No Was a conductivity measurement recorded?

If No, select one of the following reasons. No Water Other: No conductivity meter

25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter).

A <46 B 46 to < 67 C 67 to < 79 D 79 to < 230 E ≥ 230

Notes/Sketch:

NC SAM Stream Rating Sheet
Accompanies User Manual Version 2.1

Stream Site Name Johnston County Landfill
 Stream Category la2

Date of Evaluation July 22, 2016
 Assessor Name/Organization C. Hopper, P. May, G. Price

Notes of Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) YES
 Additional stream information/supplementary measurements included (Y/N) NO
 NC SAM feature type (perennial, intermittent, Tidal Marsh Stream) Perennial

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	MEDIUM	
(4) Floodplain Access	MEDIUM	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	LOW	
(3) Stream Stability	HIGH	
(4) Channel Stability	HIGH	
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	HIGH	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	MEDIUM	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	HIGH	
(2) In-stream Habitat	MEDIUM	
(3) Baseflow	HIGH	
(3) Substrate	LOW	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	HIGH	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	MEDIUM	
(3) Thermoregulation	HIGH	
(2) Tidal Marsh In-stream Habitat	NA	
(3) Flow Restriction	NA	
(3) Tidal Marsh Stream Stability	NA	
(4) Tidal Marsh Channel Stability	NA	
(4) Tidal Marsh Stream Geomorphology	NA	
(3) Tidal Marsh In-stream Habitat	NA	
(2) Intertidal Zone Habitat	NA	
Overall	HIGH	

Burdette, Jennifer a

From: Phil <phil.may@carolinaeco.com>
Sent: Wednesday, April 12, 2017 5:17 PM
To: Burdette, Jennifer a
Cc: 'Chris Hopper'
Subject: FW: RE: Mitigation request
Attachments: Johnston County Landfill - Buffer Statement of Availability 04-12-17.pdf

Jennifer

Attached is the statement of availability for Johnston County mitigation. Please let us know if you need anything else.

Thanks
Phil

Phil May
CAROLINA ECOSYSTEMS INC.
(919) 606-1065

From: Chris Hopper [mailto:chris.hopper@carolinaeco.com]
Sent: Wednesday, April 12, 2017 5:13 PM
To: Phil May
Subject: Fwd: RE: Mitigation request

Please forward to Jennifer.

I don't have her address in my phone

----- Original message -----

From: Ian Hazelhoff <ihazelhoff@wildlandseng.com>
Date: 04/12/2017 5:03 PM (GMT-05:00)
To: Chris Hopper <chris.hopper@carolinaeco.com>
Subject: RE: Mitigation request

Chris,

Nice speaking with you over the phone just now, the Statement of Availability is attached, let me know if there are questions! We are happy to submit the official invoice as the process moves forward, just give me a shout. Have a good one,



Statement of Buffer Mitigation Credit Availability

April 12, 2017

Rick Hester
Johnston County Manager
PO Box 1049
Smithfield, NC 27577

Re: Availability of Riparian Buffer credits for the Johnston County Landfill project
Bank Name: Old Savannah Nutrient Offset & Buffer Bank
Bank Sponsor: Wildlands Holdings II, LLC (wholly owned by Wildlands Engineering, Inc.)
DWR Project #: 2016-0611
Riparian Buffer Credits Available: 75,957 sq. ft.
Neuse 03020201 River Basin
Applicable Local Government/Municipality jurisdiction: NC Division of Water Resources

Dear Mr. Hester:

Wildlands Holdings II, LLC has the above mentioned Riparian Buffer Credits from the Old Savannah Nutrient Offset & Buffer Bank (DWQ Project #: 2016-0611), to satisfy the Riparian Buffer mitigation requirements related to the above mentioned project. The Project is located within the service area (HUC 03020201 - non-Falls) of the Bank.

This letter is not a guarantee of availability or a reservation of the credits – it is simply a statement of availability required to assist you in obtaining a permit for your planned impact. An invoice for this transaction will be sent upon your request and we will reserve the credits for a period of 30 days from invoice. Final transfer of the credits will be made upon receipt of a copy of the 401 Water Quality Certification Authorization Certificate from the NC Department of Environmental Quality approving the Riparian Buffer mitigation purchase from the Bank and upon receipt of your payment to Wildlands Holding II, LLC. We will then issue a credit transfer certificate verifying your credit purchase to the North Carolina Division of Water Resources and to you for your records.

We appreciate the opportunity to assist you with your mitigation requirements. Please contact me at (205) 807-0800 or ihazelhoff@wildlandseng.com if you have any questions or need any additional information.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ihazelhoff'.

Ihazelhoff
Wildlands Engineering, Inc.
ihazelhoff@wildlandseng.com
O: (704) 332-7754 ex. 120 M: (205) 807-0800