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# **Environmental Impact Assessment for the Westfall Site**

**Fearrington, Chatham County, North Carolina**

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**S&EC Project No. 8126.E4**

## Table of Contents

<b>1.0 Proposed Project Description and Need.....</b>	<b>1</b>
<b>2.0 Alternatives Analysis .....</b>	<b>3</b>
<b>3.0 Existing Environment and Project Impacts .....</b>	<b>4</b>
<b>3.1 Geography .....</b>	<b>4</b>
<b>3.1.1 Geographic Setting/Geology.....</b>	<b>4</b>
<b>3.1.2 Topography .....</b>	<b>4</b>
<b>3.1.3 FEMA Floodplains .....</b>	<b>4</b>
<b>3.2 Soils and Prime Farmlands.....</b>	<b>5</b>
<b>3.3 Land Use.....</b>	<b>6</b>
<b>3.4 Wetlands.....</b>	<b>7</b>
<b>3.5 Public Lands, Scenic, and Recreational Areas .....</b>	<b>8</b>
<b>3.6 Areas of Archaeological or Historical Value .....</b>	<b>8</b>
<b>3.7 Air Quality .....</b>	<b>9</b>
<b>3.8 Noise Levels.....</b>	<b>9</b>
<b>3.9 Light Levels.....</b>	<b>9</b>
<b>3.10 Water Resources .....</b>	<b>10</b>
<b>3.10.1 Surface Water.....</b>	<b>10</b>
<b>3.11 Fish and Aquatic Habitats .....</b>	<b>10</b>
<b>3.12 Wildlife and Natural Vegetation.....</b>	<b>11</b>
<b>3.12.1 Natural Communities .....</b>	<b>11</b>
<b>3.12.2 Endangered and Threatened Species .....</b>	<b>13</b>
<b>3.12.3 Wildlife .....</b>	<b>15</b>
<b>3.12.4 Invasive Species .....</b>	<b>16</b>
<b>3.12.5 Forest Resources.....</b>	<b>16</b>
<b>3.13 Hazardous Materials.....</b>	<b>16</b>
<b>4.0 State &amp; Federal Permits Required .....</b>	<b>17</b>
<b>5.0 References .....</b>	<b>17</b>

### Tab-1 Appendix A - Figures

**Figures 1 (A & B) - USGS Topographic Maps**

**Figure 2 - Chatham County 2-foot Lidar Based Topographic Map**

**Figure 3 - FEMA Floodplains Map**

**Figure 4 - USDA Soil Survey Map**

**Figure 5 - Existing Land Use Map**

**Figure 6 - Wetland and Buffer Sketch Map**

**Figure 7 - Public Lands and Natural Areas Map**

**Figure 8 - Cultural and Historical Resources Map**

**Figure 9 - Hydrologic Unit Map**

**Figure 10 - Natural Communities Map**

**Figure 11 - 2010 Aerial Map**

**Tab-2 Appendix B - Species List : Plants and Animals Observed on the Westfall Site (2007-2012)**

**Tab-3 Appendix C - Site Photographs (Natural Communities, Cultural Resources, Wildlife Habitat)**

**Tab-4 Appendix D**

**Table 1 - Net Land Area Computation (Original Approved)**

**Table 1A - Net Land Area Computation (Revised for Conditional Use Permit Modification)**

**Table 2 - Maximum Potential Impervious Calculation (Original Approved)**

**Table 2A - Maximum Potential Impervious Calculation (Revised for Conditional Use Permit Modification)**

**Tab-5 Appendix F**

**Existing Conditions Exhibit**

**Vicinity Map**

**Overall Modified Master Plan Exhibit**

**Existing Utilities Exhibit**

**Proposed Water Mains Exhibit**

**Proposed Sanitary Sewer Mains Exhibit**

**Pool Area Amenity Exhibit**

**Play Field Amenity Area Exhibit**

**Stormwater Management Plan Exhibit**

**Previously Approved Open Space Exhibit**

**Proposed Open Space Exhibit**

**Modified Open Space Exhibit**

**Tab-6 Appendix G**

**Wetland Delineation for Westfall Associates, LLC Maps 1-11**

**Tab-7 Appendix H**

**Correspondence with Chatham County Historical Society**

## **1.0 Proposed Project Description and Need**

The Project, initially called “Booth Mountain,” was approved in January of 2005. As required by Chatham County, the name has since been changed to “Westfall.” The originally approved Project consisted of approximately 294-acres located between Jack Bennett Road (SR 1717) and Lystra Church Road (SR 1721) within the Williams Township. The Project was approved for 180 lots. After the project received zoning approval from the County, the developer submitted for and received approval of a Preliminary Plat for the first phase of construction. Project construction for the first phase began in 2006-2007. This first phase of construction was partially completed. All roadways and utility mains within the first phase of development were constructed. However, work on the Project stopped during the economic crisis and the project was conveyed by the original developer to the lending institution funding the construction loan(s).

Applicant recently purchased the Project in the winter of 2011. Since its purchase of the property, Applicant has been diligently moving forward with completion of the existing utilities so that they can be certified for operation and has finalized agreements with Aqua of North Carolina, Inc. (“Aqua”) for the completion and operation of the wastewater treatment facility. The wastewater treatment facility has been conveyed to Aqua. In addition, off-site roadway improvements for the Phase C area along Jack Bennett Road have been completed per the North Carolina Department of Transportation’s requirements. Home construction on lots within the Phase C area has begun.

There are currently 92 existing lots for which a final plat has been recorded with the Chatham County Register of Deeds. Please refer the attached Existing Conditions Exhibit map for the current existing condition.

The original project was divided into three different sections – A, B, & C. Section A area, north of Herndon Creek to Lystra Road, contained larger estate lots. The Section B area is located south of Herndon Creek to Jack Bennett Road along the western most portion of the site. Section C area is located east of Section B along Jack Bennett Road and is separated from Section C by property owned by the Chatham County Board of Education.

The purpose of this modification is to add additional property and increase the overall residential density of the project while implementing new environmental requirements per current County regulations. Approximately, 14.071 acres of land are being added to the existing 294.316 acres such that the new overall project area will consist of 308.387 acres. The revised land plan increases the total number of lots from 180 to 242, or an additional 62 lots but decreases the overall development footprint by reducing the size of the lots. The original plan was approved for 0.61 units per acre while the proposed plan is 0.78 units per acre which is well under the allowable 1.09 units per acre. The existing platted lots within Section A will remain intact, other than a few modifications to locate the new Amenity area at the end of Westfall Way and modification of lots at the end of Raven Ridge Court to accommodate a water quality BMP. Section B will be re-platted in it’s entirety to accommodate revised lot widths throughout this section. Section C will remain intact and no changes to the existing platted lots will occur. Refer to Table 1 (original approval) and 1A (modified for approval) for the Net Land Area Computations.



The revised plan has increased the residential density by increasing the land area and by utilizing the existing infrastructure (roads and utilities) and reducing the size of the proposed residential lots. In reducing the size of the proposed lots we have also increased the amount of overall open space within the development. The original approved plan had approximately 99.9 acres of planned open space, however minor changes were made during the preliminary plat phase which increased the total area of open space to 108.81 acres. The revised plan increases this open space by 34.66 acres for a total of 140.20 acres.

In addition to increasing the open space the revised plan will also reduce the total amount of impervious surface. The approved plan proposed an impervious surface of approximately 18.5% of the total land area. The revised plan only proposes 17.8% of the total land area. The main reduction in impervious surface was relative to the reduction of asphalt paving for roadways. There was also a decrease in sidewalks and reductions to the proposed wastewater treatment and maintenance areas impervious areas.

Please refer to the attached Vicinity Map relative to the project location and surrounding areas.

Refer to the Existing Conditions Exhibit attached relative to the existing roadway network and refer to the Overall Modified Master Plan relative to the proposed facilities.

The proposed plan and modification, as previously mentioned, has an existing approval in place as a Planned Residential Development. However, the project does fit in within the surrounding land uses of residential development, forested areas, and light commercial uses within a 1-mile radius of the site. Within a 5-mile radius of the site, there are several other similar Planned Residential Developments such as The Preserve at Jordan Lake, The Legacy, and Windfall. Other mixed use developments within this area are Governors Club, Briar Chapel and Fearington Village, not to mention several existing or planned commercial centers.

Roadways will be designed to the appropriate NCDOT design standard such that land disturbance for each phase of construction will be minimized to the degree possible. Overall disturbed areas will be in accordance and as allowed per the Chatham County Soil Erosion and Sedimentation Control Ordinance.

The proposed amenity area swim facility will have an approximate 1,500 s.f. structure which will house bathrooms, pool pumps, and storage area. This structure will be single story and approximately 20-feet in height. Residential homes will range in square footage from approximately 1,800-5,000 s.f.

Since this is a residential community the majority of all buildings will be residential in nature. The amenity facility located within Section A will provide a swimming pool and small building structure which will house bathrooms, pumps/pool equipment, and storage areas for furniture. There will also be several smaller picnic structures provided in various locations within the amenity areas located in Sections A, B, and C. The wastewater treatment facility will also have a few small structures which will house components for the treatment devices.

The proposed development will only have parking spaces provided at the two amenity areas. The number of these spaces in each area will be small. Approximately 28 spaces will be provided at the Pool Amenity and approximately 17 spaces along the play field amenity area.

Definitive construction plans depicting actual cleared areas have not been prepared at this stage of the approval process, however all roadway corridors shown on the Overall Modified Master Plan Exhibit will be graded and roadways paved. It is also anticipated the amenity areas for the pool, play field, and tot lots will also require some level of grading and pavement. Landscaping will also be provided in these areas, but definitive plans have not been completed at this time. The attached Overall Master Plan provides an approximate idea of areas which would be cleared for roadways, ponds, and homes. The extent of clearing on each home lot will vary. All areas which will be graded will be done so per current Chatham County requirements.

Refer to the Existing Utilities Exhibit, Proposed Water Mains Exhibit, and the Proposed Sanitary Sewer Mains Exhibit for the existing and proposed utilities locations and connections.

Refer to the Existing Utilities Exhibit and the Proposed Sanitary Sewer Mains Exhibit for wastewater management system.

Refer to the Overall Modified Master Plan Exhibit, individual Amenity Plan Exhibits, and the Typical Roadway Sections Exhibit for reference of impervious surface locations. See Table 2 and 2A for comparison of the differences in overall impervious surface calculations between the original approval and modified plan. Impervious surface percentage for the site overall has been reduced from the original proposal.

Refer to the Stormwater Management Plan Exhibit for layout of proposed stormwater control devices. The current existing approval was approved prior to the new stormwater regulations and this approval only required dry detention basins for treatment of the first ½-inch of runoff volume. There are three existing dry detention structures within the existing constructed and platted areas which will remain as-is. All other areas will be changed to include the design and installation of Water Quality structures which will treat the 1-inch one hour storm volume in addition to detaining the 10-year storm event to pre-developed peak discharge rate per the current County regulations. These devices will be wet detention ponds per NCDENR Best Management Practices and will provide for removal of 85% Total Suspended Solids which will provide a much higher level of treatment relative to the existing approved plan.

## **2.0 Alternatives Analysis**

Since this is a modification to an existing approved Planned Residential Development the alternative is to move forward with the current approved plan. However, we feel the modification submitted, although increasing density provides for a better alternative as it relates to stormwater management, open space preservation and environmental stewardship.

The modified plan increases the amount of open space, incorporates new buffer requirements along ephemeral streams, a reduction in impervious surfaces, and the incorporation of a better overall stormwater management strategy relative to water quality.

### **3.0 Existing Environment and Project Impacts**

The following sections (3.1 – 3.13) describe conditions as observed during several visits to the project site between 2007 and 2012, and as collected from other sources including GIS data resources and publicly available records.

#### **3.1 Geography**

The Westfall site is located in the Piedmont physiographic province in the Cape Fear River Basin. Figures 1A and 1B depict the site as shown on the Fearington USGS topographic quadrangle.

##### **3.1.1 Geographic Setting and Geology**

The Westfall site is situated at the western edge of the Carolina Slate Belt, where this belt meets an area of intrusive metamorphosed granitic rock. No impacts to the geographic setting or geology are anticipated.

##### **3.1.2 Topography**

Existing topography on the site ranges from steep slopes to relatively flat areas. Drainage is generally southeastern. Elevation above sea level ranges from 246 feet at the southeastern floodplain of Herndon Creek to 600 feet at the summit of Boothe Hill, in the northwestern portion of the site. For reference, USGS and Chatham County 2-foot Lidar based topographic maps of the site are included as Figures 1A, 1B, and 2.

Anticipated impacts to topography include site grading, excavation, and filling for lot development, roadway construction, erosion and sediment control devices, and utility installation. All roadway corridors shown on the Overall Modified Master Plan exhibit will require grading. It is also anticipated the amenity areas for the pool, play field, and tot lots will also require some level of mass grading in order to develop the site plans as depicted. Some areas of mass grading may be required for home construction however; in general most lots will only require the area immediately surrounding the footprint of proposed houses to be graded.

Definitive construction plans depicting actual planned grading have not been prepared at this stage of the approval process, however all efforts will be made to ensure that earthwork is balanced on-site and no overburden is required to be hauled off-site.

##### **3.1.3 FEMA Floodplains**

Figure 3 depicts the studied extent of FEMA flood hazard areas, as per the NC Flood Mapping Program data, on and adjacent to the Westfall site. The project site is located on FEMA FIRM panel 9784J, effective February 2, 2007. Herndon Creek is studied by limited detailed methods upstream to cross section 059, which is located in the southeastern portion of the Westfall site. Special flood hazard areas on the site include Zone AE within the 100-year floodplain and Zone X outside of the 100-year floodplain. Upstream of cross section 059, Herndon Creek is not studied and no floodplains or special flood hazard areas are shown.

No impacts to the 100-year floodplain are anticipated.

There are no known contaminated areas located within the site which will require mitigation.

During construction and grading there may be areas which require soil to be relocated from one area to another in order to accomplish a balance earthwork. Proper erosion control devices will be provided in these areas.

Erosion control plans for the site development will be prepared according the latest County requirements. The overall strategy will be to utilize the proposed stormwater management structures as temporary erosion control devices since these are located in draws and tributaries of larger drainage areas. This will minimize the number of overall structures required which will also help minimize the amount of clearing required for erosion control structures. It is anticipated additional measures such as temporary skimmer basins, inlet protection, silt fencing, etc will also be utilized to minimize sediment laden runoff.

### **3.2 Soils and Prime Farmlands**

Figure 4 depicts the soil series located on the Westfall site as shown on the Chatham County Soil Survey. Descriptions of select characteristics of these soil series follow. For additional information, the interested reader is referred to the Soil Survey of Chatham County, North Carolina (NRCS 2006).

ChA - Chewacla and Wehadkee Soils, 0 to 2 % slopes, frequently flooded: Poorly to somewhat poorly drained, unsuited for urban development and septic fields. This is a hydric soil series, and is considered to be prime farmland if drained and protected from flooding.

CrB – Creedmoor-Green Level complex, 2 to 6 % slopes: Somewhat poorly to moderately well drained, poorly suited for urban development and septic tanks due to high shrink-swell potential, wetness, and restricted permeability. This series is considered to be prime farmland.

CrC – Creedmoor-Green Level complex, 6 to 10 % slopes; Somewhat poorly to moderately well drained, poorly suited for urban development and septic tanks due to high shrink-swell potential, wetness, and restricted permeability. This series is considered to be farmland of statewide importance.

WdE – Wedowee Sandy Loam, 15 to 35 % slopes, bouldery: Well drained, moderately permeable, low shrink-swell potential poorly suited for urban development due to steep slopes and boulders. This series is not considered to be important farmland.

WeB – Wedowee Sandy Loam, 2 to 6 % slopes: Well drained, moderately permeable, low shrink-swell potential, well suited for urban development, moderately suited for septic fields due to restricted permeability. This series is considered to be prime farmland.

WeC – Wedowee Sandy Loam, 6 to 10 % slopes: Well drained, moderately permeable, low shrink-swell potential, moderately suited for urban development due to steep slopes, moderately suited for septic fields due to restricted permeability and steep slopes. This series is considered to be farmland of statewide importance.

WeD – Wedowee Sandy Loam, 10 to 15 % slopes: Well drained, moderately permeable, low shrink-swell potential, moderately suited for urban development due to steep slopes, moderately suited for septic fields due to restricted permeability and steep slopes. This series is considered to be farmland of statewide importance.

WeE – Wedowee Sandy Loam, 15 to 25 % slopes: Well drained, moderately permeable, low shrink-swell potential, poorly suited for urban development and septic fields due to steep slopes. This series is not considered to be important farmland.

Anticipated impacts to soils during development include grading, excavation and filling during construction. These activities will modify the composition of the soils within the Westfall site. In order to minimize impacts to soils, development on many lots will be limited to the areas immediately surrounding the footprint of proposed houses. Portions of the site have previously been cleared and graded, and disturbance to the soil has already occurred. The following table lists approximate estimates of anticipated existing and future disturbance to soils, including farmland soils.

Soil Series	Farmland Classification	Approximate Total Acreage On-Site	Existing Disturbed Acreage *	Proposed Total Disturbed Acreage	Proposed Undisturbed Acreage
ChA	Prime if Drained	4.39	0.12	0.12	4.27
CrC	Statewide Importance	36.28	6.00	13.44	22.84
CrB	Prime	33.38	0.92	26.70	6.68
WdE	Not Important	12.41	0.61	3.37	9.04
WeB	Prime	4.48	1.00	3.98	0.5
WeC	Statewide Importance	39.96	26.46	23.13	16.83
WeD	Statewide Importance	7.63	1.86	4.37	3.26
WeE	Not Important	169.01	28.57	90.11	78.9

\*Existing disturbed acreage calculated based on previously cleared areas shown on 2010 aerial

### 3.3 Land Use

The Existing land use within and adjacent to the site is primarily a mix of forested areas and residential development, with few light industrial areas. A portion of the site has previously been cleared and infrastructure (roads, wastewater plant, stormwater devices, and some utilities) installed. The remainder of the site is forested. The Westfall site and the majority of the surrounding area are currently zoned as R-1 for residential development. Other zoning designations within a 1-mile radius of the site include Unzoned, MH-NC, B-1, CU-IND-L, O&I, and R-5. Zoning and land use is shown in Figure 5.

The proposed change in land use of forested portions of the Westfall site to residential development is consistent with the surrounding land use. Portions of the site have been designated as open space, and many of these areas will remain in a forested or mostly forested condition after development. Additionally, many lots will be cleared and graded only to the extent necessary to site a residential dwelling, with the remainder of the lot area left in a forested.

The modified site plan calls for 242 lots, with approximately 143.95 acres set aside as open space (approximately 47% of the site).

### 3.4 Wetlands

A detailed wetland delineation and Cape Fear stream buffer evaluation of the Westfall site was conducted in July of 2004. Streams and wetlands were reviewed and confirmed by the US Army Corps

of Engineers (USACE). These streams and wetlands were surveyed and a final survey map was submitted to the USACE and a Signed Jurisdictional Determination was received from the USACE in August of 2007 that was good for 5 years. USACE Nationwide Permits 12 & 39 and North Carolina Division of Water Quality (DWQ) 401 approval were issued for wetland and stream impacts to the Westfall site in October of 2007. The construction of the approved activities within these areas was completed in 2007. No additional wetland or stream impacts are proposed for the Westfall site; therefore no further permits will be requested from the USACE or DWQ.

Violations NOV-2008-PC-0176, NOV-2008-PC-0643 and NOV-2008-PC-0833 were issued in March of 2009 based upon a General Site Permit Inspection performed by DWQ in February of 2009. A final Repair and Stabilization Plan was submitted and approved by the DWQ and USACE in September of 2009. Repair and Stabilization was performed in December of 2009. Three year monitoring of the repair and stabilization began in January of 2010. Year Three Monitoring was conducted in July of 2012. Close out of the monitoring based upon the success of the repair and stabilization was approved by Monte Mathews of the USACE during a site visit in August of 2012. A site visit was conducted with Lauren Witherspoon of the DWQ to review the success of the repair and stabilization in October of 2012. Two of the three areas repaired and stabilized no longer require any monitoring. The crossing at Lystra Road may require additional monitoring until construction activities in this area are complete.

A re-verification of the streams and wetlands was conducted by S&EC in July 2012. A site visit was conducted with Monte Mathews of the USACE in August of 2012 to confirm the stream and wetland delineation. The final survey map depicting the findings of the site meeting with the USACE was submitted to the USACE for a Jurisdictional Determination in October of 2012. Wetlands and streams on-site have been approximated on the attached Wetland Sketch Map, presented as Figure 6. The final survey maps submitted to the USACE for sign off are presented Appendix G. Based on survey map preparation, the total wetland acreage within the area evaluated for this Environmental Impact Assessment is approximately 9.2 acres. Chatham County buffers have been added to wetlands due to the modification of the Westfall site plan.

The detailed wetland delineation consisted of traversing the property to examine soils, vegetation, and hydrology across the site in search of areas that meet the criteria for jurisdictional wetlands as described by the procedures set forth in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0) (USACE April 2012). Areas on the site with positive indicators of hydric soils, evidence of wetland hydrology, and presence of hydrophytic vegetation were flagged with sequentially numbered, pink S&EC flagging. Proof of wetland hydrology would be the existence of hydric soils with oxidized root channels in the upper 12 inches of the soil profile, water borne deposits, drift lines, scour marks, drainage patterns, regional indicators of soil saturation, etc. Surface waters such as intermittent and perennial stream channels, ponds, and lakes, which are also subject to regulation by the US Army Corps of Engineers (USACE) as waters of the US, were also identified. These surface waters may also be referred to as jurisdictional waters to indicate that they are within the jurisdiction of the USACE. It is important to note that wetlands are also classified as waters of the US and regulated by the USACE under authority of the Clean Water Act (33 USC 1344).

Ephemeral channels are also regulated by Chatham County. Ephemeral channels were identified during the wetland delineation and stream evaluation conducted in July of 2012, and is also shown in Figure 6. The Ephemeral Review Packet was submitted to Dan LaMontagne of the Chatham County Land and Water Resources Division in August of 2012.

The wetlands onsite were identified as both Headwater and Bottomland Hardwood Forest wetland type as outlined in the publication A Field Guide to North Carolina Wetlands. These wetland types are common throughout the piedmont region of North Carolina and are found mainly along headwater

streams and floodplains like the ones onsite. The primary functions of the wetlands on-site include flood attenuation, pollutant removal, and wildlife habitat.

### **3.5 Public Lands and Scenic, Recreational, and State Natural Areas**

The Westfall site is adjacent to a public land owned by the US Army Corps of Engineers and managed by the NC Wildlife Resources Commission as part of the Jordan Game Lands. This public land is located generally southeast of the Westfall site and shares approximately 0.24 miles of border with the Westfall site in the vicinity of Herndon Creek.

The Game Lands area adjacent to the Westfall site is already designated as an Archery Only zone. As such, no additional impacts to recreational use by hunters using firearms are anticipated; however, the NCWRC may decide to change the area to be a designated Safety Zone following development of the Westfall site, which will disallow hunting in the area.

Two areas designated by the NC Natural Heritage Program as Significant Natural Heritage Areas (SNHA) overlap the Westfall site. These are Boothe Hill and the Herndon Creek Ravine. Boothe Hill overlaps approximately 47.58 acres of the northwestern portion of the project site. This area is currently forested and has not been disturbed by recent development. The Herndon Creek Ravine overlaps approximately 70.73 acres of the project site in the vicinity of Herndon Creek. Of this area, approximately 10.36 acres within the project site has been previously disturbed by existing development.

Anticipated impacts to Boothe Hill and the Herndon Creek Ravine include clearing and grading for residential development. While there are no building restrictions designated to SNHA's, the modified site plan minimizes impacts to these areas. Approximately 12.75 acres of the Boothe Hill SNHA and 50.55 acres of the Herndon Creek Ravine SNHA will be preserved within the proposed Open Space. This is an increase in open space within the SNHA's from the previously approved site plan.

### **3.6 Areas of Archaeological or Historical Value**

A review of online records maintained by the North Carolina State Historic Preservation Office (SHPO) was conducted in September of 2012.

No historic structures are documented by SHPO within the proposed Westfall site. Three existing structures are documented by SHPO to exist within a 1-mile radius of the site. These structures have been surveyed and do not have a historic designation. One additional structure, also with no historic designation, has been removed or destroyed. Figure 8 depicts surveyed structures documented by SHPO in the vicinity of the Westfall site.

Surveyed structures within a 1-mile radius of the Westfall site include:

- CH0230 – Pierson House
- CH 0268 – Sidney Dean house
- CH0369 – Isiah Cole House
- Ch0512 – Pink & James Wesley Carson House (Gone)

The ruin of an old house with a standing stone chimney exists on the Westfall site. It is likely that this chimney is over 50 years old; however, it has not been documented by SHPO. This chimney was GPS-located by S&EC, and is also shown on Figure 8. Photographs of this chimney are included in Appendix C.

No impacts are anticipated to any historic structures documented by SHPO. The existing chimney, which is not documented by SHPO, is within an area proposed for development, and will be removed.

No areas of archaeological significance were noted during previous submittals of the Westfall site plan. A request for comments has been sent to the State Office of Archaeology.

Applicant has consulted with the Chatham County Historical Association regarding the chimney and any possible but unconfirmed cemetery locations. The exchange of correspondence is attached hereto. Applicant has invited the Association to the property to conduct an on-site review of the chimney and to search for any cemeteries. Applicant has not located any cemeteries on site. To the extent any cemeteries are found, Applicant will comply with all applicable laws with respect to the same.

### **3.7 Air Quality**

The proposed development is a residential neighborhood and impacts on ambient air quality will be minimal if any.

Open burning during construction may take place, depending on conditions prevailing at time of need. There will be no open burning after development build out.

Since this is a residential project, there are only two areas where parking will be provided. There will be approximately 28 parking spaces provided at the amenity swimming pool and approximately 12 parking spaces will be provided close to the play field amenity area.

The two existing sanitary sewer pump stations on-site have odorophos odor control chemical feeds to aid in odor control. The existing wastewater treatment facility also will have operating provisions for odor control. The modification as submitted will not affect the operation of these existing facilities or have any additional negative impact on the surroundings.

### **3.8 Noise Levels**

Currently noise levels on-site are relatively low and consist of typical construction projects. Construction is active in Section A and Section C.

It is anticipated that noise levels generated on-site will be the same as the previous approval.

### **3.9 Light Levels**

The proposed plan modification will increase the residential density, so the only impact will be relative to the additional home lighting which will be minimal. All lighting will conform to the requirements of the Chatham County Zoning Ordinance.

### **3.10 Water Resources**

The project is located within the Cape Fear River Basin. Please refer to Figure 9 for a detailed hydrologic map of the site and surrounding areas.

Drinking water source for the project will be provided by Chatham County.



### 3.10.1 Surface Waters

Surface waters on the Westfall site flow into Herndon Creek in the Jordan Lake watershed, which has been classified in NC-DWQ's "Classification and Water Quality Standards Applicable to Surface Waters and Wetlands of North Carolina" as WS-IV; NSW, CA. A hydrologic map is provided as Figure 9. S&EC's stream buffer evaluation consisted of examining each feature on the site that is shown on the most recent version of the US Geological survey's 7.5 Minute Quadrangle or NRCS soil survey using NC-DWQ stream evaluation techniques. 10 jurisdictional streams and 6 Ephemeral drainages were identified during the site evaluation, the approximate locations of which are illustrated in Figure 6. An additional perennial stream was mapped during S&EC's stream evaluation on July of 2012. This stream was confirmed by the USACE during the August 2012 site visit. The site plan was adjusted based upon these findings to avoid any impacts to the additionally mapped stream. There are no additional impacts to any streams due to the modification of the Westfall site plan. Additional buffers have been added to the Westfall site due to the modification of the Westfall site plan.

Additional benefits to surface waters at the Westfall site due to the modification of the site plan include an overall reduction in impervious surface area which will decrease run off to surface waters on and off site. Also, more stringent storm water treatment is being implemented due to the Jordan Lake storm water regulations.

***NOTE: Streams on-site have been identified in the field, confirmed by the USACE, and surveyed by a licensed professional surveyor. A final survey map has been submitted to the USACE for sign-off. Ephemeral drainages on-site are awaiting verification by Chatham County.***

### 3.10.2 Groundwater

Drinking water for the Westfall site will be provided by Chatham County Public Works and no groundwater wells will be utilized at Westfall. The spray area to be used by the wastewater treatment facility has been reduced and with current regulations for treatment there are no impacts anticipated to groundwater.

## 3.11 Fish and Aquatic Habitats

Fish and aquatic habitat within the Westfall site consists of Herndon Creek and its tributaries and adjacent wetlands. Although no specific survey for fish or aquatic organisms was conducted, several species of freshwater fish were observed in Herndon Creek during the field reconnaissance. Piles of small rocks observed in the creek indicate chub nesting activity. These nests, or "reds", are often used as breeding and spawning areas by multiple fish species. In addition to fish, various other aquatic and semi-aquatic animals were observed on the site within Herndon Creek and its adjacent wetlands and tributaries. Tributaries and wetland seeps on the site support a healthy population of the NHP-designated Significantly Rare Carolina Ladle Crayfish (*Cambarus davidi*). Herndon Creek also contains large populations of the Rocky River Crayfish (*Cambarus hobbsorum*), and Two-lined Salamander (*Eurycea cirrigera*). Several Northern Dusky Salamanders (*Desmognathus fuscus*), Pickerel Frogs (*Rana (Lithobates) palustris*), and a single specimen of the Mud Salamander (*Pseudotriton montanus*) were also found in Herndon Creek or its tributaries. Temporary pools in the floodplain of Herndon Creek were observed to support breeding populations of American Toads (*Bufo (Anaxyrus) americanus*), Spotted Salamanders (*Ambystoma maculatum*), Spring Peepers (*Pseudacris crucifer*), Uplands Chorus Frogs (*Pseudacris feriarum*), and other amphibians. The portion of Herndon Creek impounded by beavers was observed to support a large population of the Paper Pondshell (*Utterbackia imbecilis*), in addition to Blue-spotted Sunfish (*Enneacanthus gloriosus*), Eastern Newts

(*Notophthalmus viridescens*), and various freshwater turtle species. For a full list of aquatic species incidentally observed on the site during field work, please refer to Appendix B.

Anticipated impacts to aquatic habitat include road and sewer line crossings. Culverted road crossings with adequate aquatic life passageways have already been constructed across two streams, and a sewer line has been installed across Herndon Creek and its adjacent wetlands. Incidental observation of aquatic organisms in the vicinity of these impacts shows that many species, including the Carolina Ladle Crayfish, persist immediately upstream and downstream of the impacts.

### 3.12 Wildlife and Natural Vegetation

The wildlife and natural vegetation assessment of the Westfall site included both field reconnaissance and investigation of North Carolina Natural Heritage Program (NHP) records. The overall condition of the site with respect to its existing vegetation and wildlife species composition was observed.

#### 3.12.1 Natural Communities

Natural Communities and habitat types on the Westfall site include dry oak-hickory, dry-mesic oak-hickory, mesic mixed hardwoods, pine dominant areas, bottomland hardwoods, semipermanent impoundments, and previously cleared and/or paved areas. Descriptions and locations of these areas follow.

Dry oak-hickory forest: This community type on the Westfall site is approximately 0.49 acres in size, and is restricted to the summit and a portion of the southern slope of Boothe Hill. Although the entirety of Boothe Hill is described by NHP as being dry-mesic oak-hickory forest, the summit and uppermost south facing slope contain a very high percentage of White Oaks (*Quercus alba*), indicating more dry conditions than the surrounding slope areas.

Species composition within the dry oak-hickory forest is as follows:

Canopy dominated by White Oak, with few Post Oaks (*Quercus stellata*). Understory less dense and composed of very few Dogwood (*Cornus florida*) and young Red Maple (*Acer rubrum*). Herb stratum is very sparse. Vine stratum at ground level composed of dense Muscadine (*Vitis rotundifolia*).

Dry-mesic oak-hickory forest: This community type is widespread and covers approximately 131.87 acres on the Westfall site.

Species composition within the dry-mesic oak-hickory forest is as follows: Canopy composed of Southern Red Oak (*Quercus falcata*), Northern Red Oak (*Quercus rubra*), Mockernut Hickory (*Carya tomentosa*), and Tulip Poplar (*Liriodendron tulipifera*). The dominant canopy species within this community type on certain north-facing slopes adjacent to Lystra Road changes to Chestnut Oak (*Quercus montana*) and these areas resemble more mesic Piedmont monadnock forests. Understory is moderately dense and varies across the site. Generally, the understory is composed of Dogwood, Redbud (*Cercis canadensis*), Red Maple, Persimmon (*Diospyros virginiana*), Maple-leaved Viburnum (*Viburnum acerifolium*), Winged Elm (*Ulmus alata*), Blackgum (*Nyssa sylvatica*) and Sourwood (*Oxydendrum arboreum*). Herb stratum is sparse, with Spotted Wintergreen (*Chimaphila maculata*), Wild Ginger (*Hexastylis* sp.), Crane-fly Orchid (*Tipularia discolor*), Hoary Mountainmint (*Pycnanthemum incanum*), Puttyroot (*Aplectrum hyemale*) and Christmas Fern (*Polystichum acrostichoides*). Vine stratum composed primarily of Muscadine, with some Poison Ivy (*Toxicodendron radicans*) and Virginia Creeper (*Parthenocissus quinquefolia*).

Mesic mixed hardwood forest: This community type covers approximately 62.02 acres of the site. It is found on the lower portions of slopes and north-facing slopes on the Westfall site, and adjacent to streams.

Species composition within the mesic mixed hardwood forest is as follows: Canopy varies across the site, but is generally composed of Tulip Poplar, Sweet Gum (*Liquidambar styraciflua*), Umbrella Magnolia (*Magnolia tripetala*), Green Ash (*Fraxinus pennsylvanica*), Sycamore (*Platanus occidentalis*), Willow Oak (*Quercus phellos*), and Northern Red Oak, and Southern Red Oak. Understory includes Witch Hazel (*Hamamelis virginiana*), Serviceberry (*Amelanchier arborea*), and other sapling hardwood species. Throughout most of the site, the herbaceous stratum within this community type is generally either sparse or composed primarily of Christmas Fern. Sporadic other herbaceous species include Sedges (*Carex sp.*), Lady Fern (*Athyrium filix-femina*), Ebony Spleenwort (*Asplenium platyneuron*).

Species composition within this community type on certain north-facing slopes of Herndon Creek and one of its tributaries changes significantly. The canopy in these areas is dominated by mature Beech (*Fagus grandifolia*). These north-facing slopes have an apparently more diverse herbaceous species composition, including Black Cohosh (*Cimicifuga racemiflora*), Bloodroot (*Sanguinaria canadensis*), Windflower (*Thalictrum thalictroides*), Upland Dwarf Iris (*Iris verna*), Rattlesnake Orchid (*Goodyera pubescens*), Round-lobed Hepatica (*Anemone americana*), Trillium (*Trillium sp.*), and Wild Sarsaparilla (*Aralia nudicaulis*).

Pine dominant areas: Approximately 25.86 acres of the site in several small patches, which would likely otherwise be dry-mesic oak-hickory or mesic mixed hardwoods, were harvested within the last 20 years and planted in Loblolly Pine (*Pinus taeda*).

Species composition within pine dominant areas is generally as follows: Near monoculture of relatively densely planted Loblolly Pine (*Pinus taeda*). Few sapling hardwoods occur in the understory, and these areas generally have a very sparse herbaceous and vine stratum.

Bottomland hardwoods: This community type accounts for approximately 8.46 acres of the Westfall site, and is restricted to the less steep topography in the floodplain of Herndon Creek.

Species composition within the bottomland hardwoods is as follows: Canopy dominated by large Sycamore and Tulip Poplar, with many Umbrella Magnolia and River Birch. The understory is moderately dense, and includes Possumhaw (*Ilex decidua*), Ironwood (*Carpinus caroliniana*), and Tag Alder (*Alnus serrulata*) as well as the invasive Chinese Privet (*Ligustrum sinense*). The herb stratum is generally dense, and includes False Nettle and the invasive Japanese Stilt Grass (*Microstegium vimineum*). Vines are common, with Muscadine the dominant species. Other vines include Japanese Honeysuckle (*Lonicera japonica*), Roundleaf Greenbrier (*Smilax rotundifolia*), and Poison Ivy.

Semipermanent impoundment: This community type, located in the southeast portion of the Westfall site is the result of a beaver dam across Herndon Creek. The impounded area within the site boundaries is approximately 0.77 acres. Vegetation in and around the impoundment consists of a mix of emergent and wetland herbs, shrubs, and trees.

Species composition within the semi permanent impoundment is as follows: The canopy is sparse, with very few large trees at the edges of the impoundment. Canopy species include River Birch (*Betula nigra*) and Black Willow (*Salix nigra*). Shrubs are sporadic and include Buttonbush (*Cephalanthus occidentalis*) and Persimmon. Herbs dominate this community

type, and include Woolgrass (*Scirpus cyperinus*), Common Rush (*Juncus effusus*), Cattail (*Typha latifolia*), Wartremoving Herb (*Murdannia keisak*), and False Nettle (*Boehmeria cylindrica*).

Previously cleared: Areas that have been previously cleared or paved account for approximately 78.14 acres on the Westfall site. Portions of this area that have not been paved consist of a mix of primarily herbaceous grasses, with sporadic young woody trees and shrubs. Most of the invasive species located on the site are found in these areas.

Species composition within unpaved areas that have been previously cleared is as follows: There is no canopy stratum. The largest plants in this area are sporadic young Loblolly Pines and the fast-growing invasive species Tree of Heaven (*Ailanthus altissima*) and Princess Tree (*Paulownia tomentosa*). Other woody tree and shrub species include many seedlings and small saplings of species in the surrounding forested areas, as well as Winged Sumac (*Rhus copallinum*). Herbs dominate these areas, and include Sericea Lespedeza (*Lespedeza cuneata*), Broomsedge Bluestem (*Andropogon virginicus*), Dogfennel (*Eupatorium capillifolium*), Blackberry (*Rubus sp.*), Thistle (*Cirsium vulgare*), and Common Mullein (*Verbascum thapsus*).

### 3.12.2 Endangered Species

Endangered species research and site surveys were previously performed for the existing development. Endangered species research for the purposes of this report focused only on portions of the site added since the previous approvals. The scope of rare species investigated during the preparation of this Environmental Impact Assessment includes all federally protected Endangered and Threatened species documented by the NC Natural Heritage program as occurring in Chatham and nearby Orange Counties and all federally listed, state listed, and NHP listed species documented within a 2-mile radius of the boundaries of the recently added site areas. The tables below describe these species and their habitats, with an assessment of whether potentially suitable habitat for these species may exist on the recently added portions of the Westfall site.

**Chatham and Orange County Federally Protected Endangered and Threatened Species**

<u>Scientific Name</u>	<u>Common Name</u>	<u>Fed. Status</u>	<u>State Status</u>	<u>Co. Status</u>	<u>Habitat Comments</u>	<u>Potentially Suitable Habitat On-site?</u>
<i>Alasmidonta heterodon</i>	Dwarf Wedgemussel	E	E	Orange – Current	Tar and Neuse drainages; mainly near Fall Line	No
<i>Echinacea laevigata</i>	Smooth Coneflower	E	E	Orange – Historical	Glades, woodlands, and open areas over mafic rocks	No
<i>Lindera melissifolia</i>	Pondberry	E	E	Orange – Historical	Carolina bays and seasonally wet depressions	No
<i>Notropis mekistocholas</i>	Cape Fear Shiner	E	E	Chatham – Current	Cape Fear drainage	No
<i>Picoides borealis</i>	Red-cockaded Woodpecker	E	E	Chatham, Orange – Historical	Mature open pine forests, mainly longleaf	No
<i>Ptilimnium nodosum</i>	Harperella	E	E	Chatham – Current	Rocky riverbeds	No
<i>Rhus michauxii</i>	Michaux's Sumac	E	E	Orange – Historical	Sandhills, sandy forests, woodland, woodland	No

					edges	
--	--	--	--	--	-------	--

**Federal, State, and NHP-listed Species documented within a 2-mile radius of the boundaries of recently added portions of the site (Chatham County)**

<u>Scientific Name</u>	<u>Common Name</u>	<u>Fed. Status</u>	<u>State Status</u>	<u>EO. Status</u>	<u>Habitat Comments (as per NHP)</u>	<u>Potentially Suitable Habitat On-site?</u>
<i>Cambarus davidi</i>	Carolina Ladle Crayfish		SR	Current	Neuse and Cape Fear drainages	Yes – Found on-site
<i>Haliaeetus leucocephalus</i>	Bald Eagle	BGPA	T	Current	Mature forests near large bodies of water	No
<i>Monotropsis odorata</i>	Sweet Pinesap	FSC	SC-V	Historical	Dry forests and bluffs	Yes
<i>Thermopsis mollis</i>	Appalachian Golden-banner		SC-V	Historical	Dry ridges and open woodlands	Yes

### 3.12.3 Wildlife

The Westfall site supports many species of mammals, birds, reptiles, and amphibians, as well as several species of fish and aquatic and terrestrial invertebrates. During site visits, a large population of Wild Turkey (*Meleagris gallopavo*) and many White-tailed Deer (*Odocoileus virginianus*) were observed. Please refer to the species list provided as Appendix B for a list of wildlife observed on the Westfall site.

The Westfall site currently contains good quality habitat for many species of wildlife. Oaks, hickories, Persimmons, and other trees and shrubs provide food for mammals and birds. The predominantly deciduous overstory produces a thick layer of leaf litter which supports various detritivores, decomposers, insects, and arachnids. These, in turn, provide food for small insectivorous mammals, reptiles, and amphibians. The leaf layer also provides humidity for woodland species of amphibians, and refuge for small reptile and mammal species. Larger debris, including fallen rotting logs and piles of large rocks relict from previous human activity on the site provide refuge for larger reptiles such as Black Rat Snakes (*Elaphe obsoleta*), Copperheads (*Agkistrodon contortrix*), and rodents. The mature forest trees and sporadically dense shrubs on the site support nests of both large raptors and Neotropical migrant songbirds. Edges between forest and previously cleared areas provide opportunities for reptiles such as Northern Fence Lizards (*Sceloporus hyacinthinus*) to thermoregulate. The semipermanent impoundment and floodplain area supports turtles, fish, amphibians, native mussel species and other aquatic invertebrates.

Anticipated impacts to wildlife habitat include the conversion of forest for residential development, and the fragmentation of forested areas by roads. Smaller species of wildlife and species such as terrestrial amphibians which require specific habitat parameters (i.e. moisture and temperature constraints) will be directly affected the most by this development. Larger species of wildlife and habitat generalists are expected to be less directly affected by the development. During construction, larger wildlife and more mobile wildlife (mammals, birds) will be displaced into the surrounding areas, which consist of a mixture of forest and residential areas. The only

barriers to this displacement are Lystra road, north of the site and Jack Bennett road south of the site. However, the project is connected to the Jordan Lake Army Corps of Engineers property which allows passage. Furthermore, the expansion in width of wildlife corridor along Herndon Creek further enhances wildlife migration.

Following construction, portions of the developed area will remain available for use by larger species of wildlife (deer, coyotes, foxes, squirrels, birds, etc...) Additionally, approximately 140 acres of the site is set aside as Open Space, and will be available to wildlife, including wildlife migrating to and from adjacent forested areas. This is an increase in wildlife habitat from the previously approved site plan

#### **3.12.4 Invasive Species**

Invasive plant species on the Westfall site are primarily adventive within previously cleared areas, as noted above. Exceptions to this include the presence of several, but not many, specimens of Autumn-Olive (*Elaeagnus umbellata*) in forested portions of the site, several areas covered by Japanese Stilt Grass, and few areas where Japanese Honeysuckle is present. In addition to invasive plant species, the invasive Red Imported Fire Ant (*Solenopsis invicta*) has become established in previously cleared and disturbed areas of the site. Please refer to the species list provided as Appendix B for a list of invasive species documented on the Westfall site.

#### **3.12.5 Forest Resources**

Future phases of the proposed development will require additional clearing for road and home construction. Only roadway corridors will be cleared during road construction and clearing only as necessary for this construction.

### **3.13 Hazardous Materials**

During construction gasoline and diesel will be utilized for mechanical equipment. Re-fueling for this equipment will be required to take place in upland areas away from surface waters.

The planned Amenity Pool area will have a locked storage facility for required pool chemicals. Construction plans have not been developed for this facility and the overall pool design has not been completed, therefore a complete list of hazardous materials has not been determined. Once these designs are finalized a complete list of chemicals and associated Material Data Safety Sheets will be provided as required by local emergency responders.

The additional lots will create no additional hazardous materials issues with regard to the previously approved amenity pool area, wastewater treatment and associated reuse spray areas.

## **4.0 State and Federal Permits Required**

The following site-related permits will be obtained:

Stormwater: Chatham County

Grading/Erosion Control: Chatham County

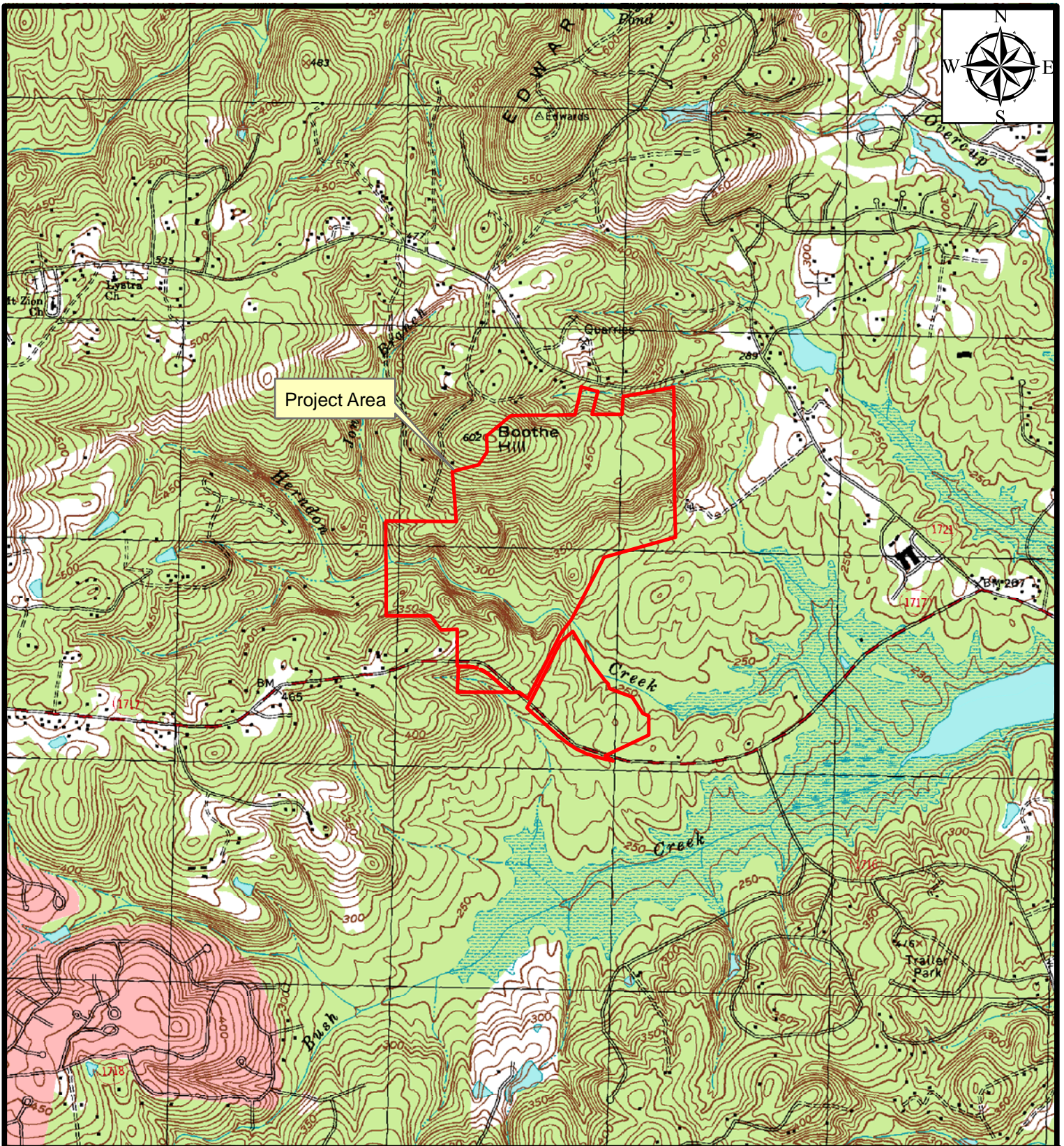
Water Distribution: Chatham County

Sanitary Sewer: Permit required from the NCDENR Division of Water Quality, Non-Discharge Permitting Unit for proposed sanitary sewer extensions.

## **5.0 References**

- Bogan, A.E. 2007. Workbook and Key to the Freshwater Bivalves of North Carolina (DRAFT). North Carolina Museum of Natural Sciences, Raleigh, NC 105 pp, 10 color plates.
- Bull, J. and John Farrand Jr. 1977. National Audubon Society Field Guide to North American Birds, Eastern Region. Alfred A. Knopf, New York. 797 pp.
- Menhinick, E.F. 1991. The Freshwater Fishes of North Carolina. North Carolina Wildlife Resources Commission, Raleigh, North Carolina. 227 pp.
- North Carolina Natural Heritage Program [NHP]. 2012. N.C. NHP internet-based search. "<http://www.nconemap.com/data.html>" Accessed August 11, 2012.
- Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions [Online]. Available URL: "<http://soils.usda.gov/technical/classification/osd/index.html>" Accessed August 11, 2012.





Project No.  
8126.E4

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DG

Scale:  
1" = 2,000'

8/24/2012

**Figure 1A**  
**1:24,000 USGS Vicinity Map**

Westfall Site  
Chatham County, NC

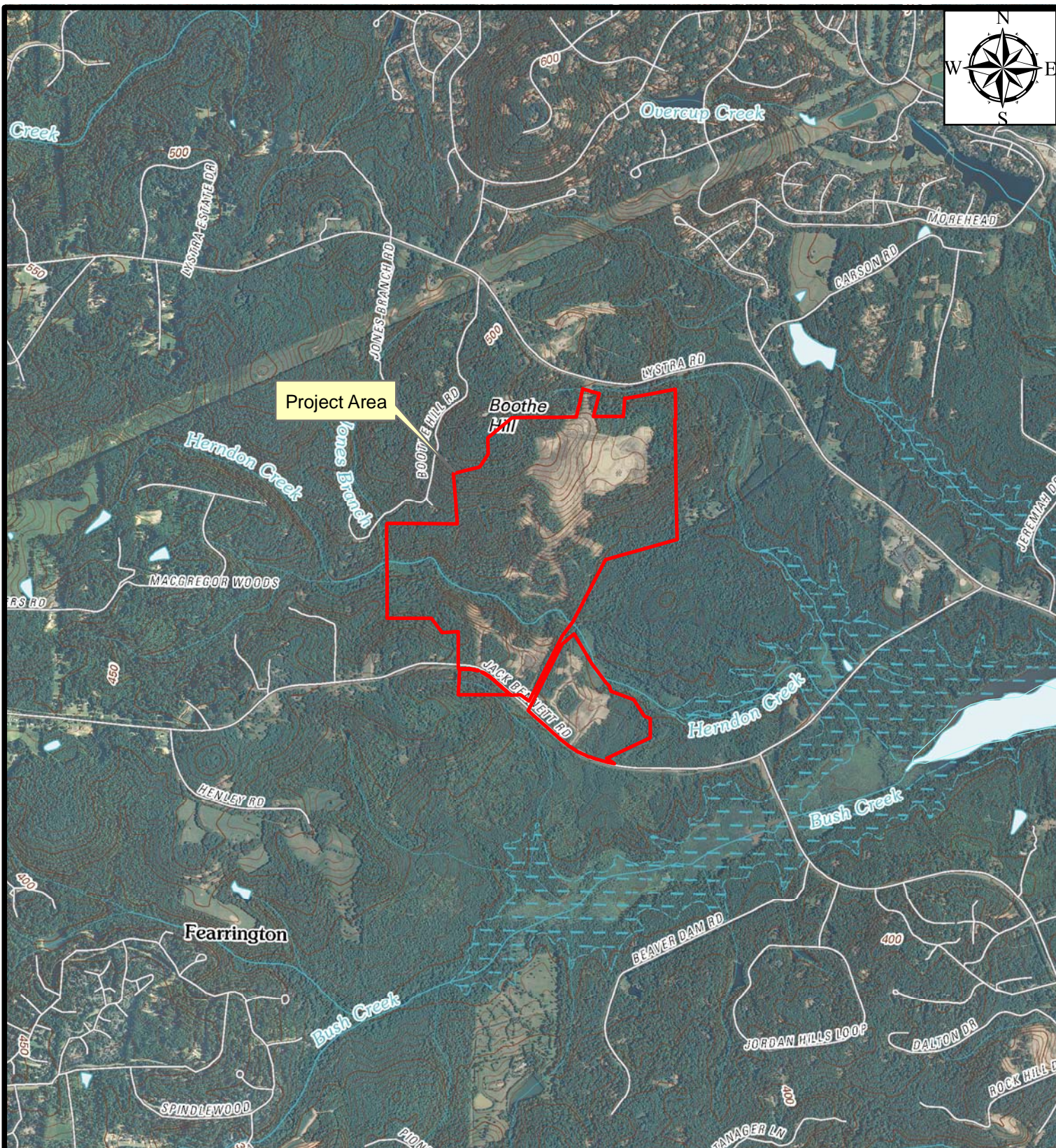
Farrington Quadrangle

0 2,000 4,000 8,000  
Feet



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Scale:  
1" = 2,000'

8/24/2012

**Figure 1B**  
**1:24,000 USGS Vicinity Map**  
**2010 Version**

Westfall Site  
Chatham County, NC

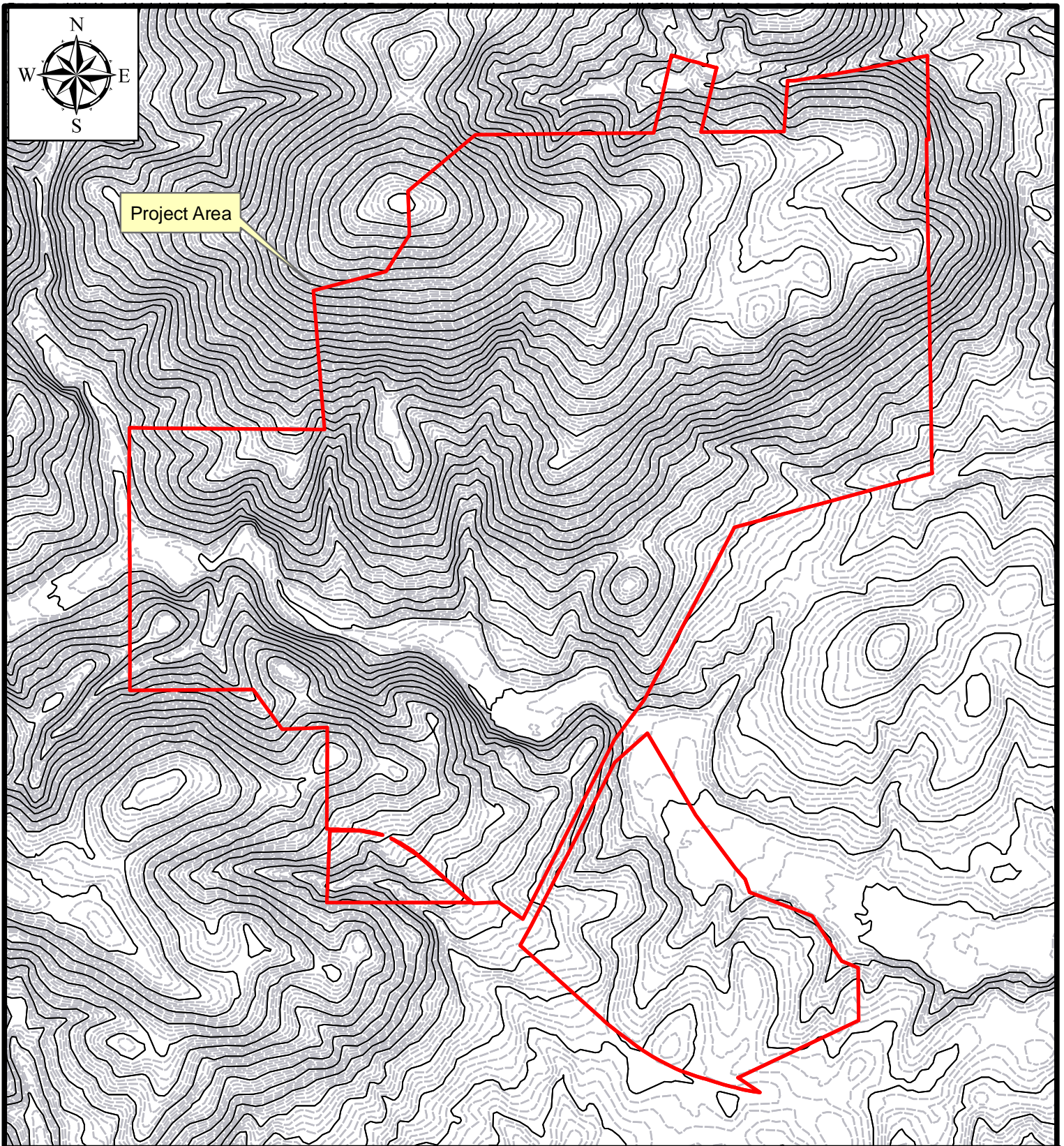
Farrington Quadrangle

0 2,000 4,000 8,000  
Feet

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Scale:  
1" = 700'

8/24/2012

**Figure 2**  
**Topographic Map**  
Westfall Site  
Chatham County, NC




2-Foot LIDAR-based  
Contours from NCDOT GIS

0 700 1,400 2,800  
Feet





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### Legend

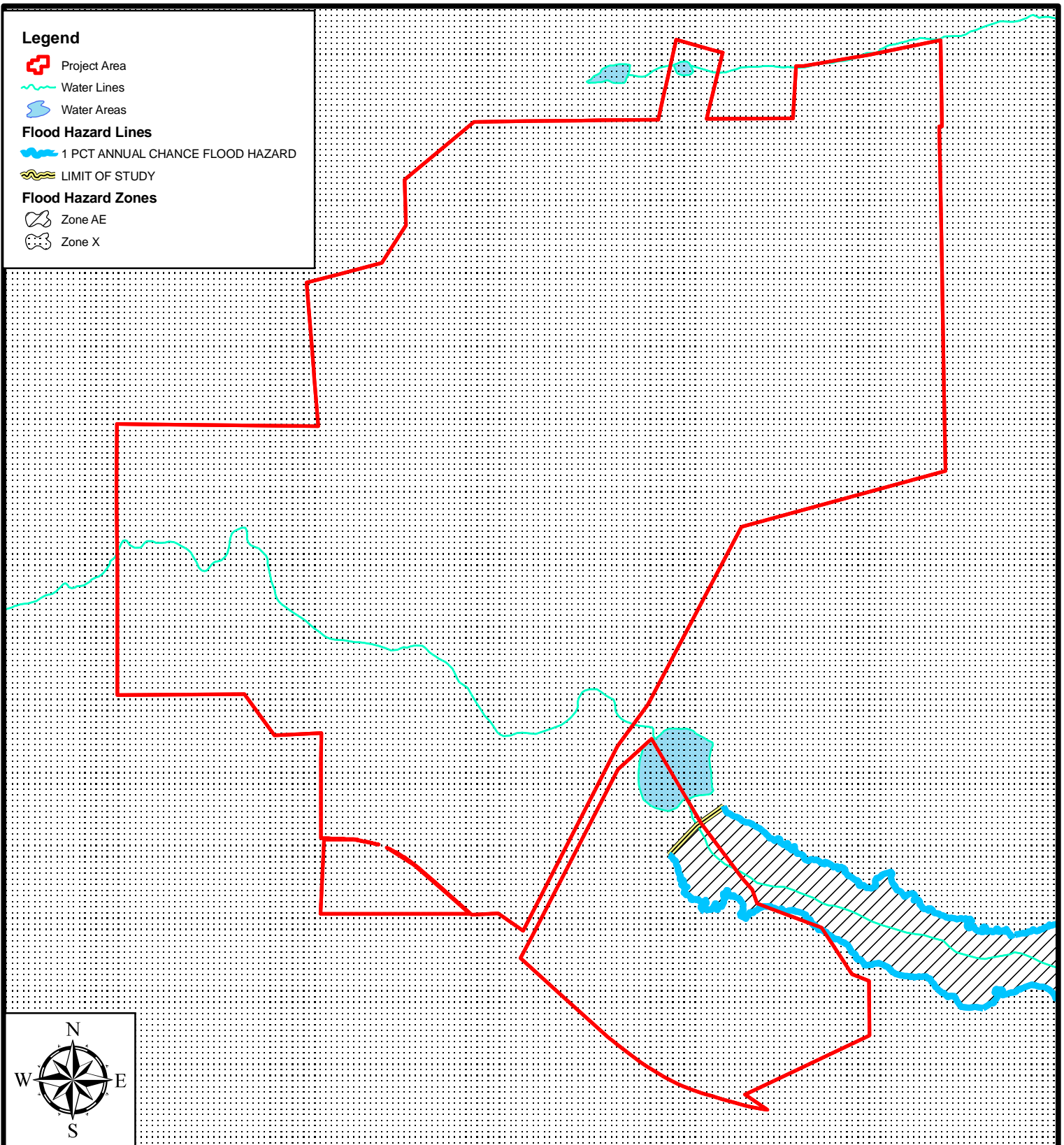
-  Project Area
-  Water Lines
-  Water Areas

### Flood Hazard Lines

-  1 PCT ANNUAL CHANCE FLOOD HAZARD
-  LIMIT OF STUDY

### Flood Hazard Zones

-  Zone AE
-  Zone X



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Scale:  
1" = 700'

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**Figure 3**  
**FEMA Flood Hazard Map**  
Westfall Site  
Chatham County, NC

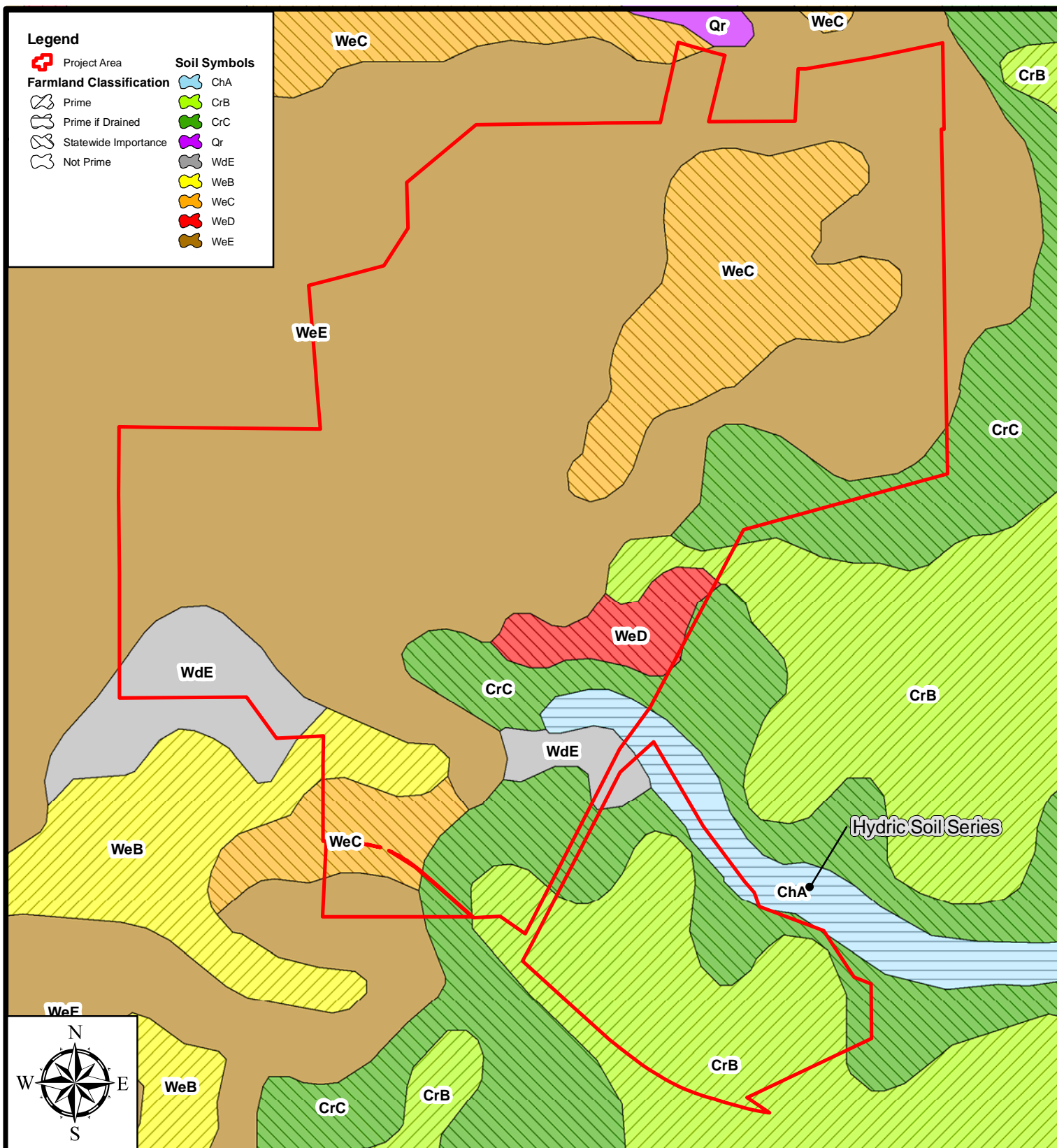
Source: NCFloodmaps.com GIS  
Chatham County PGDB

0 700 1,400 2,800  
Feet



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Scale:  
1" = 700'

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## Figure 4 Soils Map

Westfall Site  
Chatham County, NC

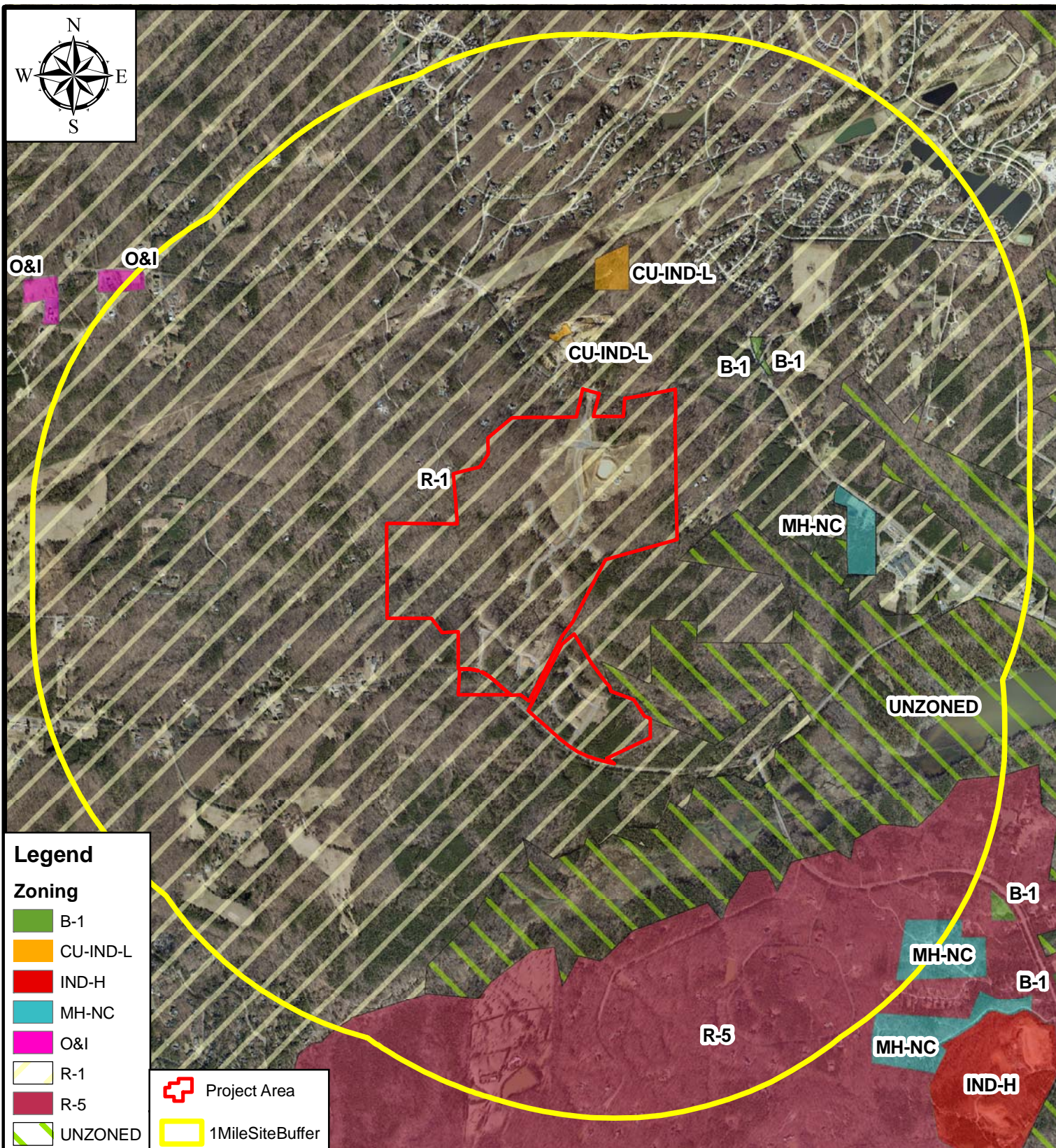
Soils from NRCS Soil DataMart  
Farmland Classifications from  
NRCS Web Soil Survey

0 700 1,400 2,800  
Feet



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## Legend

### Zoning

- B-1
- CU-IND-L
- IND-H
- MH-NC
- O&I
- R-1
- R-5
- UNZONED



Project Area



1 Mile Site Buffer

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Scale:  
1" = 2,000'

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## Figure 5 Existing Land Use Map

Westfall Site  
Chatham County, NC

Zoning from Chatham County GIS  
Updated May 2012  
2010 Aerial from NCOneMap.com





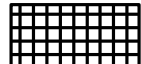




0 2,000 4,000 8,000  
Feet



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# Legend

-  additional parcels
-  Perennial Stream (100 ft buffer)
-  Intermittent (100 ft buffer)
-  Ephemeral Stream (subject to Chatham County 30' buffer)
-  Marginal wetland (not flagged; USACE should verify)
-  Valid wetlands flagged in past delineation (50 ft Buffer)
-  Offsite wetland flagged in most recent evaluation (50 ft buffer)
-  50' Buffer *Measured from top-of-bank*
-  30'Ephemeral Buffer and 100' Perennial Buffer

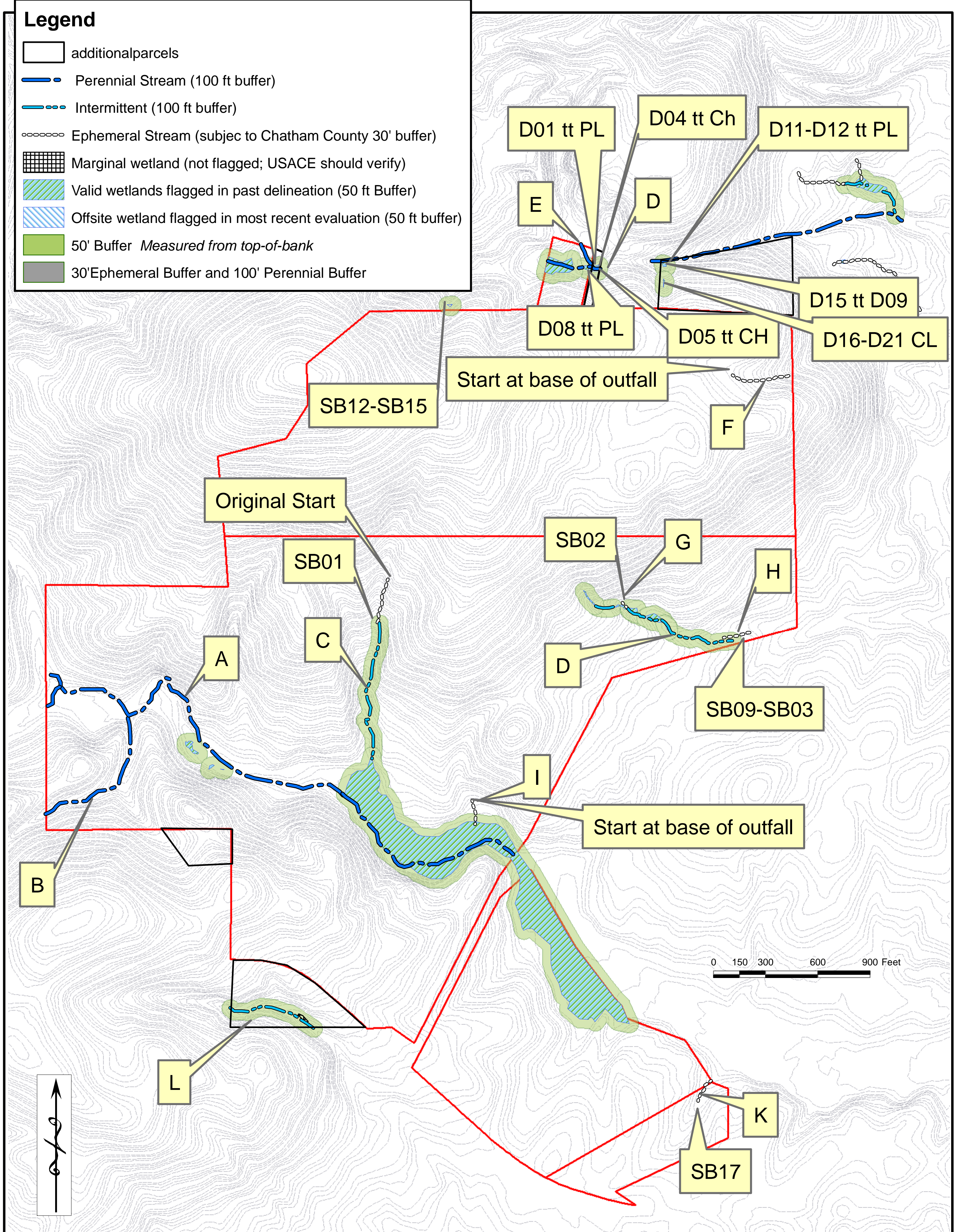


FIGURE 6 -  
**Chatham County Buffer Map**

Scale:  
1" = 350'

Boothe Mtn. Property  
Chatham County, NC

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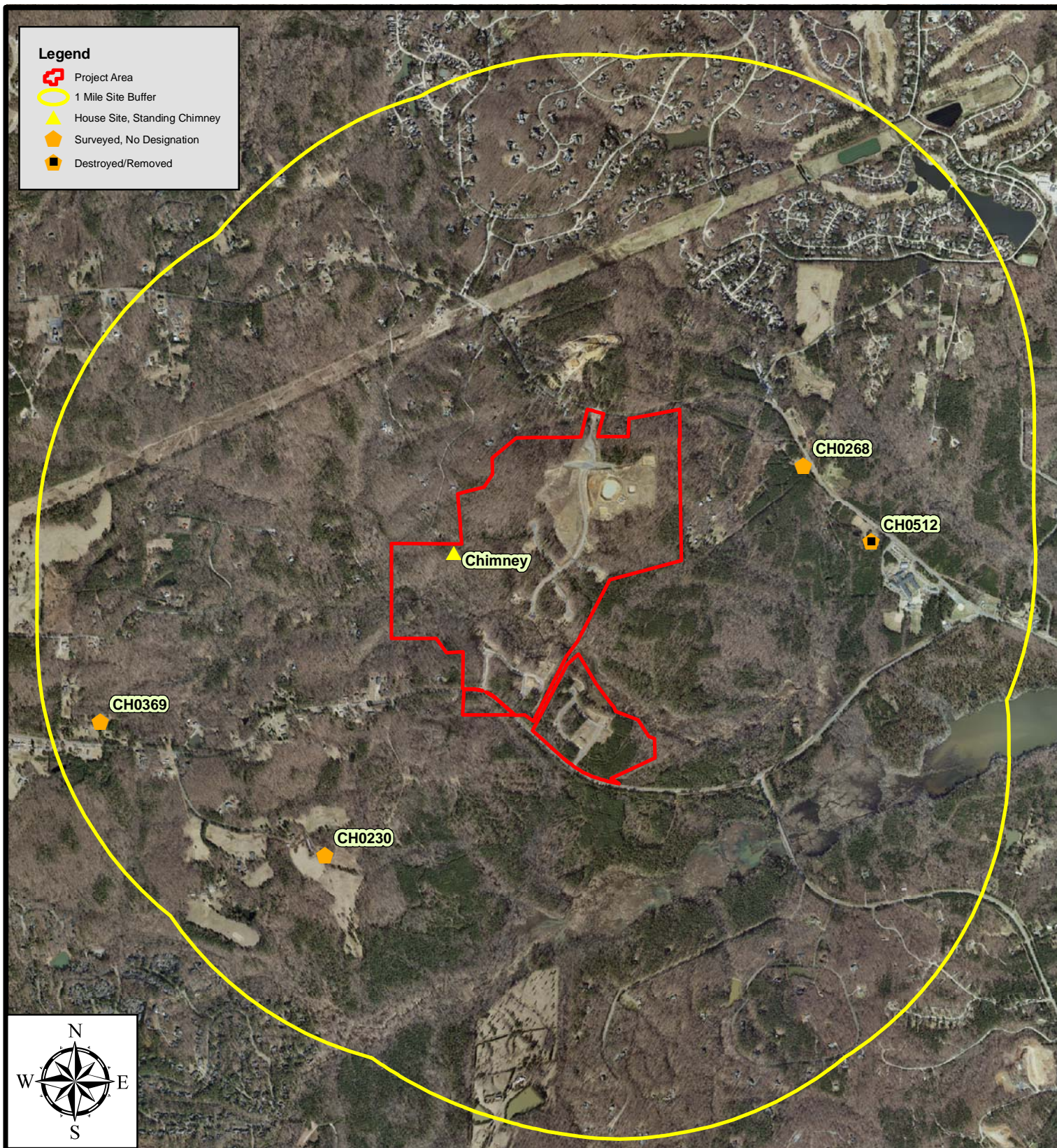
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July 23, 2012

Project Manager:  
Steven Ball

Project Number:  
8126.W9

Prepared by  
Steven Ball





Project No.  
8126.E4

Project Mgr.:  
DG

Scale:  
1" = 2,000'

8/24/2012

# **Figure 7** **Historic Structure Map**

Westfall Site  
Chatham County, NC

Historic Structures based on  
SHPO HPOWEB GIS data.  
Chimney GPS-Located by S&EC.

**S&EC**

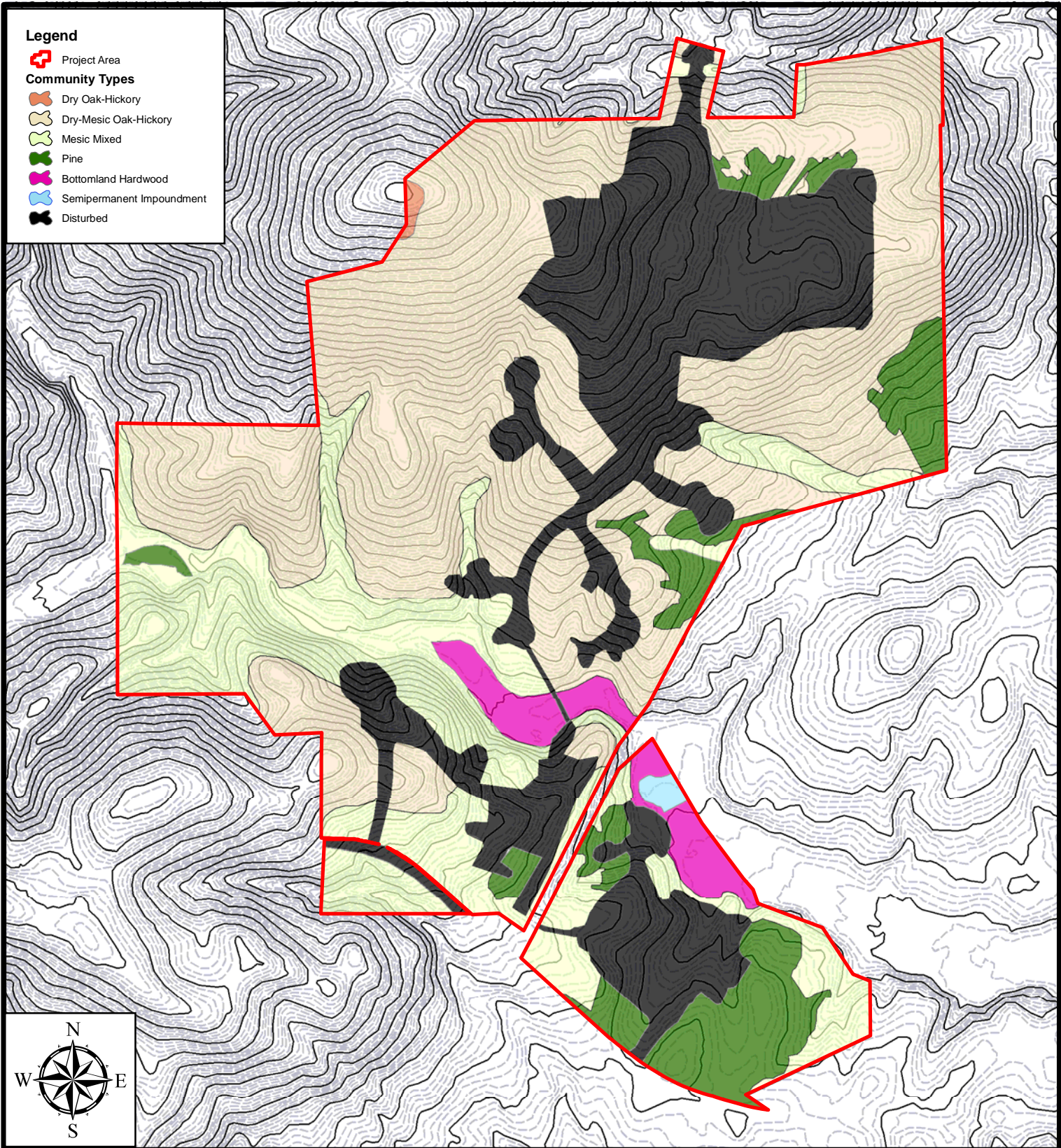
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Scale:  
1" = 4,000'

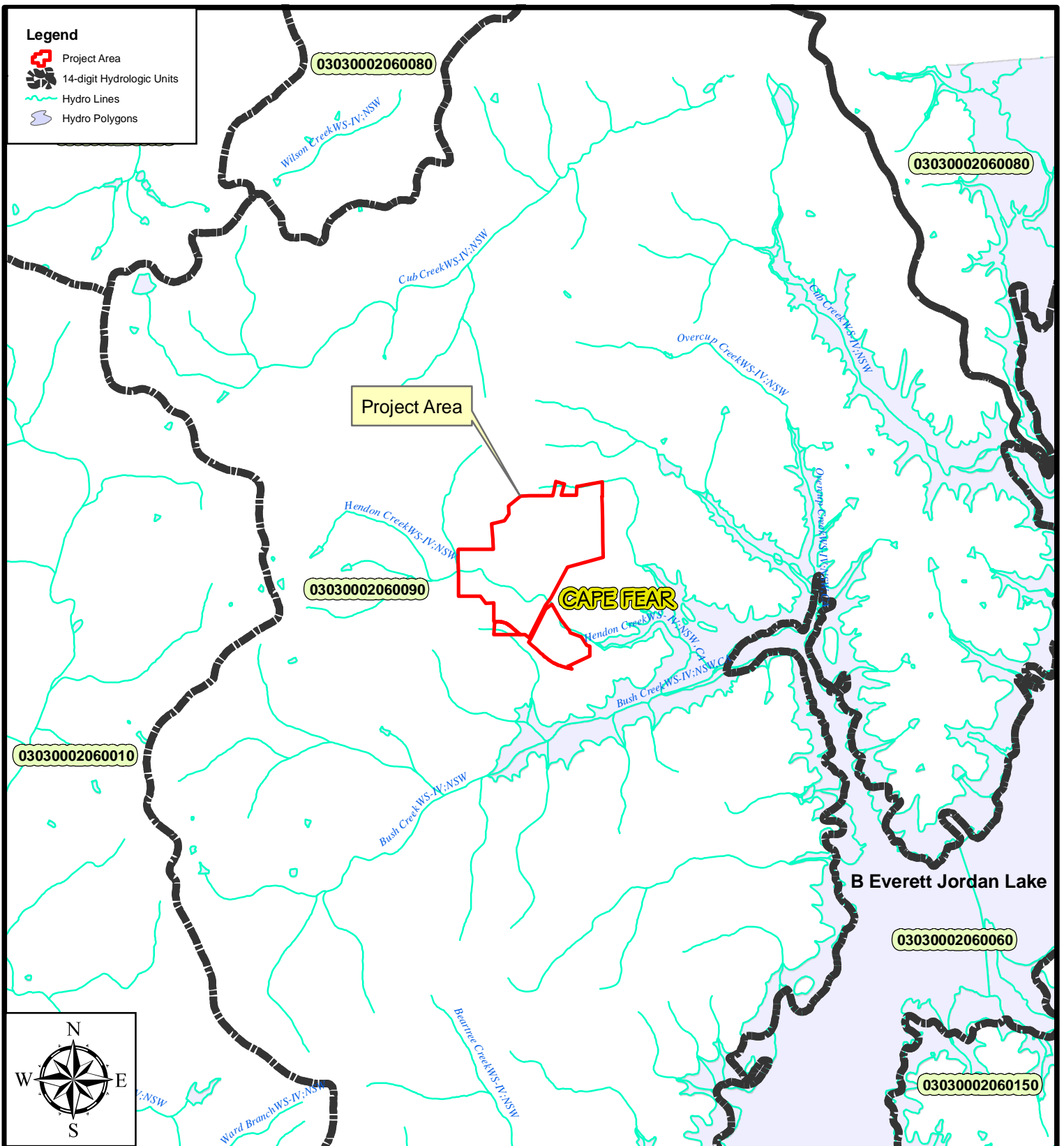
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0 700 1,400 2,800  
Feet



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Scale:  
1" = 4,000'

8/24/2012

**Figure 9**  
**Hydrologic Unit Map**  
Westfall Site  
Chatham County, NC

Source: EEP BasinPro 3.1  
from NC CGIA  
Hydro Layers: Chatham Co. GIS



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**Legend**

 Project Area



**Project No.**  
8126.E4

**Project Mgr.:**  
DG

**Scale:**  
1" = 700'

8/24/2012

**Figure 10**  
**2010 Aerial Map**

**Westfall Site**  
**Chatham County, NC**

**Source: NCOneMap.com**

0 700 1,400 2,800  
Feet

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## Appendix B

### **Species List: Plants and Animals Observed on the Westfall Site (2007 – 2012)**

#### **Plants**

- **Trees**

- Box Elder (*Acer negundo*)
- Red Maple (*Acer rubrum*)
- Tree of Heaven (*Ailanthus altissima*)\*
- Mimosa Tree (*Albizia julibrissin*) \*
- Pawpaw (*Asimina triloba*)
- River Birch (*Betula nigra*)
- Ironwood (*Carpinus caroliniana*)
- Mockernut Hickory (*Carya tomentosa*)
- Shagbark Hickory (*Carya ovata*)
- Southern Hackberry (*Celtis laevigata*)
- Eastern Redbud (*Cercis canadensis*)
- Flowering Dogwood (*Cornus florida*)
- American Hazelnut (*Corylus americana*)
- Persimmon (*Diospyros virginiana*)
- Beech (*Fagus grandifolia*)
- Green Ash (*Fraxinus pennsylvanica*)
- American Holly (*Ilex opaca*)
- Black Walnut (*Juglans nigra*)
- Eastern Red Cedar (*Juniperus virginiana*)
- Sweet Gum (*Liquidambar styraciflua*)
- Tulip-tree (*Liriodendron tulipifera*)
- Umbrella Magnolia (*Magnolia tripetala*)
- Blackgum (*Nyssa sylvatica*)
- Sourwood (*Oxydendrum arboreum*)
- Princess Tree (*Paulownia tomentosa*) \*
- Loblolly Pine (*Pinus taeda*)
- American Sycamore (*Platanus occidentalis*)
- Black Cherry (*Prunus serotina*)
- White Oak (*Quercus alba*)
- Willow Oak (*Quercus phellos*)
- Southern Red Oak (*Quercus falcata*)
- Chestnut Oak (*Quercus montana*)
- Northern Red Oak (*Quercus rubra*)
- Post Oak (*Quercus stellata*)
- Black Willow (*Salix nigra*)
- Sassafras (*Sassafras albidum*)
- Winged Elm (*Ulmus alata*)
- American Elm (*Ulmus americana*)

- Shrubs

- Painted Buckeye (*Aesculus sylvatica*)
- Hawthorne (*Crataegus sp.*)
- Tag Alder (*Alnus serrulata*)
- Common Serviceberry (*Amelanchier arborea*)
- Eastern Baccharis (*Baccharis halimifolia*) \*
- Buttonbush (*Cephalanthus occidentalis*)
- Autumn Olive (*Elaeagnus umbellata* var. *parviflora*) \*
- Witch Hazel (*Hamamelis virginiana*)
- Possumhaw (*Ilex decidua*)
- Chinese Privet (*Ligustrum sinense*) \*
- Spicebush (*Lindera benzoin*)
- Winged Sumac (*Rhus copallinum*)
- Elderberry (*Sambucus canadensis*)
- American Snowbell (*Styrax americanus*)
- Blueberry (*Vaccinium sp.*)
- Maple-leaved Viburnum (*Viburnum acerifolium*)
- Possumhaw (*Viburnum nudum*)
- Downy Arrowwood (*Viburnum rafinesquianum*)

- Vines

- Crossvine (*Bignonia capreolata*)
- Trumpet Creeper (*Campsis radicans*)
- Carolina Jessamine (*Gelsemium sempervirens*)
- Tall Morning Glory (*Ipomoea purpurea*) \*
- Japanese Honeysuckle (*Lonicera japonica*) \*
- Climbing Hempvine (*Mikania scandens*)
- Virginia Creeper (*Parthenocissus quinquefolia*)
- Laurel-leaved Greenbrier (*Smilax laurifolia*)
- Round-leaved Greenbrier (*Smilax rotundifolia*)
- Poison Ivy (*Toxicodendron radicans*)
- Muscadine (*Vitis rotundifolia*)

- Herbaceous

- Broomsedge Bluestem (*Andropogon virginicus*)
- Round Lobed Hepatica (*Anemone americana*) (Weakley)
- Puttyroot (*Aplectrum hyemale*)
- Jack in the Pulpit (*Arisaema triloba*)
- Giant-cane (*Arundinaria gigantea*)
- Wild Ginger (*Asarum canadense*, *Hexastylis sp.*)
- Ebony Spleenwort (*Asplenium platyneuron*)
- Lady Fern (*Athyrium filix-femina*)
- Beggarticks (*Bidens sp.*)
- False Nettle (*Boehmeria cylindrica*)

- Grape Fern (*Botrychium sp.*)
- Rattlesnake Fern (*Botrychium virginianum*)
- Various Sedges (*Carex sp.*)
- Spotted Wintergreen (*Chimaphila maculata*)
- Black Cohosh (*Cimicifuga racemosa*)
- Thistle (*Cirsium vulgare*)
- Dayflower (*Commelina sp.*)
- Elephant's-foot (*Elephantopus sp.*)
- Beechdrops (*Epifagus virginiana*)
- Strawberry-bush (*Euonymus americanus*)
- Dogfennel (*Eupatorium capillifolium*)
- Bedstraw (*Galium sp.*)
- Rattlesnake Orchid (*Goodyera pubescens*)
- St. Johns Wort (*Hypericum sp.*)
- Jewelweed (*Impatiens capensis*)
- Upland Dwarf Iris (*Iris verna*)
- Soft Rush (*Juncus effusus*)
- Sericea Lespedeza (*Lespedeza cuneata*) \*
- Cardinal Flower (*Lobelia cardinalis*)
- Japanese Stiltgrass (*Microstegium vimineum*) \*
- Partridgeberry (*Mitchella repens*)
- Indian Pipe (*Monotropa uniflora*)
- Wartremoving Herb (*Murdannia keisak*)
- Sensitive Fern (*Onoclea sensibilis*)
- Cinnamon Fern (*Osmunda cinnamomea*)
- Royal Fern (*Osmunda regalis*)
- Pokeweed (*Phytolacca americana*)
- Tearthumb (*Polygonum sagittatum*)
- Smartweed (*Polygonum sp.*)
- Hoary Mountainmint (*Pycnanthemum incanum*)
- Blackberry (*Rubus sp.*)
- Bloodroot (*Sanguinaria canadensis*)
- Lizard's Tail (*Saururus cernuus*)
- Woolgrass (*Scirpus cyperinus*)
- Blue Eyed Grass (*Sisyrinchium sp.*)
- Horse Nettle (*Solanum carolinense*)
- Goldenrod (*Solidago sp.*)
- Star Chickweed (*Stellaria pubera*)
- Crane-fly Orchid (*Tipularia discolor*)
- Trillium (*Trillium sp.*)
- Cattail (*Typha latifolia*)
- Mullein (*Verbascum thapsus*) \*
- Wingstem (*Verbesina alternifolia*)
- Chain Fern (*Woodwardia areolata*)

### **Invertebrates (Cursory List)**

- Luna Moth (*Actias luna*)
- Carolina Ladle Crayfish (*Cambarus davidi*) (NCNHP-SR)
- Rocky River Crayfish (*Cambarus hobbsorum*)
- Imperial Moth (*Eacles imperialis*)
- Mourning Cloak (butterfly) (*Nymphalis antiopa*)
- Cloudless Sulphur (butterfly) (*Phoebis sennae*)
- Physid snails (*Physa* cf. *acuta*)
- Buckeye (butterfly) (*Precis coenia*)
- White River Crayfish (*Procambarus acutus*)
- American Bird Grasshopper (*Schistocerca americana*)
- Red Imported Fire Ant (*Solenopsis invicta*) \*
- Gray Hairstreak (butterfly) (*Strymon melinus*)
- Horse fly larvae (*Tabanus* sp.)
- Annual Cicada (*Tibicen* sp.)
- Crane fly larvae (*Tipula* sp.)
- Paper Pondshell (mussel) (*Utterbackia imbecilis*)
- Red Admiral (butterfly) (*Vanessa atalanta*)
- Caddisfly larvae
- Various stonefly larvae
- Various mayfly larvae
- Various dragonfly larvae

### **Fish (Recorded by Visual Observation Only)**

- Bluespotted Sunfish (*Enneacanthus gloriosus*)
- Creek Chubsucker (*Erimyzon oblongus*)
- Chain Pickerel (*Esox niger*)
- Mosquitofish (*Gambusia holbrooki*)
- Green Sunfish (*Lepomis cyanellus*)
- Bluegill (*Lepomis macrochirus*)
- Bluehead Chub (*Nocomis leptcephalus*)
- Shiners (*Notropis* sp.) (cf. *alborus* and/or *procne*)
- Creek Chub (*Semotilus atromaculatus*)

### **Amphibians and Reptiles (Recorded by Auditory and Visual Observation)**

- Northern Cricket Frog (*Acris crepitans*)
- Spotted Salamander (*Ambystoma maculatum*)
- Green Anole (*Anolis carolinensis*)
- American Toad (*Bufo americanus*)
- Worm Snake (*Carphophis amoenus*)
- Snapping Turtle (*Chelydra serpentina*)
- Black Racer (*Coluber constrictor*)
- Northern Dusky Salamander (*Desmognathus fuscus*)
- Black Rat Snake (*Elaphe obsoleta*)

- Two-lined Salamander (*Eurycea cirrigera*)
- Eastern Mud Turtle (*Kinosternon subrubrum*)
- Redbelly Water Snake (*Nerodia erythrogaster*)
- Northern Water Snake (*Nerodia sipedon*)
- Eastern Newt (*Notophthalmus viridescens*)
- Upland Chorus Frog (*Pseudacris feriarum*)
- Spring Peeper (*Pseudacris crucifer*)
- Mud Salamander (*Pseudotriton montanus*)
- River Cooter (*Pseudemys concinna*)
- Bullfrog (*Rana catesbeiana*)
- Green Frog (*Rana clamitans*)
- Pickerel Frog (*Rana palustris*)
- Northern Fence Lizard (*Sceloporus hyacinthinus*)
- Ground Skink (*Scincella lateralis*)
- Eastern Box Turtle (*Terrapene carolina*)
- Yellow-bellied Slider (*Trachemys scripta*)

#### **Birds (Recorded by Auditory and Visual Observation)**

- Wood Duck (*Aix sponsa*)
- Ruby-throated Hummingbird (*Archilochus colubris*)
- Tufted Titmouse (*Baeolophus bicolor*)
- Red-tailed Hawk (*Buteo jamaicensis*)
- Red-shouldered Hawk (*Buteo lineatus*)
- Cardinal (*Cardinalis cardinalis*)
- Northern Flicker (*Colaptes auratus*)
- Eastern Wood Pewee (*Contopus virens*)
- American Crow (*Corvus brachyrhynchos*)
- Blue Jay (*Cyanocitta cristata*)
- Pileated woodpecker (*Dryocopus pileatus*)
- Common Yellowthroat (*Geothlypis trichas*)
- Yellow-breasted Chat (*Icteria virens*)
- Red-bellied woodpecker (*Melanerpes carolinus*)
- Red-headed Woodpecker (*Melanerpes erythrocephalus*)
- Wild Turkey (*Meleagris gallopavo*)
- Black and White Warbler (*Mniotilta varia*)
- Blue Grosbeak (*Passerina caerulea*)
- Downy Woodpecker (*Picoides pubescens*)
- Hairy Woodpecker (*Picoides villosus*)
- Summer Tanager (*Piranga rubra*)
- Carolina Chickadee (*Poecile atricapillus*)
- Northern Parula (*Setophaga americana*)
- Eastern Bluebird (*Sialia sialis*)
- Red-breasted Nuthatch (*Sitta canadensis*)
- Field Sparrow (*Spizella pusilla*)

- Barred Owl (*Strix varia*)
- Carolina Wren (*Thryothorus ludovicianus*)
- Yellow-throated Vireo (*Vireo flavifrons*)
- White-eyed Vireo (*Vireo griseus*)

**Mammals (Recorded by Visual Observation, Tracks/ Sign, and Remains)**

- Coyote (*Canis latrans*) \*
- Beaver (*Castor canadensis*)
- Opossum (*Didelphis virginiana*)
- White-tailed Deer (*Odocoileus virginianus*)
- Raccoon (*Procyon lotor*)
- Gray Squirrel (*Sciurus carolinensis*)



**Site Photographs – Natural Community and Habitat Types**



**Typical Previously Cleared, Herbaceous Area**



**Typical Pine Dominant Area**





**Typical Dry Oak-hickory Community Type**



**Typical Dry-mesic Oak-hickory Community Type**





**Typical Mesic Mixed Hardwood Community Type**



**Typical Bottomland Hardwood Community Type (Photo taken 2/25/2009)**





**Typical Semipermanent Impoundment Community Type (Beaver Pond)**

**Site Photographs – Potential Cultural/Historic Resources**



**Old House Site with Standing Chimney at 35.823328 N, -79.060026 E**



**Site Photographs – Typical Wildlife Microhabitat**



**Rocks Piled from Previous Land Management – Small Animal Microhabitat**



**Fallen Log/Woody Debris – Amphibian, Reptile, Invertebrate, Small Mammal Microhabitat**

**TABLE 1**

ORIGINAL APPROVED

***NET LAND AREA COMPUTATION***

294.32 AC	Gross Land Area
35.7 AC	Land in Road Right-of-way
<u>6 AC</u>	100 Year Floodplain, Wetlands, Ponds > 1 AC
252.62 AC	Net Land Area Available (AC)

11,004,127.20 SF	Net Land Area Available for Dwelling Units
------------------	--

275 UNITS	Dwelling Unit / 40,000 SF
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180 UNITS	Proposed Dwelling Units
0.61 UNITS	Per Gross Acre
1.64 AC	Per Unit

**TABLE 1A**

REVISED FOR CONDITIONAL USE PERMIT MODIFICATION

***NET LAND AREA COMPUTATION***

308.387 AC	Gross Land Area
28.98 AC	Land in Road Right-of-way
<u>6 AC</u>	100 Year Floodplain, Wetlands, Ponds > 1 AC
273.407 AC	Net Land Area Available (AC)

11,909,608.92 SF	Net Land Area Available for Dwelling Units
------------------	--

298 UNITS	Dwelling Unit / 40,000 SF
-----------	---------------------------

242 UNITS	Proposed Dwelling Units
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0.78 UNITS	Per Gross Acre
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1.27 AC	Per Unit
---------	----------

**TABLE 2**

ORIGINAL APPROVED

***MAXIMUM POTENTIAL  
IMPERVIOUS CALCULATION***

<b>Lots</b>	<b>Impervious Area</b>	<b>Total</b>
127	8,000	1,016,000 s.f.
53 ( Village )	6,000	318,000 s.f.
180		

	<b>Item</b>	<b>Impervious Area</b>
1	Homesites	1,334,000 s.f.
2	Roadways	783,225 s.f.
3	WWTP and Maintenace	88,000 s.f.
4	Amenity	52,000 s.f.
5	Sidewalks & Trails	115,000 s.f.
	<b>TOTAL IMPERVIOUS</b>	<b>2,372,225 s.f.</b>

**TOTAL TRACT AREA**                      **294.32 acres**  
**12,820,579 s.f.**

<b>IMPERVIOUS PERCENTAGE</b>	<b>18.5 %</b>
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**TABLE 2A**

REVISED FOR CONDITIONAL USE PERMIT MODIFICATION

***MAXIMUM POTENTIAL  
IMPERVIOUS CALCULATION***

<b>Lots</b>	<b>Assumed Impervious Area</b>	<b>Total</b>
66 Estate	8,000	528,000 s.f.
47 100' Lots	7,000	329,000 s.f.
60 80' Lots	6,000	360,000 s.f.
69 60' Lots	5,000	345,000 s.f.
242		1,562,000 s.f.

<b>Item</b>	<b>Impervious Area</b>
1 Home Sites	1,562,000 s.f.
2 Roadways	675,935 s.f.
3 WWTP and Maintenance	29,565 s.f.**
4 Amenity	65,000 s.f.
5 Sidewalks & Trails	60,000 s.f.***
<b>TOTAL IMPERVIOUS</b>	<b>2,392,500 s.f.</b>

**TOTAL TRACT AREA**                      **308.387 acres**  
**13,433,338 s.f.**

\*\* WWTP, Maintenance area, and Amenity based upon actual planned development.

\*\*\* Sidewalks and trails were assumed based upon approximate linear footage.  
approximately 15,000 l.f. of 4' width sidewalk


**IMPERVIOUS PERCENTAGE**                      **17.8 %**  
Maximum allowable impervious area within the WS-IV Protected Area is  
24% with curb and gutter.



SITE SUMMARY	
CURRENT ZONING - R-1 CUP FOR PRO	
W&A PROTECTED AREA WATERSHED	
EXISTING PLATTED LOTS	= 294,316 AC.
EXISTING PLATTED LOTS	= 82
EXISTING PRIVATE ROAD	= 11,018 LT.
FUTURE PRIVATE ROAD	= 1,824 LT.
SINGLE FAMILY HOMESITES	= 34
ESTATE (± 160' WIDTH)	= 34
NEIGHBORHOOD (± 100' WIDTH)	= 34
VILLAGE (± 80' WIDTH)	= 34
EXISTING PLATTED LOT AREA	TOTAL = 180
FUTURE LOT AREA	= 82.73 AC.
EXISTING ROAD R/W AREA	= 81.41 AC.
FUTURE ROAD R/W AREA	= 17.38 AC.
WTF AREA	= 11.88 AC.
TOTAL OPEN SPACE	= 2.0 AC.
- AMENITY AREA IN OPEN SPACE	= 2.5 AC.
- OPEN SPACE (OTHER)	= 47.91 AC.
- PASSIVE OPEN SPACE	= 58.4 AC.
(WOODED BUFFER NOT INCLUDING PROTECTED AREA WITHIN LOTS)	



- LEGEND**
- PLATTED LOTS
  - LOTS OWNED BY OTHERS
  - FUTURE LOTS (CURRENTLY APPROVED)
  - WETLAND & STREAM
  - RIPARIAN BUFFER AREAS
  - WETLAND AREA
  - FEMA FLOODWAY
  - DRY POND LOCATION
  - NO BUILD SETBACK
  - 200' NOS
- ADJOINERS**
- NF - NANCY W. BRITT - PIN: 8785-51-2598 - DB: 883-812
  - NF - UNITED STATES OF AMERICA - PIN: 8785-18-6724
  - NF - CHATHAM CO. BOARD OF EDUCATION - PIN: 8785-33-3703 DB: 885-924
  - NF - PIERCE A. & ELIZABETH N. CASSEY - PIN: 8785-54-7634 DB: 447-717
  - NF - DAVID E. MILLER - PIN: 8785-66-2805 - DB: 1431-718
  - NF - DAVID E. MILLER - PIN: 8785-55-7771 - DB: 1431-720
  - NF - DAVID E. MILLER - PIN: 8785-55-7158 - DB: 1301-744
  - NF - WESTFALL ASSOCIATES, LLC - PIN: 8785-68-1548 - D.B. 1481-08
  - NF - MACGREGOR DEVELOPMENT CO. - PIN: 8785-57-5070 - DB: 1381-283 DB: 1375-378
  - NF - RICHARD J. & MARJORIE S. BARTLETT - PIN: 8785-58-4942 DB: 1375-378
  - NF - RICHARD J. & MARJORIE S. BARTLETT - PIN: 8785-58-0748 DB: 1375-378
  - NF - THOMAS & TERRI GIBSON - PIN: 8785-48-8448 - DB: 1381-405
  - NF - JENNIFER D. & WILLIAM W. CURE - PIN: 8785-48-7812 - DB: 920-848
  - NF - ROY H. DAVIS - PIN: 8785-47-8078 - DB: 489-861
  - NF - R. NELSON & JANICE C. WALL - PIN: 8785-47-0130 - DB: 988-970
  - NF - CYNTHIA K. SMITH & LINDA FULLWOOD - PIN: 8785-38-9859 DB: 802-908
  - NF - MARTIN J. BERNHOLZ - PIN: 8785-38-6413 - DB: 452-888
  - NF - JOHN M. & DONNA M. HUFF - PIN: 8785-38-2433 - DB: 885-337
  - NF - DENZIL L. & LULA J. THORN - PIN: 8785-28-7310 - DB: 474-888
  - NF - LELLA M. WEBSTER - PIN: 8785-28-4045 - DB: 480-281
  - NF - LELLA M. WEBSTER - PIN: 8785-25-3775 - DB: 1208-511
  - NF - MARK A. & STEPHANIE L. MADAMS - PIN: 8785-25-1378 - DB: 1034-84 DB: 1594-1088
  - NF - MICHAEL J. BROCKI & ANGELA K. SPIVEY - PIN: 8785-24-0867 DB: 448-587
  - NF - GEORGE MEYER & MAURA L. O'DONOGHUE - PIN: 8785-04-9844 DB: 448-587
  - NF - CHARLES T. & NANCY L. ANDERSON - PIN: 8785-14-0088 DB: 679-1007
  - NF - DAVID L. & JEAN CARLTON - PIN: 8785-13-1301 - DB: 388-882
  - NF - SUSAN L. FIELDS - PIN: 8785-12-6888 - DB: 1422-188
  - NF - ALVIN L. & DEBORAH P. FULLER - PIN: 8785-22-2756 - DB: 880-888
  - NF - TIMOTHY B. PECK - PIN: 8785-22-1384 - DB: 420-718
  - NF - NANCY W. BRITT - PIN: 8785-21-1282 - DB: 1074-788
  - NF - MACIE W. LAMBERT - PIN: 8785-31-7048 - DB: 1028-484
  - NF - MILLER DAVID E. - PIN: 8785-55-3558 - DB: 1488-0284
  - NF - FH PROPERTY INVESTMENTS LLC - PIN: 8785-35-5081 DB: 1388-0171
  - NF - MEYERS CHARLES T. & JANET B. - PIN: 8785-32-1559 DB: 1581-0888
  - NF - SOUTHBANK - PIN: 8785-32-4457 - DB: 1508-1088
  - NF - SOUTHBANK - PIN: 8785-32-4180 - DB: 1508-1088
  - NF - SOUTHBANK - PIN: 8785-42-0202 - DB: 1508-1083
  - NF - SOUTHBANK - PIN: 8785-41-4708 - DB: 1508-1072
  - NF - WESTFALL ASSOCIATES LLC - PIN: 8785-58-4582 - DB: 1597-0888 DB: 1108-512
  - NF - EISNER JOEL ETUX STEPHANIE - PIN: 8785-65-0450
  - NF - WESTFALL ASSOCIATES LLC - PIN: 8785-68-3028 - DB: 1597-0888
  - NF - WANDA K. & GREGORY DUKES - PIN: 8785-22-0818



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 www.cegroupinc.com

**WESTFALL SUBDIVISION**  
 CHATHAM COUNTY,  
 NORTH CAROLINA

**EXISTING CONDITIONS / PREVIOUSLY APPROVED MASTER PLAN EXHIBIT**

**OCTOBER 2012**

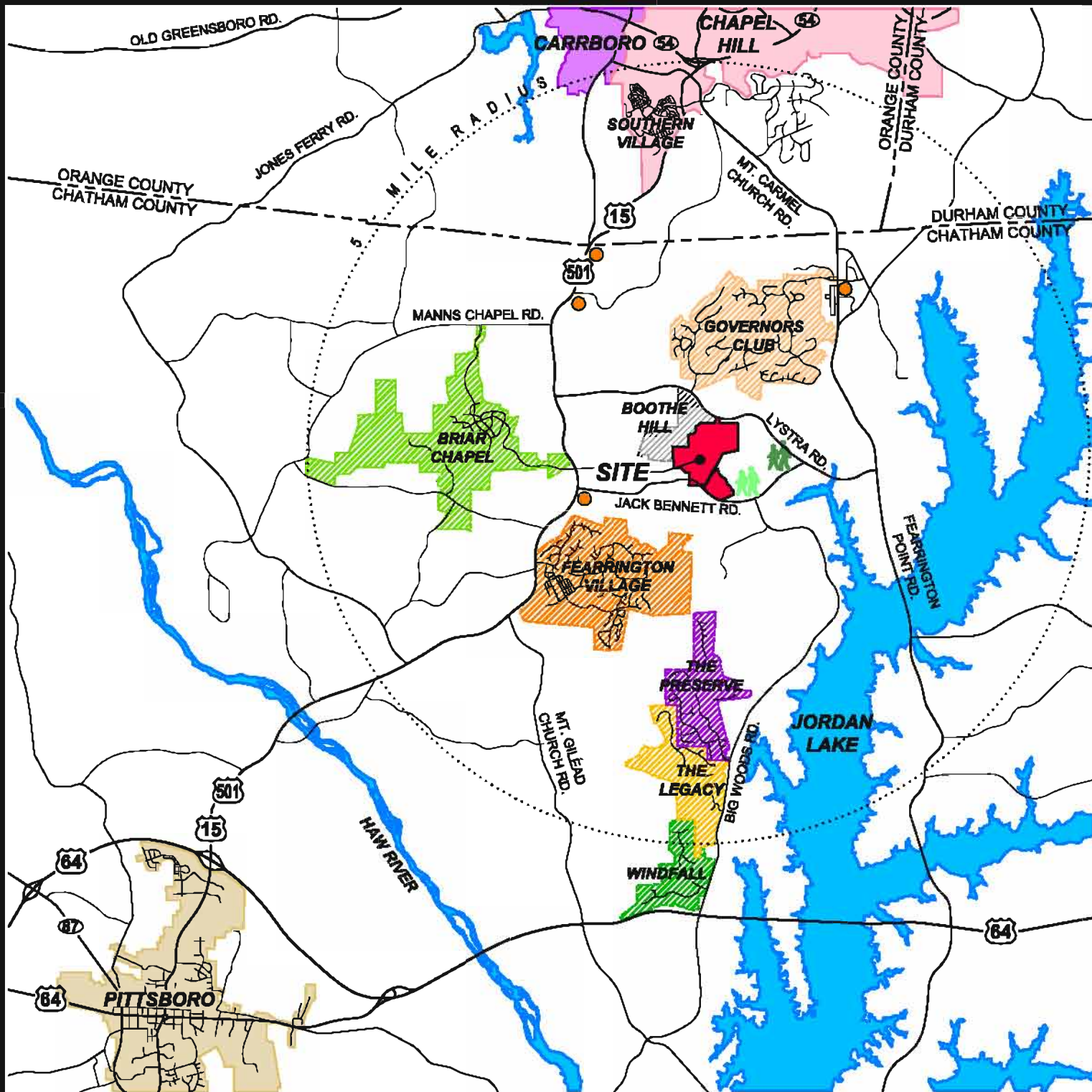
**NORTH**






600' 300' 0 600'

SCALE: 1" = 600'





-  EXISTING / PLANNED COMMERCIAL CENTERS
-  EXISTING NORTH CHATHAM ELEMENTARY
-  FUTURE NORTH EAST CHATHAM HIGH SCHOOL



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## WESTFALL SUBDIVISION

CHATHAM COUNTY, NORTH CAROLINA

# VICINITY MAP

OCTOBER 2012



**NORTH**





**LEGEND**

- WETLAND & STREAM RIPARIAN BUFFER AREAS
- WETLAND AREA
- FEMA FLOODWAY
- ADDITIONAL PUD AREA
- LOTS OWNED BY OTHERS
- PLATTED ESTATE LOTS (± 150' WIDTH)
- PROPOSED ESTATE LOTS (± 150' WIDTH)
- PROPOSED RECOMBINED ESTATE LOTS (± 150' WIDTH)
- PROPOSED NEIGHBORHOOD LOTS (± 100' WIDTH)
- PLATTED VILLAGE LOTS (± 80' WIDTH)
- PROPOSED VILLAGE LOTS (± 80' WIDTH)
- PROPOSED VILLAGE LOTS (± 80' WIDTH)
- 150' NBS NO BUILD SETBACK

**SITE SUMMARY**

EXISTING SITE AREA	= 294.316 AC.
PROPOSED TOTAL SITE AREA	= 308.387 AC.
EXISTING PRIVATE ROAD	= ± 11,016 LF
FUTURE PRIVATE ROAD	= ± 8,947 LF
<b>SINGLE FAMILY HOMESITES</b>	
PLATTED ESTATE (± 150' WIDTH)	= 31
PROPOSED ESTATE (± 150' WIDTH)	= 35
PROPOSED NEIGHBORHOOD (± 100' WIDTH)	= 47
PLATTED VILLAGE (± 80' WIDTH)	= 35
PROPOSED VILLAGE (± 80' WIDTH)	= 25
PROPOSED VILLAGE (± 80' WIDTH)	= 89
<b>TOTAL = 242</b>	

EXISTING PLATTED LOT AREA	= ± 42.75 AC.
FUTURE LOT AREA	= ± 87.80 AC.
EXISTING ROAD R/W AREA	= ± 17.38 AC.
FUTURE ROAD R/W AREA	= ± 11.80 AC.
WWTF AREA	= ± 5.11 AC.
<b>TOTAL OPEN SPACE</b>	= ± 143.95 AC.
<b>TOTAL PUD AREA</b>	= ± 308.38 AC.

<b>OPEN SPACE</b>	
AMENITY AREA	= ± 3.71 AC.
OPEN SPACE (OTHER)	= ± 65.04 AC.
PASSIVE OPEN SPACE	= ± 85.20 AC.
(WOODED BUFFER NOT INCLUDING PROTECTED AREAS WITHIN LOTS)	
<b>TOTAL OPEN SPACE</b>	= ± 143.95 AC.

WOODED BUFFER PROTECTED AREA WITHIN LOTS	= ± 14.8 AC.
--	--------------

**\* LOCATION SUBJECT TO CHANGE**



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**WESTFALL  
 SUBDIVISION**

CHATHAM COUNTY,  
 NORTH CAROLINA

**OVERALL  
 MODIFIED MASTER  
 PLAN EXHIBIT**

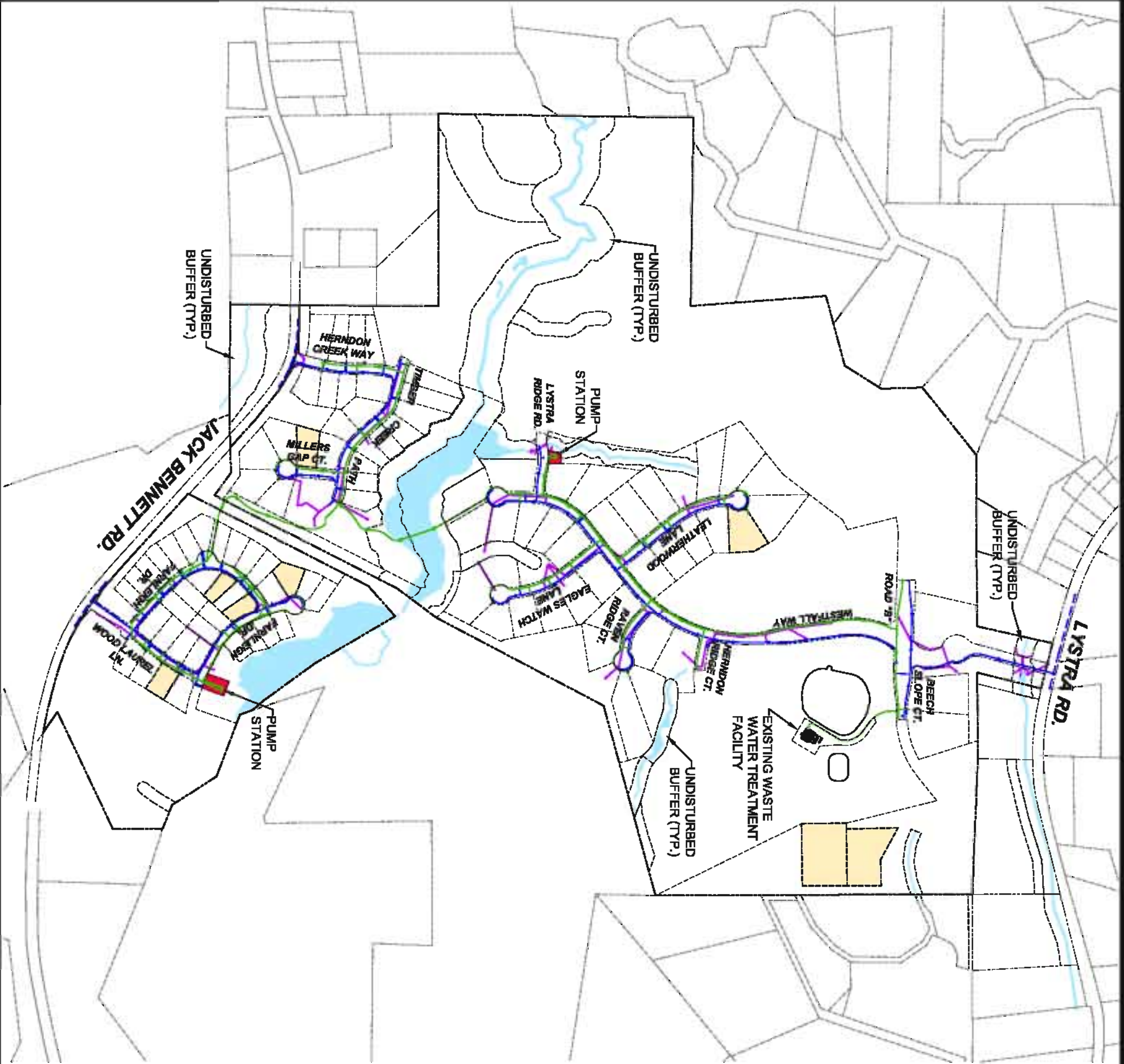
OCTOBER 2012



**NORTH**







- LEGEND**
- STORM DRAINAGE
  - SANITARY SEWER
  - WATERLINE



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**WESTFALL  
SUBDIVISION**  
CHATHAM COUNTY,  
NORTH CAROLINA  
**EXISTING  
UTILITIES  
EXHIBIT**

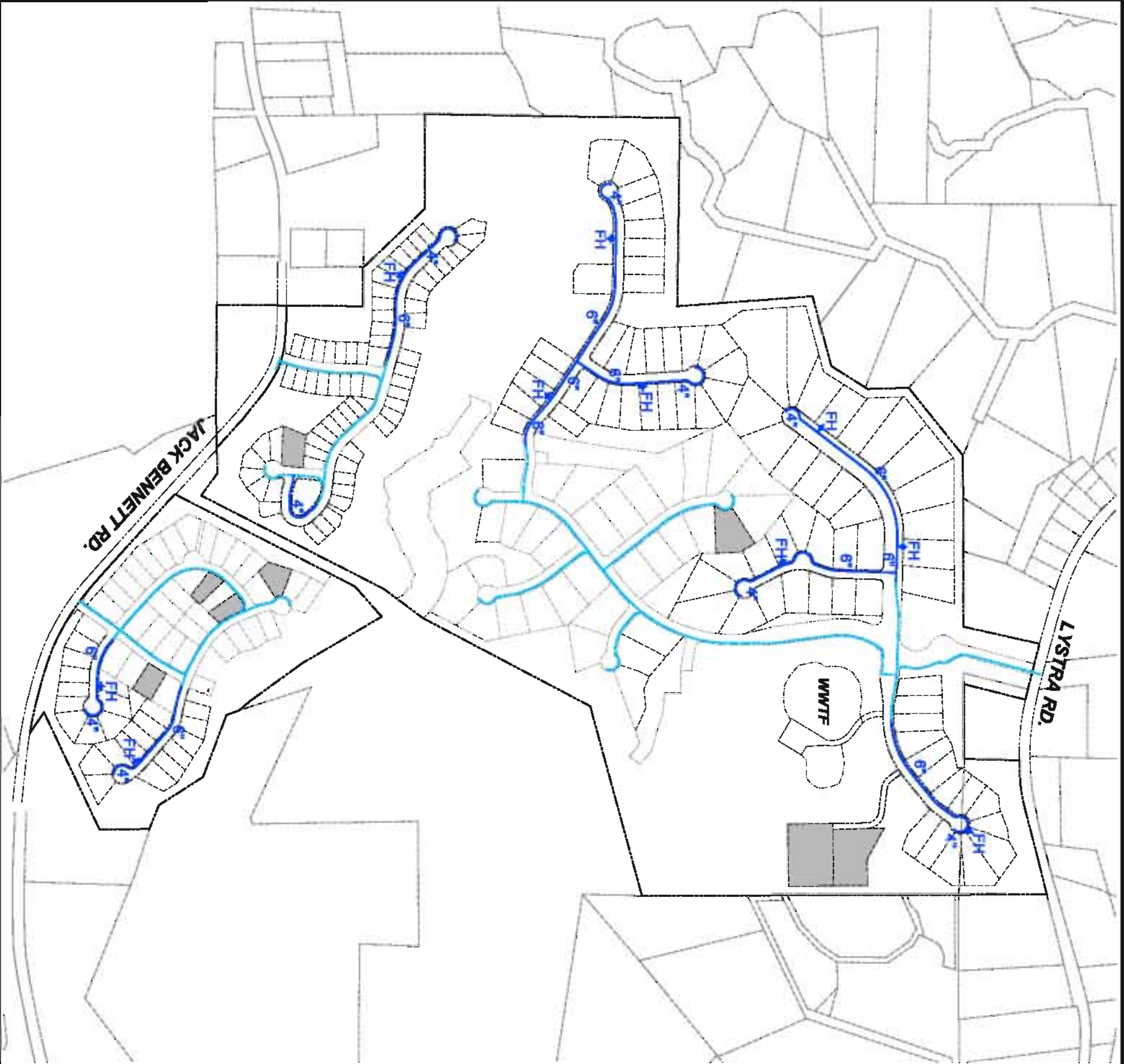
OCTOBER 2012



**NORTH**



SCALE: 1" = 600'



- LEGEND**
- EXISTING WATERLINE
  - PROPOSED WATERLINE
  - WATERLINE SIZE (APPROXIMATE)
  - FH FIRE HYDRANT



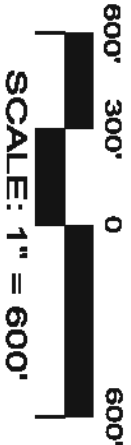
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**WESTFALL  
SUBDIVISION**  
CHATHAM COUNTY,  
NORTH CAROLINA  
**PROPOSED  
WATER MAIN  
EXHIBIT**

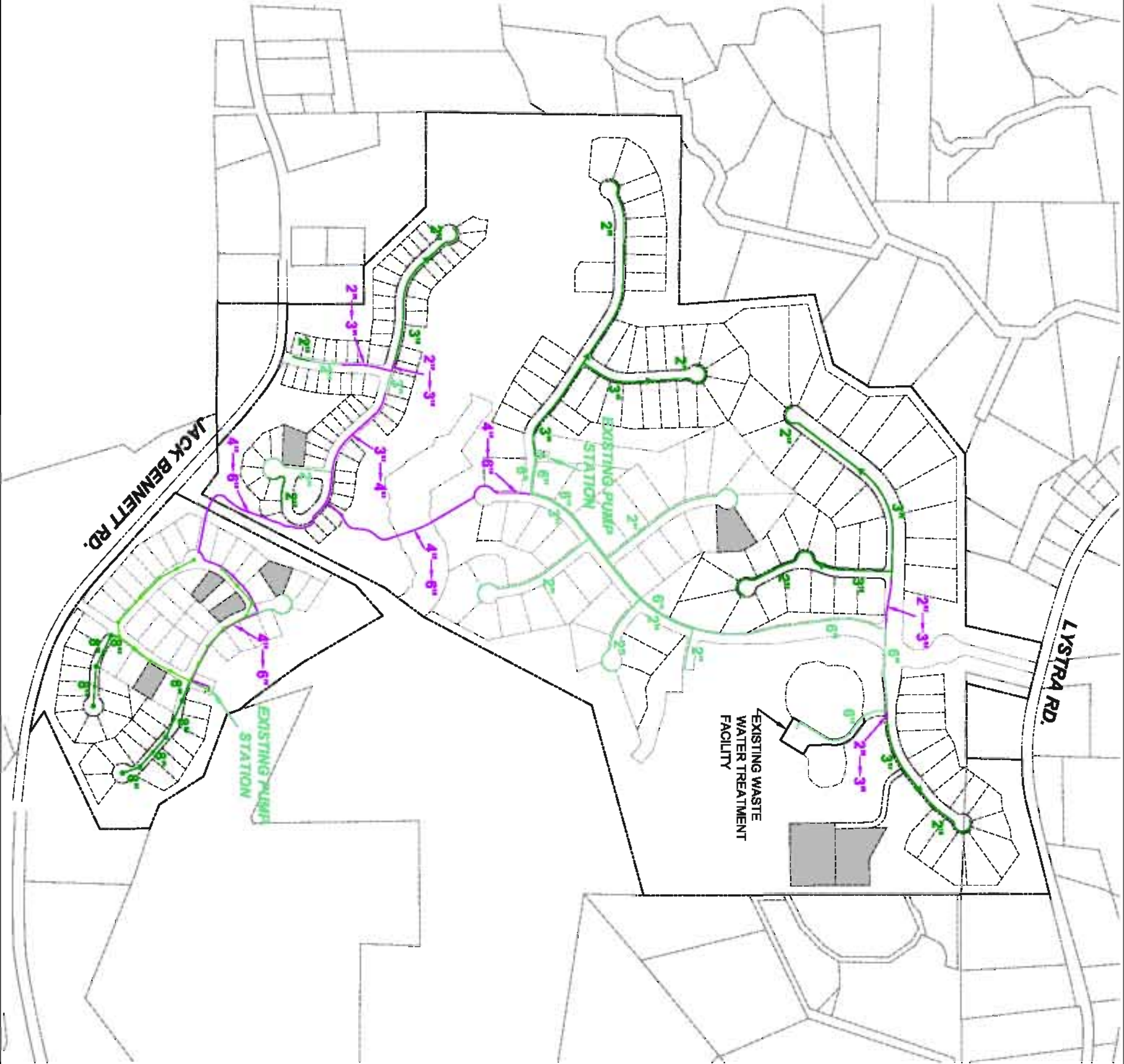
OCTOBER 2012



**NORTH**







**LEGEND**

- EXISTING FORCE MAIN
- EXISTING GRAVITY SEWER
- PROPOSED FORCE MAIN
- PROPOSED GRAVITY SEWER
- EXISTING FORCE MAIN TO BE UP-SIZED
- EXISTING LINE SIZE
- PROPOSED LINE SIZE (APPROXIMATE)
- EXISTING LINE UPGRADED SIZE



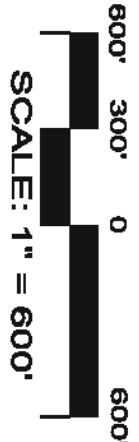
**CE GROUP**  
301 GLENWOOD AVE. SUITE 220  
RALEIGH, NC 27603  
PHONE: 919-367-8790  
[www.cegroupinc.com](http://www.cegroupinc.com)

**WESTFALL  
SUBDIVISION**  
CHATHAM COUNTY,  
NORTH CAROLINA  
**PROPOSED  
SANITARY SEWER  
MAIN EXHIBIT**

OCTOBER 2012



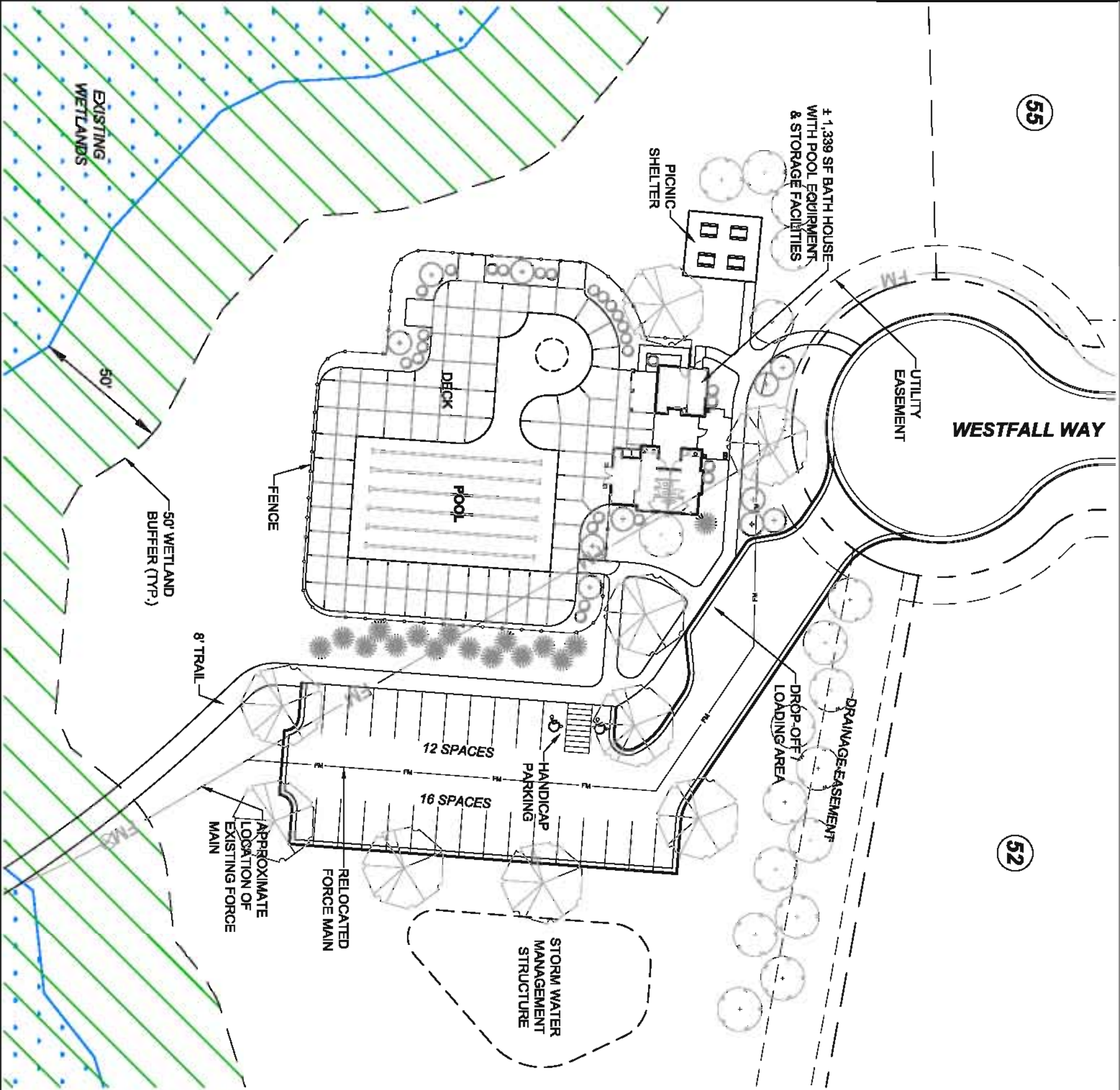
NORTH





55

52



**SITE DATA**

PARKING REQUIRED: 1 SPACE / 25 LOTS  
242 LOTS = 10 SPACES REQUIRED  
PARKING PROVIDED: 26 SPACES PROVIDED  
IMPERVIOUS AREA: ± 36,000 SF



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**WESTFALL  
SUBDIVISION**

CHATHAM COUNTY,  
NORTH CAROLINA

**AMENITY POOL  
AREA EXHIBIT**

OCTOBER 2012



**NORTH**

40' 20' 0 40'  
SCALE: 1" = 40'

NOTE: THE FEATURES DESCRIBED AND DEPICTED  
HEREON ARE BASED UPON CURRENT  
DEVELOPMENT PLANS. ACTUAL DEVELOPMENT  
MAY BE SUBJECT TO CHANGE.



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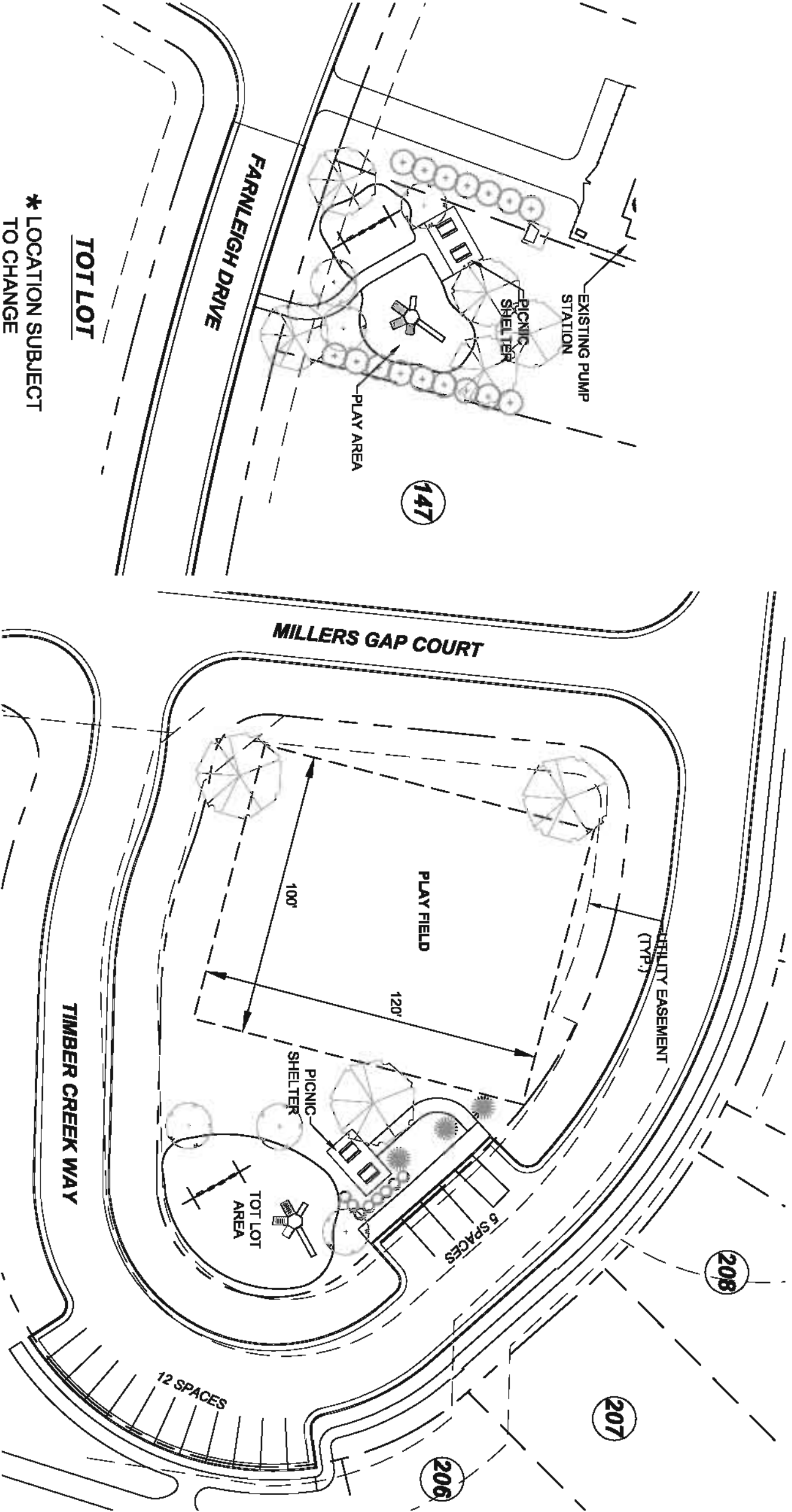
**WESTFALL  
SUBDIVISION**  
CHATHAM COUNTY,  
NORTH CAROLINA

**AMENITY TOT LOT  
& PLAY FIELD  
EXHIBIT**

OCTOBER 2012

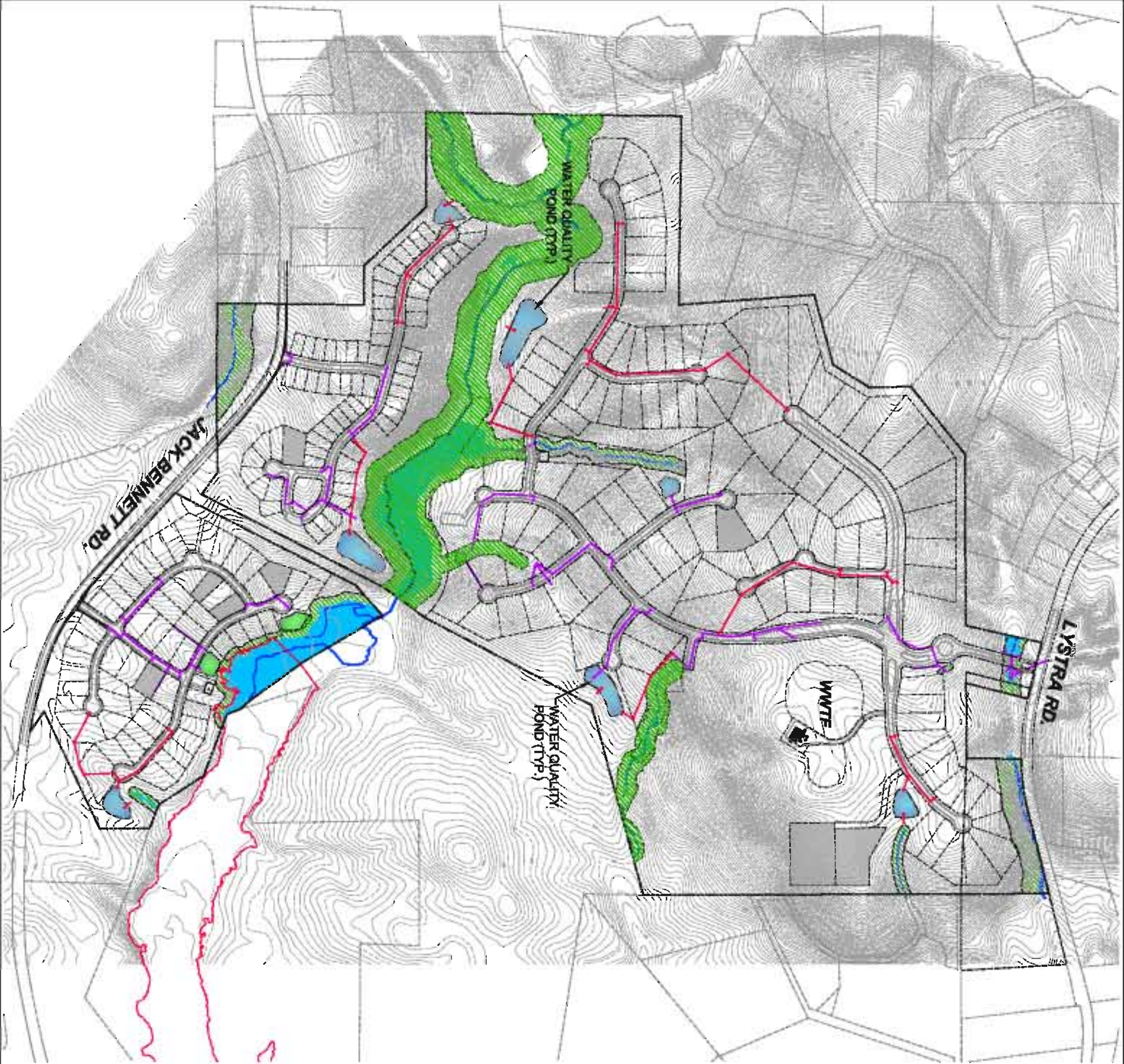


**NORTH**



NOTE: THE FEATURES DESCRIBED AND DEPICTED  
HEREON ARE BASED UPON CURRENT  
DEVELOPMENT PLANS. ACTUAL DEVELOPMENT  
MAY BE SUBJECT TO CHANGE.





- LEGEND**
- WETLAND & STREAM RIPARIAN BUFFER AREAS
  - WETLAND AREA
  - FEMA FLOODWAY
  - EXISTING STORM DRAINAGE
  - PROPOSED SUBSURFACE STORM DRAINAGE
  - NCDEMR BMP WET POND
  - EXISTING DRY DETENTION BASIN

NOTE: PROPOSED WET PONDS WILL BE DESIGNED IN ACCORDANCE WITH THE CHATHAM COUNTY STORMWATER ORDINANCE DATED SEPTEMBER 8, 2009.



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**WESTFALL  
 SUBDIVISION**  
 CHATHAM COUNTY,  
 NORTH CAROLINA

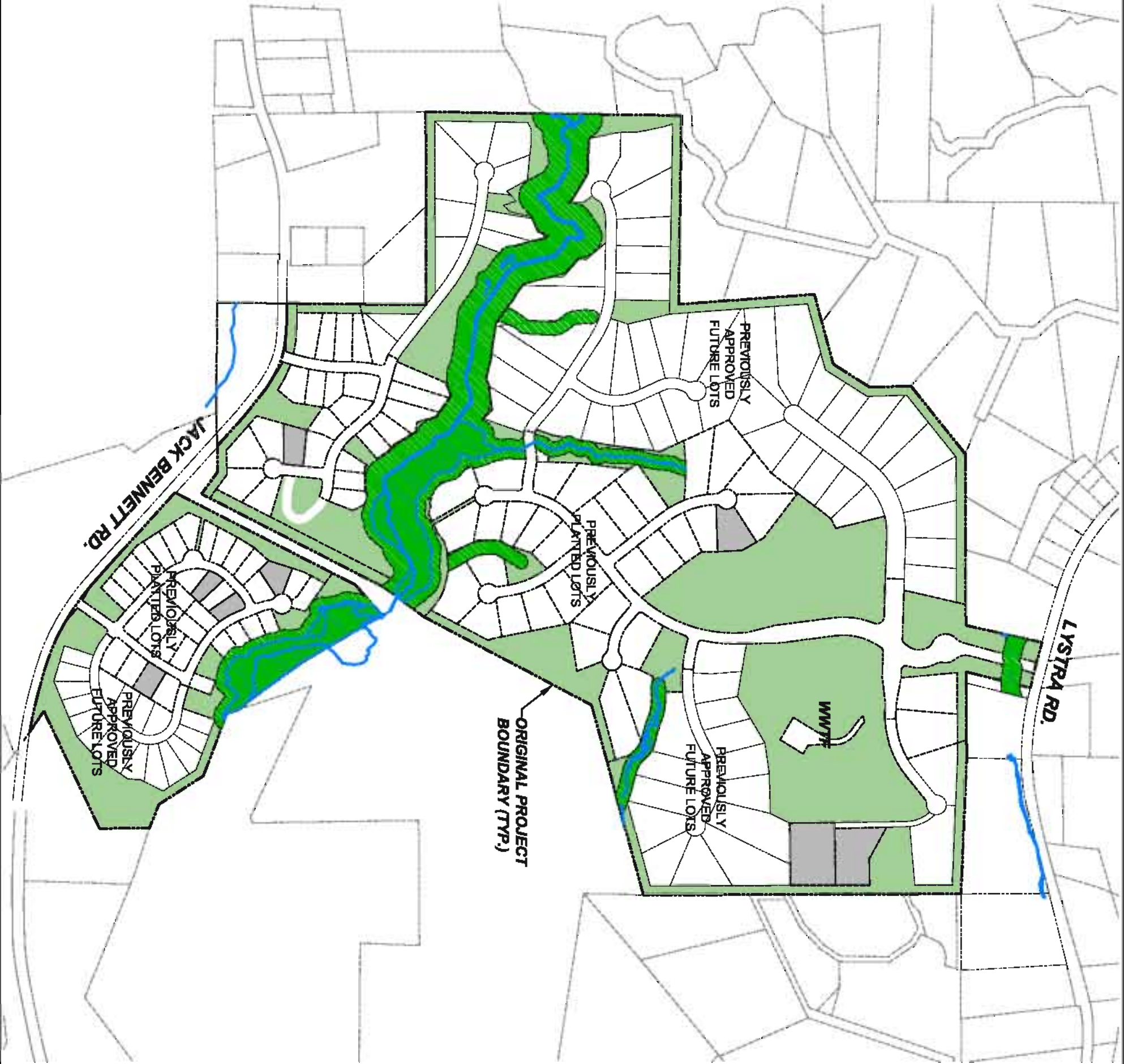
**STORMWATER  
 MANAGEMENT  
 PLAN EXHIBIT**  
 OCTOBER 2012



**NORTH**







**LEGEND**

- LOTS OWNED BY OTHERS
- PREVIOUSLY APPROVED OPEN SPACE
- WETLAND & STREAM RIPARIAN BUFFER AREAS
- WETLAND AREA

PREVIOUSLY APPROVED TOTAL OPEN SPACE	108.81 Ac.
--------------------------------------	------------



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**WESTFALL  
SUBDIVISION**

CHATHAM COUNTY,  
NORTH CAROLINA

**PREVIOUSLY  
APPROVED OPEN  
SPACE EXHIBIT**

OCTOBER 2012



**NORTH**



SCALE: 1" = 600'





**LEGEND**

- LOTS OWNED BY OTHERS
  - PROPOSED OPEN SPACE
  - WETLAND & STREAM RIPARIAN BUFFER AREAS
  - WETLAND AREA
- |                     |            |
|---------------------|------------|
| PROPOSED OPEN SPACE | 143.95 Ac. |
|---------------------|------------|



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**WESTFALL  
SUBDIVISION**

CHATHAM COUNTY,  
NORTH CAROLINA

**PROPOSED OPEN  
SPACE EXHIBIT**

OCTOBER 2012



**NORTH**



Of -



Cf -



"This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is a change in the law or our published regulation, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. This determination was made utilizing the 1987 Corps of Engineers Wetlands Delineation Manual."

Regulatory Official: \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

USACE Action ID: \_\_\_\_\_

This survey is of an existing building or other structure, or natural feature, such as a watercourse.

*William M. Digiacomo*  
Surveyor

September 18, 2012  
Date



#### SURVEY NOTES:

- 1) EXISTING WETLAND AND STREAM INFORMATION TAKEN FROM MAPS PREPARED BY SMITH & SMITH SURVEYORS DATED MAY 22, 2006 ENTITLED "WETLAND DELINEATION FOR OVER JORDAN, LLC".
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#### ABBREVIATION LEGEND

EIP EXISTING IRON PIPE  
IPF IRON PIPE FOUND  
C&T CAP AND TACK  
WL WETLAND  
PS PLAT SLIDE  
PG PAGE  
N/F NOW OR FORMERLY

#### LEGEND

--- RIGHT-OF-WAY  
--- CREEK CENTERLINE  
--- TIE LINES  
--- PROPERTY LINES  
--- LOT LINES  
--- STORM DRAIN  
--- WETLANDS  
--- RIP RAP

#### LINE TABLE

LINE	BEARING	LENGTH
L508	N49°59'36"E	7.04
L509	N25°53'37"E	8.44
L510	N68°33'13"W	9.35
L511	S88°05'28"E	19.74
L512	N61°40'38"E	28.09
L513	S87°40'16"E	21.58
L514	N82°02'29"E	30.54
L515	N69°18'00"E	19.56
L516	N86°28'48"E	15.95
L517	N84°10'14"E	28.49
L518	N81°30'41"E	53.61
L519	N86°02'19"E	41.85
L520	N70°38'52"E	57.29
L521	N70°21'09"E	58.82
L522	N81°45'55"E	32.72
L523	N76°22'06"E	17.10
L524	N56°27'52"E	24.30
L525	N67°18'07"E	29.73
L526	N65°56'39"E	38.80
L527	N82°13'54"E	33.01
L528	N81°52'50"E	33.07
L529	N74°45'44"E	43.25
L530	N74°47'37"E	44.79
L531	S85°40'31"E	19.21
L532	S74°58'45"E	38.83
L533	N85°24'33"E	38.95
L534	N65°57'57"E	13.13
L612	S47°49'15"E	11.03
L613	N38°06'38"E	10.00
L614	N56°57'24"W	11.32
L615	N35°14'09"E	7.86
L616	N37°47'43"W	9.95
L617	N23°59'59"E	10.12
L618	N48°59'20"E	8.04
L619	N08°24'36"W	16.04
L620	N02°56'07"W	26.86
L621	S87°03'53"W	8.00
L622	S02°56'07"E	27.24
L623	S08°24'38"E	9.79
L624	S88°16'04"W	3.72
L625	S88°16'04"W	6.33
L626	S02°13'41"E	19.20
L627	S28°31'42"W	12.28
L628	S44°16'20"E	11.75
L629	S47°49'15"E	3.08

N.C.S.R. No. 1721  
(LYSTRA CHURCH ROAD)  
(60' PUBLIC ROW)

WETLAND AREA  
0.011 ACRE

WETLAND AREA  
0.021 ACRE

IMPORTANT -  
PERENNIAL  
CHANNEL



SCALE: 1" = 100' (Horiz.)



NORTH

PS 2002 PG 397

S87°39'22"E  
752.41

EIP



CE GROUP

301 GLENWOOD AVE. 220  
RALEIGH, NC 27603  
PHONE: 919-367-8790  
FAX: 919-233-0032

www.cegroupinc.com

License # C-4739

REV	DATE

WETLAND DELINEATION FOR  
WESTFALL ASSOCIATES, LLC  
WILLIAMS TOWNSHIP  
CHATHAM COUNTY  
NORTH CAROLINA

Date: 08/24/2012  
Scale: 1" = 100'  
Drawn: CPM  
Checked: AJF  
Project No: 800-09  
Computer Dwg. Name: sht 03 wetlands

Sheet No:  
**3**  
Of -

# **SURVEY NOTES:**

1) EXISTING WETLAND AND STREAM INFORMATION TAKEN FROM MAPS PREPARED BY SMITH & SMITH SURVEYORS DATED MAY 22, 2008 ENTITLED "WETLAND DELINEATION FOR OVER JORDAN, LLC".  
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 3) EXISTING PLATTED LOTS TAKEN FROM THE FOLLOWING MAPS RECORDED WITH THE CHATHAM COUNTY REGISTER OF DEEDS - PS 2008 PG 95, PS 2008 PG 96, PS 2008 PG 97 AND PS 2008 PG 98.

## **ABBREVIATION LEGEND**

EIP EXISTING IRON PIPE  
 IPF IRON PIPE FOUND  
 C&T CAP AND TACK  
 WL WETLAND  
 PS PLAT SLIDE  
 PG PAGE  
 N/F NOW OR FORMERLY

## **LEGEND**

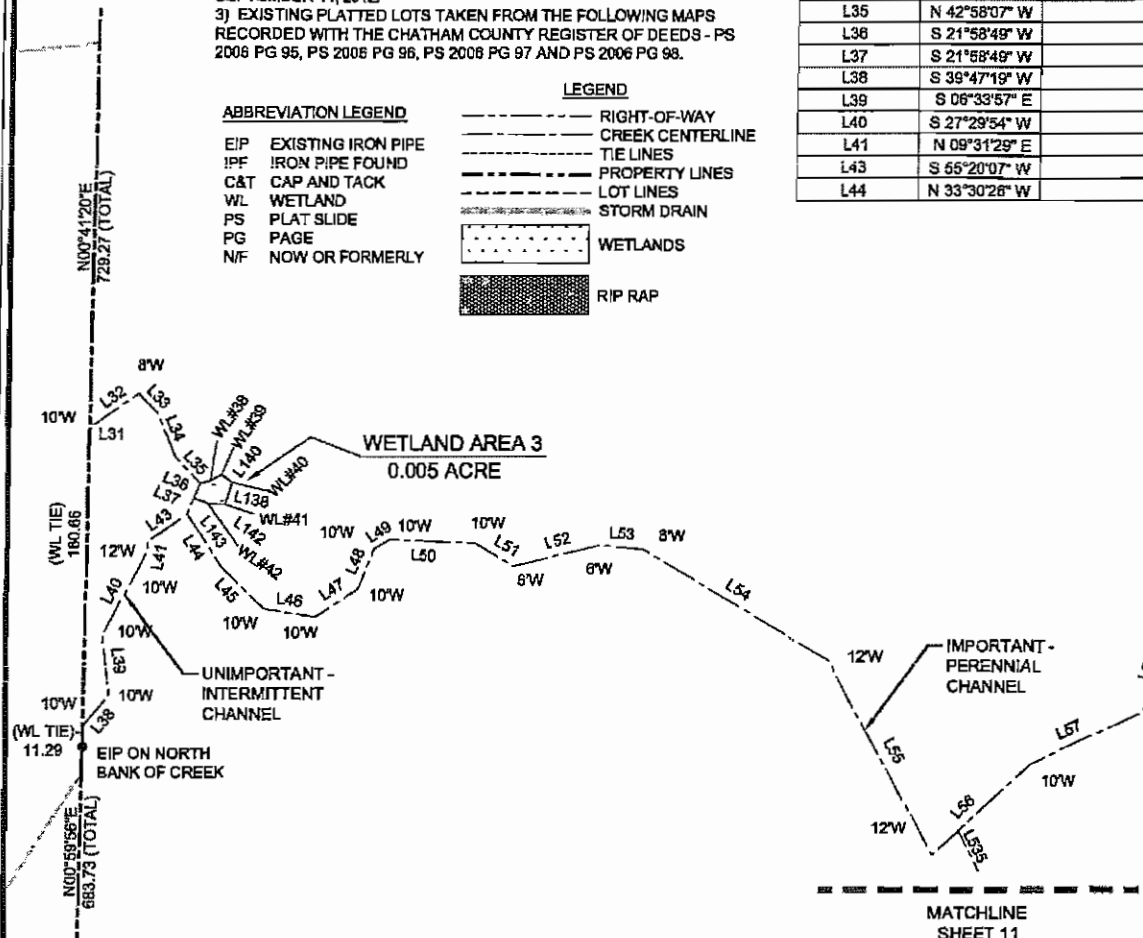
--- RIGHT-OF-WAY  
 --- CREEK CENTERLINE  
 --- TIE LINES  
 --- PROPERTY LINES  
 --- LOT LINES  
 --- STORM DRAIN  
 [Pattern] WETLANDS  
 [Pattern] RIP RAP

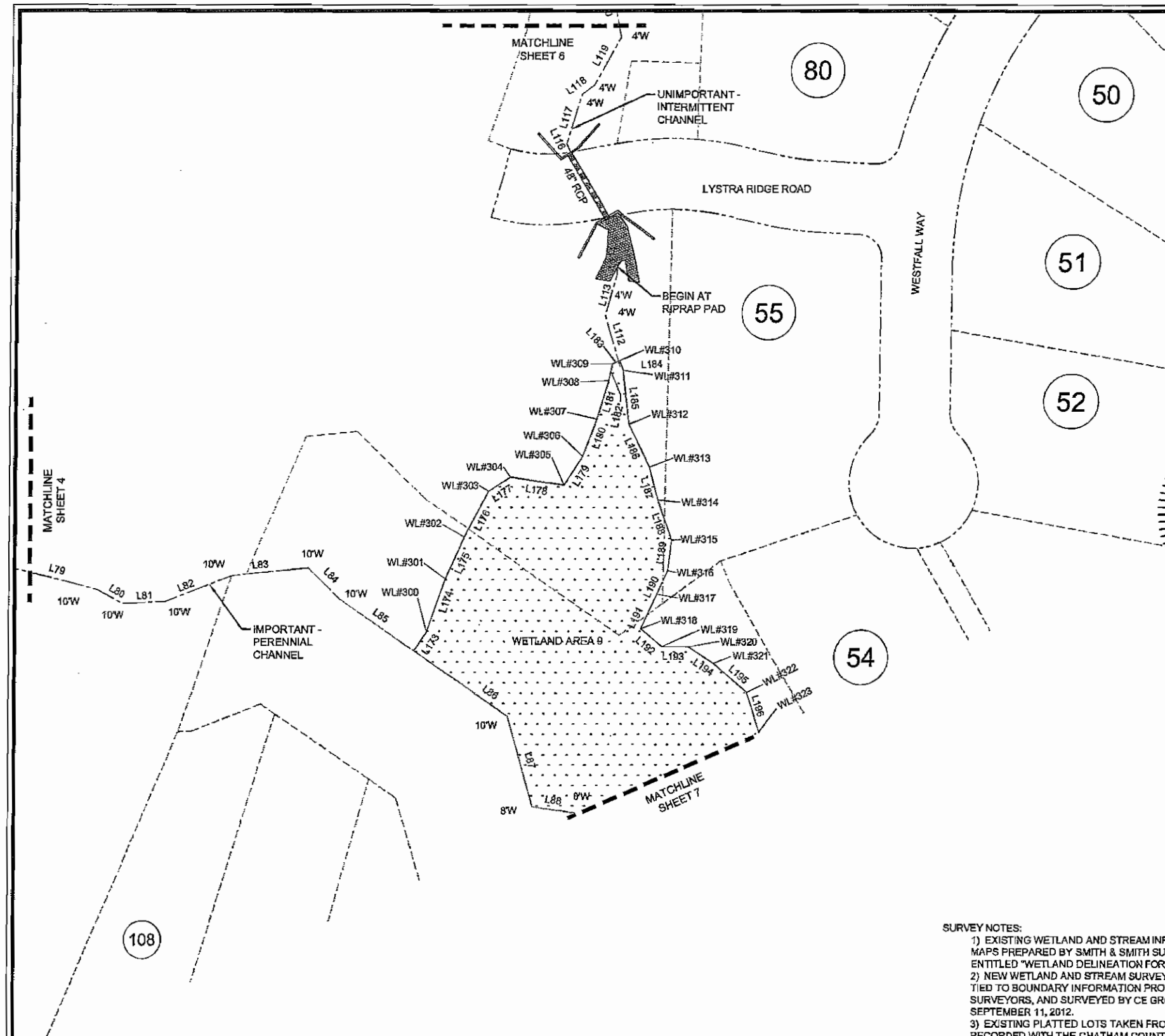
LINE	BEARING	LENGTH
L31	N 88°57'29" W	2.30'
L32	S 54°38'50" W	28.55'
L33	N 44°07'42" W	14.76'
L34	N 22°26'56" W	25.26'
L35	N 42°58'07" W	19.05'
L36	S 21°58'49" W	8.49'
L37	S 21°58'49" W	9.33'
L38	S 39°47'19" W	20.62'
L39	S 06°33'57" E	32.16'
L40	S 27°29'54" W	50.00'
L41	N 09°31'29" E	6.83'
L43	S 55°20'07" W	24.34'
L44	N 33°30'28" W	33.35'

LINE	BEARING	LENGTH
L45	N 45°28'25" W	32.13'
L46	N 80°44'17" W	27.61'
L47	S 57°18'58" W	27.76'
L48	S 21°43'52" W	22.95'
L49	S 57°46'59" W	9.70'
L50	N 87°44'36" W	46.82'
L51	S 80°00'02" E	24.26'
L52	S 78°23'46" W	46.11'
L53	N 88°07'20" W	24.46'
L54	S 69°04'20" E	116.90'
L55	S 28°27'50" E	117.27'
L56	N 46°49'36" E	71.02'
L57	N 65°34'46" E	66.71'
L58	N 24°18'19" E	50.72'

LINE	BEARING	LENGTH
L59	N 27°09'50" E	20.83'
L60	N 00°00'10" E	46.97'
L61	N 55°46'55" E	93.76'
L62	S 40°16'14" E	20.41'
L63	S 08°53'45" W	50.90'
L64	S 21°14'07" E	17.48'
L65	S 68°08'13" E	42.97'
L66	S 48°19'21" E	83.96'
L67	S 00°46'28" W	12.27'
L68	S 12°15'36" E	103.69'
L69	S 18°06'35" E	75.77'
L70	N 19°40'08" W	41.61'
L71	S 41°53'13" E	41.11'
L72	N 54°16'15" W	78.01'
L73	N 80°56'50" W	38.04'
L74	N 52°52'55" W	69.67'
L75	S 54°50'42" E	112.75'
L76	S 83°18'34" E	88.43'
L77	S 78°25'42" E	43.17'
L78	S 83°23'09" E	90.28'

LINE	BEARING	LENGTH
L144	S 38°49'35" W	6.29'
L145	N 88°09'10" W	4.20'
L146	S 58°40'07" W	12.31'
L147	S 75°47'47" E	12.63'
L148	S 04°02'52" E	26.14'
L149	N 60°22'58" W	17.66'
L150	S 61°42'01" E	20.90'
L151	S 33°54'04" W	10.35'
L152	N 73°39'47" W	25.67'
L153	N 42°10'45" W	22.17'
L154	N 38°17'14" W	16.00'
L155	N 66°15'42" W	18.20'
L156	N 17°13'48" W	16.90'
L157	N 11°28'55" E	12.50'
L158	S 69°19'11" E	13.90'
L159	N 31°33'40" E	8.24'
L160	N 86°49'30" E	17.90'
L161	S 54°02'18" E	11.86'
L162	S 57°18'50" W	4.08'
L163	S 47°38'55" W	12.43'
L164	S 54°52'24" W	21.72'
L165	N 09°27'51" E	21.78'
L166	N 72°24'43" E	17.97'
L167	S 88°20'59" E	10.42'
L168	S 60°54'06" E	6.21'
L169	S 60°44'24" E	19.19'
L170	S 58°09'47" E	15.97'
L171	S 79°46'20" E	17.35'
L172	N 54°29'12" E	5.40'





"This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is a change in the law or our published regulation, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. This determination was made utilizing the 1987 Corps of Engineers Wetlands Delineation Manual."

Regulatory Official: \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

USACE Action ID: \_\_\_\_\_

This survey is of an existing building or other structure, or natural feature, such as a watercourse.

*William M. Digiacomo*  
Surveyor

September 18, 2012  
Date



LINE TABLE		
LINE	BEARING	LENGTH
L173	S 34°33'11" W	18.98'
L174	N 19°08'41" E	47.46'
L175	N 23°30'52" E	38.34'
L176	N 28°12'08" E	43.57'
L177	N 57°03'44" E	21.92'
L178	S 81°37'25" E	46.70'
L179	N 32°30'55" E	28.54'
L180	N 20°01'34" E	33.26'
L181	N 16°58'55" E	33.83'
L182	N 12°10'01" E	14.50'
L183	N 66°02'40" E	6.58'
L184	S 20°02'55" E	8.46'
L185	S 06°48'44" E	45.73'
L186	S 28°14'12" E	40.04'
L187	S 15°59'32" E	28.85'
L188	S 19°58'58" E	35.75'
L189	S 06°52'59" W	25.93'
L190	S 25°19'03" W	21.69'
L191	S 25°04'39" W	32.09'
L192	S 50°55'31" E	23.76'
L193	S 89°29'40" E	22.78'
L194	S 56°18'00" E	25.18'
L195	S 49°38'40" E	37.50'
L196	S 18°06'48" E	35.18'
L197	S 75°40'24" E	81.40'
L180	S 60°18'40" E	24.05'
L81	N 87°16'00" E	37.35'
L82	N 68°55'08" E	60.13'
L83	N 84°17'15" E	64.80'
L84	S 45°41'39" E	37.48'
L85	S 55°26'49" E	76.69'
L86	S 55°26'49" E	97.57'
L87	S 16°37'22" E	79.47'
L88	S 81°37'18" E	35.79'
L112	N 16°54'42" W	45.58'
L113	N 15°36'39" E	35.32'
L114	N 02°58'18" E	6.67'
L116	N 25°29'21" W	8.58'
L117	N 16°47'13" E	43.62'
L118	N 52°48'11" E	12.35'
L119	N 28°45'45" E	48.44'

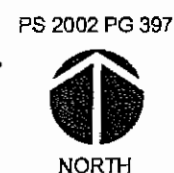
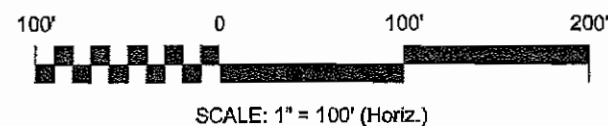
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ABBREVIATION LEGEND

EIP EXISTING IRON PIPE  
IPF IRON PIPE FOUND  
C&T CAP AND TACK  
WL WETLAND  
PS PLAT SLIDE  
PG PAGE  
N/F NOW OR FORMERLY

LEGEND

--- RIGHT-OF-WAY  
--- CREEK CENTERLINE  
--- TIE LINES  
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--- WETLANDS  
--- RIP RAP



CE GROUP

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RALEIGH, NC 27603  
PHONE: 919-367-8790  
FAX: 919-233-0032

www.cegroupinc.com

License # C-1739

REV	DATE
1	10/03/2012

WETLAND DELINEATION FOR  
WESTFALL ASSOCIATES, LLC  
WILLIAMS TOWNSHIP  
CHATHAM COUNTY  
NORTH CAROLINA

Date: 08/24/2012  
Scale: 1" = 100'  
Drawn: CPM  
Checked: AJF  
Project No: 800-09  
Computer Dwg. Name: sht 05 wetlands

Sheet No: 5 Of -

LINE TABLE		
LINE	BEARING	LENGTH
L120	N 11°15'34" W	53.58'
L121	N 33°00'03" W	46.83'
L122	N 28°25'59" E	70.57'
L123	N 14°07'32" W	34.84'
L124	N 09°43'20" E	15.59'
L125	N 42°45'28" E	34.17'
L126	N 53°21'03" E	30.63'
L127	N 14°50'43" W	54.67'
L128	N 15°03'13" E	37.48'
L129	N 00°16'18" E	33.55'
L233	S 40°26'37" E	9.42'
L234	N 37°49'30" W	11.91'
L235	N 78°35'22" W	18.90'
L236	N 21°43'42" E	13.82'
L237	S 38°47'48" E	3.20'
L238	N 16°34'15" W	12.25'
L239	S 47°03'40" W	9.25'

SURVEY NOTES:

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--- RIGHT-OF-WAY  
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Regulatory Official: \_\_\_\_\_

Title \_\_\_\_\_

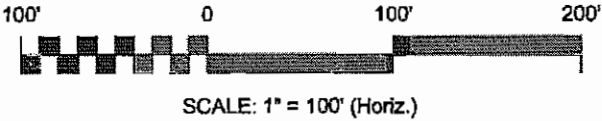
Date \_\_\_\_\_

USACE Action ID: \_\_\_\_\_

This survey is of an existing building or other structure, or natural feature, such as a watercourse.

*William M. Digiacomo*  
 Surveyor

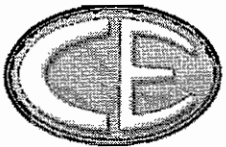
September 18, 2012  
 Date



PS 2002 PG 397

MATCHLINE  
 SHEET 5

START POINT OF  
 UNIMPORTANT/INTERMITTENT  
 CHANNEL REVISED FROM PREVIOUS  
 SURVEY BY SMITH & SMITH PER ACCE  
 FIELD CALL



**CE GROUP**

301 GLENWOOD AVE, 220  
 RALEIGH, NC 27603  
 PHONE: 919-367-8790  
 FAX: 319-233-0032

www.cegroupinc.com

License # C-1739

REV	DATE



LINE TABLE			LINE TABLE			LINE TABLE			LINE TABLE		
LINE	BEARING	LENGTH	LINE	BEARING	LENGTH	LINE	BEARING	LENGTH	LINE	BEARING	LENGTH
L197	S 03°24'42" E	35.21'	L247	N 77°55'30" W	30.38'	L273	N 58°28'42" W	9.38'	L427	S 83°32'41" E	8.78'
L198	S 26°58'01" E	24.20'	L248	N 73°39'45" W	21.56'	L89	S 30°38'13" E	172.62'	L428	S 13°51'39" W	17.50'
L199	S 47°15'39" E	59.33'	L249	N 68°15'25" W	34.85'	L90	S 50°23'09" E	38.73'	L429	S 22°59'27" E	16.54'
L200	S 61°51'12" E	48.83'	L250	S 55°18'02" W	15.80'	L91	S 32°53'10" E	35.91'	L430	S 17°58'06" W	15.39'
L201	S 31°50'11" E	30.51'	L251	S 83°48'17" W	15.55'	L92	S 34°13'06" E	83.12'	L431	S 28°07'14" W	30.50'
L202	S 59°46'32" E	47.64'	L252	N 83°48'18" W	25.55'	L93	S 88°55'38" E	43.95'	L432	S 03°44'44" E	32.56'
L203	N 74°04'16" E	25.98'	L253	S 66°28'28" W	15.13'	L94	N 68°04'38" E	72.46'	L433	S 01°35'41" W	29.04'
L204	S 84°29'53" E	61.47'	L254	S 73°38'15" W	17.70'	L95	S 64°07'59" E	42.42'	L434	S 64°30'29" W	23.68'
L205	N 66°26'35" E	39.49'	L255	S 40°52'03" W	24.56'	L96	N 60°47'41" E	40.80'	L435	S 71°50'51" W	20.18'
L206	N 38°19'14" E	34.37'	L256	S 46°37'04" W	18.79'	L97	S 75°11'31" E	43.06'	L436	N 01°49'35" W	36.84'
L207	N 83°51'35" E	38.41'	L257	S 38°58'47" W	28.14'	L98	N 74°29'53" E	25.99'	L438	N 07°08'43" W	24.72'
L208	N 51°44'33" E	29.77'	L258	S 30°50'20" W	42.31'	L99	N 32°24'13" E	13.88'	L439	S 32°49'19" W	14.85'
L209	N 72°46'54" E	34.45'	L259	S 37°30'17" W	29.69'	L100	N 64°43'38" E	111.65'	L440	S 24°43'26" W	28.30'
L210	N 54°34'22" E	22.81'	L260	S 38°46'26" W	26.44'	L101	S 79°17'16" W	30.17'	L441	S 06°31'56" E	42.98'
L211	S 88°10'01" E	42.13'	L261	S 45°48'40" W	29.27'	L102	N 52°33'53" E	79.18'	L442	S 03°11'42" E	35.30'
L212	S 69°12'13" E	27.01'	L262	S 42°45'19" W	26.34'	L103	S 74°21'08" W	29.56'	L274	N 42°59'39" W	19.40'
L213	N 52°42'53" E	11.52'	L263	S 69°16'45" W	24.32'	L104	N 71°43'47" E	29.49'	L275	N 24°43'36" E	21.04'
L214	S 73°47'23" E	28.42'	L264	S 59°52'17" W	25.78'	L105	N 50°55'01" E	24.72'	L276	N 50°31'51" W	25.25'
L215	N 75°10'12" E	41.65'	L265	N 88°50'10" W	27.50'	L106	S 83°59'50" E	51.68'	L277	N 44°04'22" W	15.32'
L216	S 88°08'55" E	35.05'	L266	N 63°04'15" W	26.19'	L107	N 62°49'57" E	30.25'	L278	S 20°43'46" E	24.46'
L217	S 65°12'42" E	29.93'	L267	N 60°51'06" W	22.51'	L108	S 00°37'29" E	24.15'	L279	S 05°34'04" E	44.00'
L218	S 49°38'21" E	24.06'	L268	N 39°23'21" W	33.95'	L109	S 88°49'27" E	20.48'	L280	S 05°34'04" E	12.39'
L219	S 22°44'32" E	37.20'	L269	N 50°38'49" W	26.23'	L110	S 49°23'00" E	21.52'	L281	S 00°45'22" E	36.22'
L220	S 34°34'08" E	36.00'	L270	N 63°38'23" W	21.24'	L111	S 32°12'00" E	43.04'	L282	S 22°13'53" W	33.46'
L221	S 42°22'25" E	34.01'	L271	N 70°47'38" W	25.58'	L424	N 64°10'14" W	78.66'	L283	S 11°09'17" W	36.78'
L222	S 28°36'18" E	39.01'	L272	S 57°21'41" W	15.63'	L425	S 33°02'50" E	39.20'	L284	S 08°42'18" W	30.13'
L243	S 80°02'55" W	26.08'				L426	S 43°59'07" E	12.18'	L285	S 24°50'20" E	24.60'
L244	S 89°52'56" W	20.60'									
L245	N 18°28'14" W	18.30'									
L246	N 41°44'45" W	43.02'									

#### ABBREVIATION LEGEND

EIP EXISTING IRON PIPE  
IPF IRON PIPE FOUND  
C&T CAP AND TACK  
WL WETLAND  
PS PLAT SLIDE  
PG PAGE  
N/F NOW OR FORMERLY

#### LEGEND

--- RIGHT-OF-WAY  
--- CREEK CENTERLINE  
--- TIE LINES  
--- PROPERTY LINES  
--- LOT LINES  
--- STORM DRAIN  
WETLANDS  
RIP RAP

111

LINE TABLE		
LINE	BEARING	LENGTH
L451	S 75°08'42" E	14.15'
L452	S 27°38'53" E	17.13'
L453	S 19°10'49" E	27.21'
L454	S 66°24'31" E	18.24'
L455	S 68°12'41" E	10.97'
L457	N 00°09'31" W	18.45'
L458	N 50°51'15" E	18.45'

PS 2002 PG 397



NORTH



SCALE: 1" = 100' (Horiz.)

#### SURVEY NOTES:

- 1) EXISTING WETLAND AND STREAM INFORMATION TAKEN FROM MAPS PREPARED BY SMITH & SMITH SURVEYORS DATED MAY 22, 2008 ENTITLED "WETLAND DELINEATION FOR OVER JORDAN, LLC".
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- 3) EXISTING PLATTED LOTS TAKEN FROM THE FOLLOWING MAPS RECORDED WITH THE CHATHAM COUNTY REGISTER OF DEEDS - PS 2006 PG 95, PS 2006 PG 96, PS 2006 PG 97 AND PS 2006 PG 98.

"This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is a change in the law or our published regulation, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. This determination was made utilizing the 1987 Corps of Engineers Wetlands Delineation Manual."

Regulatory Official: \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

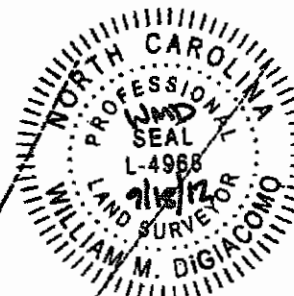
USACE Action ID: \_\_\_\_\_

This survey is of an existing building or other structure, or natural feature, such as a watercourse.

*William M. Digiacomo*  
Surveyor

September 18, 2012

Date



**CE GROUP**

301 GLENWOOD AVE. 220  
RALEIGH, NC 27603  
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License # C-1739

REV	DATE

WETLAND DELINEATION FOR  
WESTFALL ASSOCIATES, LLC  
WILLIAMS TOWNSHIP  
CHATHAM COUNTY  
NORTH CAROLINA

Date: 08/24/2012

Scale: 1" = 100'

Drawn: CPM

Checked: AJF

Project No. 800-09

Computer Dwg. Name  
Sht 07 wetlands

Sheet No:

7

Of -

MATCHLINE  
SHEET 8



# **SURVEY NOTES:**

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## **ABBREVIATION LEGEND**

EIP EXISTING IRON PIPE  
IPF IRON PIPE FOUND  
C&T CAP AND TACK  
WL WETLAND  
PS PLAT SLIDE  
PG PAGE  
N/F NOW OR FORMERLY

## **LEGEND**

--- RIGHT-OF-WAY  
--- CREEK CENTERLINE  
--- TIE LINES  
--- PROPERTY LINES  
--- LOT LINES  
--- STORM DRAIN  
--- WETLANDS  
--- RIP RAP

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Regulatory Official: \_\_\_\_\_

Title \_\_\_\_\_

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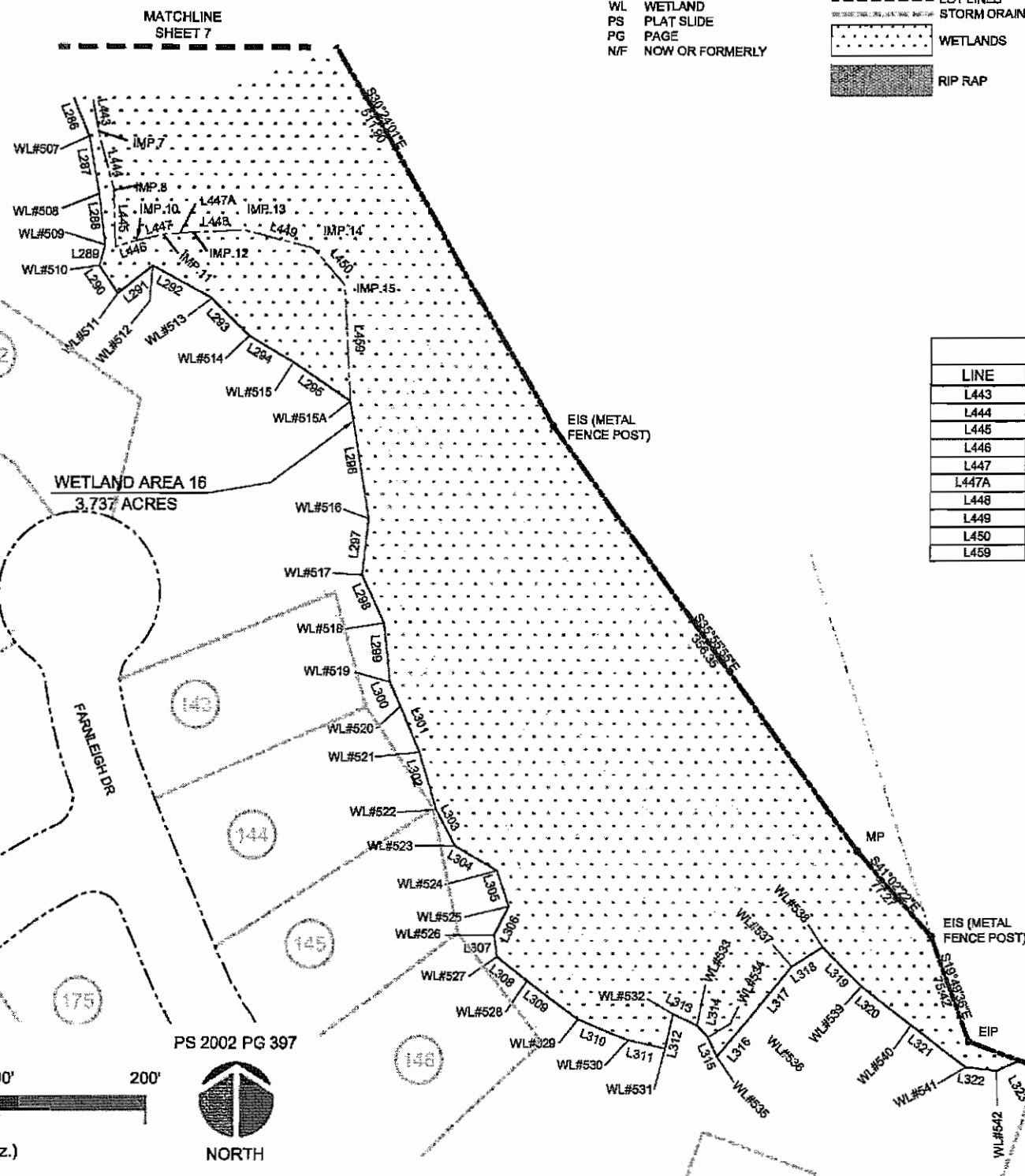
USACE Action ID: \_\_\_\_\_

This survey is of an existing building or other structure, or natural feature, such as a watercourse.

*W.M. Digiacomo*  
Surveyor

September 18, 2012

Date



LINE TABLE		
LINE	BEARING	LENGTH
L443	S 10°43'39" E	29.25'
L444	S 15°09'41" E	41.43'
L445	S 01°49'32" E	38.38'
L446	N 73°28'40" E	15.22'
L447	N 77°15'02" E	18.72'
L447A	N 85°06'28" E	19.93'
L448	N 87°46'45" E	35.38'
L449	S 75°27'23" E	48.18'
L450	S 41°14'18" E	33.20'
L459	S 03°13'22" E	78.78'

LINE TABLE		
LINE	BEARING	LENGTH
L286	S 22°35'35" E	28.76'
L287	S 10°24'55" E	39.84'
L288	S 07°21'11" E	35.06'
L289	S 15°28'47" W	14.42'
L290	S 34°02'57" E	22.51'
L291	N 51°49'22" E	30.17'
L292	S 61°41'12" E	46.04'
L293	S 44°52'38" E	36.12'
L294	S 59°46'14" E	35.32'
L295	S 55°39'59" E	46.70'
L296	S 09°13'55" E	80.80'
L297	S 06°06'43" W	38.42'
L298	S 24°58'43" E	35.98'
L299	S 08°19'23" E	40.31'
L300	S 24°23'55" E	17.96'
L301	S 22°45'47" E	33.89'
L302	S 16°53'57" E	40.57'
L303	S 28°58'32" E	28.18'
L304	S 58°58'54" E	33.11'
L305	S 18°08'17" E	25.53'
L306	S 26°29'28" W	21.44'
L307	S 07°30'07" E	15.01'
L308	S 50°45'18" E	25.84'
L309	S 53°13'21" E	43.73'
L310	S 68°11'38" E	37.21'
L311	S 77°14'47" E	25.44'
L312	N 12°57'41" E	23.93'
L313	S 64°11'13" E	17.95'
L314	S 42°34'42" E	11.04'
L315	S 25°13'33" E	14.54'
L316	N 40°01'02" E	35.73'
L317	N 39°46'11" E	43.79'
L318	N 58°02'32" E	24.82'
L319	S 44°51'34" E	37.33'
L223	S 48°08'38" E	28.50'
L224	S 70°06'13" E	31.75'
L225	N 68°59'30" E	30.41'
L226	S 83°01'18" E	30.45'
L227	S 79°51'29" E	60.18'
L320	S 52°18'21" E	42.98'
L321	S 52°34'04" E	46.97'
L322	S 83°22'13" E	21.41'
L323	N 65°22'35" E	18.56'



**CE GROUP**

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License # C-1739

REV	DATE

WETLAND DELINEATION FOR  
WESTFALL ASSOCIATES, LLC  
WILLIAMS TOWNSHIP  
CHATHAM COUNTY  
NORTH CAROLINA

Date: 08/24/2012

Scale: 1" = 100'

Drawn: CPM

Checked: AJF

Project No. 800-09

Computer Desig. Name  
shs 06 - shs 06

Sheet No:

8

Of -

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Name \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

This survey is of an existing building or other structure, or natural feature, such as a watercourse.

W.M.D.  
Surveyor

September 18, 2012  
Date



**SURVEY NOTES:**  
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**ABBREVIATION LEGEND**

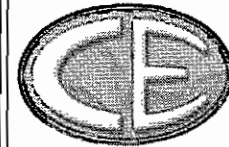
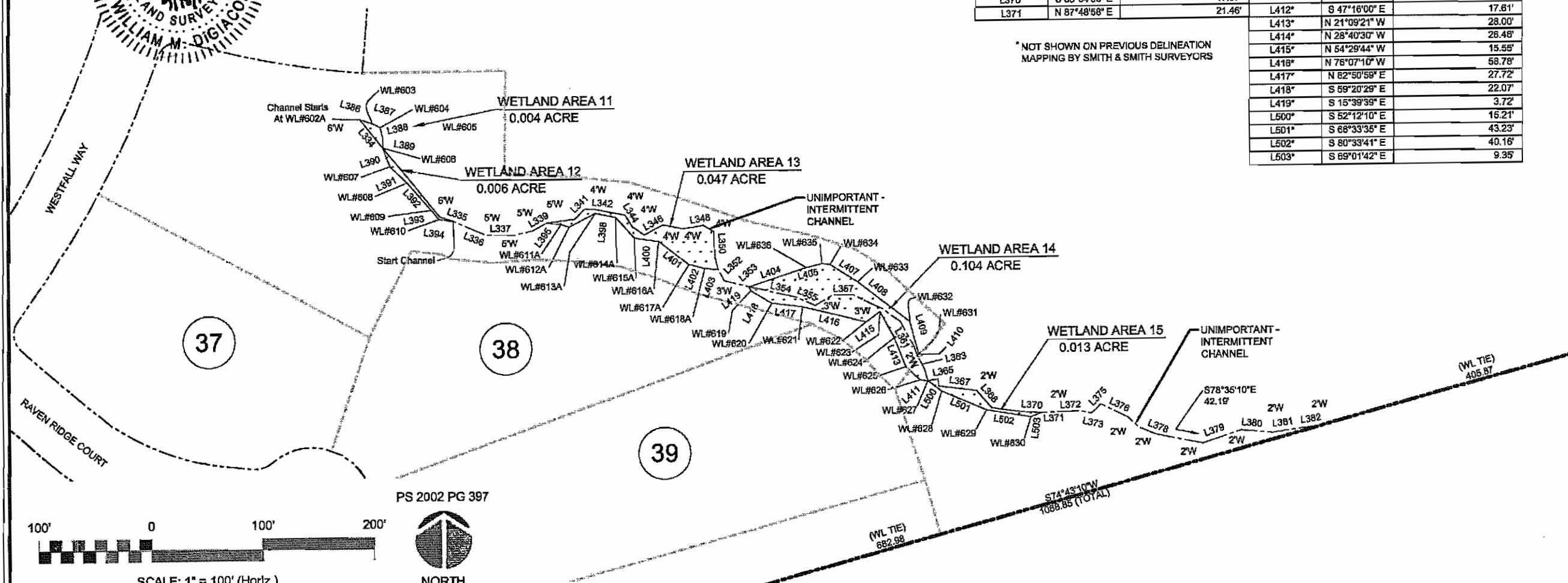
EIP EXISTING IRON PIPE  
IPF IRON PIPE FOUND  
C&T CAP AND TACK  
WL WETLAND  
PS PLAT SLIDE  
PG PAGE  
N/F NOW OR FORMERLY

**LEGEND**

--- RIGHT-OF-WAY  
--- CREEK CENTERLINE  
--- TIE LINES  
--- PROPERTY LINES  
--- LOT LINES  
--- STORM DRAIN  
--- WETLANDS  
--- RIP RAP

LINE TABLE			LINE TABLE		
LINE	BEARING	LENGTH	LINE	BEARING	LENGTH
L334	S 36°11'00"E	112.35'	L372	N 88°37'38"E	14.08'
L335	S 70°48'37"E	13.42'	L373	S 77°48'23"E	9.46'
L336	S 67°00'13"E	32.02'	L374	N 52°25'57"E	3.77'
L337	S 89°38'01"E	23.94'	L375	N 44°03'18"E	8.12'
L338	N 78°25'08"E	17.47'	L376	S 64°05'19"E	27.07'
L339	N 61°05'12"E	14.48'	L377	S 46°54'47"E	13.97'
L340	N 82°09'13"E	25.52'	L378	S 67°23'49"E	16.28'
L341	N 45°29'44"E	13.06'	L379	N 71°41'21"E	36.52'
L342	S 84°56'41"E	10.91'	L380	S 84°33'10"E	27.96'
L343	S 78°55'50"E	25.33'	L381	N 81°58'51"E	20.68'
L344	S 31°23'52"E	12.63'	L382	N 82°05'08"E	25.93'
L345	S 66°15'18"E	12.79'	L386	S 72°39'22"E	11.79'
L346	N 61°07'46"E	18.77'	L387	S 64°59'07"E	8.06'
L347	S 78°14'35"E	18.42'	L388	S 11°19'25"E	10.27'
L348	N 80°48'21"E	18.45'	L389	S 00°29'44"E	8.34'
L349	S 58°38'55"E	10.92'	L390	S 20°56'50"E	17.92'
L350	S 02°59'01"E	23.13'	L391	S 45°04'22"E	20.84'
L351	S 13°38'49"E	11.32'	L392	S 41°53'06"E	32.82'
L352	S 30°17'13"E	11.71'	L393	S 38°52'42"E	10.83'
L353	S 76°00'50"E	23.09'	L394	S 81°59'22"E	13.27'
L354	S 78°58'53"E	43.12'	L395	S 84°18'26"E	12.96'
L355	S 86°02'01"E	18.72'	L396	S 72°36'23"E	7.81'
L356	N 59°43'22"E	18.56'	L397	N 62°40'39"E	26.66'
L357	N 69°44'44"E	17.58'	L398	S 78°21'02"E	18.20'
L358	S 63°25'55"E	18.77'	L399	S 41°30'43"E	25.21'
L359	S 65°53'53"E	10.60'	L400	S 81°21'08"E	21.58'
L360	S 63°51'26"E	20.21'	L401	S 52°36'00"E	34.23'
L361	S 28°36'27"E	26.47'	L402	S 75°41'42"E	14.70'
L362	S 19°13'38"E	7.72'	L403	S 85°11'50"E	12.06'
L363	S 27°20'32"E	14.25'	L404	S 71°51'45"W	53.55'
L364	S 15°15'11"E	10.95'	L405	S 77°31'24"W	14.52'
L365	N 81°22'46"E	9.22'	L406	N 84°10'06"W	7.26'
L366	S 02°47'29"E	6.25'	L407	N 57°54'19"W	29.47'
L367	S 82°30'56"E	34.00'	L408	N 52°28'12"W	58.60'
L368	S 40°45'40"E	20.38'	L409	N 15°23'28"W	29.99'
L369	S 81°53'09"E	25.95'	L410	N 56°17'57"E	1.71'
L370	S 85°34'36"E	17.97'	L411	S 83°32'39"E	6.75'
L371	N 87°48'58"E	21.46'	L412*	S 47°16'00"E	17.81'
			L413*	N 21°09'21"W	28.00'
			L414*	N 28°40'30"W	26.46'
			L415*	N 54°29'44"W	15.55'
			L416*	N 76°07'10"W	58.78'
			L417*	N 62°50'58"E	27.72'
			L418*	S 59°20'29"E	22.07'
			L419*	S 15°39'39"E	3.72'
			L500*	S 52°12'10"E	16.21'
			L501*	S 66°33'35"E	43.23'
			L502*	S 80°33'41"E	40.16'
			L503*	S 69°01'42"E	9.35'

\* NOT SHOWN ON PREVIOUS DELINEATION MAPPING BY SMITH & SMITH SURVEYORS



**CE GROUP**

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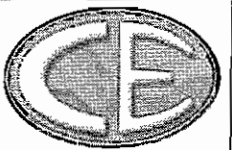
WETLAND DELINEATION FOR  
WESTFALL ASSOCIATES, LLC  
WILLIAMS TOWNSHIP  
CHATHAM COUNTY  
NORTH CAROLINA

Date: 08/24/2012  
Scale: 1" = 100'  
Drawn: CPM  
Checked: AJF  
Project No.: 800-09  
Computer Dwg. Name: shi 09 - Wetlands

Sheet No.:  
**9**  
Of -



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Project No. 800-09

Computer Dig. Name  
sh11 Wetlands

Sheet No:

11

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IPF IRON PIPE FOUND  
C&T CAP AND TACK  
WL WETLAND  
PS PLAT SLIDE  
PG PAGE  
N/F NOW OR FORMERLY

LEGEND

--- RIGHT-OF-WAY  
--- CREEK CENTERLINE  
--- TIE LINES  
--- PROPERTY LINES  
--- LOT LINES  
--- STORM DRAIN  
--- WETLANDS  
--- RIP RAP

LINE	BEARING	LENGTH
L535	S27°24'59"E	23.66
L536	S05°00'58"W	37.29
L537	S33°20'16"E	43.78
L538	S07°20'03"W	44.84
L539	S31°41'20"E	31.15
L540	S21°06'42"W	32.75
L541	S18°54'28"W	54.52
L542	S12°05'48"W	27.30
L543	S04°20'35"W	39.35
L544	S46°52'19"W	51.47
L545	S46°52'01"W	55.94
L546	S24°21'21"W	54.18
L547	S57°00'35"W	50.28
L548	S61°43'47"W	33.61
L549	N89°12'22"W	35.94
L550	S59°21'23"W	42.19
L551	N70°13'01"W	28.67
L552	S74°50'41"W	31.95
L553	N67°47'15"W	27.37
L554	N89°04'13"W	25.45
L555	S39°55'33"W	27.04
L556	S74°52'59"W	36.58
L557	S50°15'39"W	26.84
L558	S63°42'48"W	41.19
L559	S75°14'55"W	15.54
L560	S37°02'15"W	9.42

"This certifies that this copy of this plat accurately depicts the boundary of the jurisdiction of section 404 of the Clean Water Act as determined by the undersigned on this date. Unless there is a change in the law or our published regulation, this determination of Section 404 jurisdiction may be relied upon for a period not to exceed five years from this date. This determination was made utilizing the 1987 Corps of Engineers Wetlands Delineation Manual."

Regulatory Official: \_\_\_\_\_

Title \_\_\_\_\_

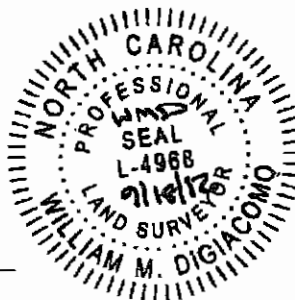
Date \_\_\_\_\_

USACE Action ID: \_\_\_\_\_

This survey is of an existing building or other structure, or natural feature, such as a watercourse.

*William M. Digiacomo*  
Surveyor

September 18, 2012  
Date



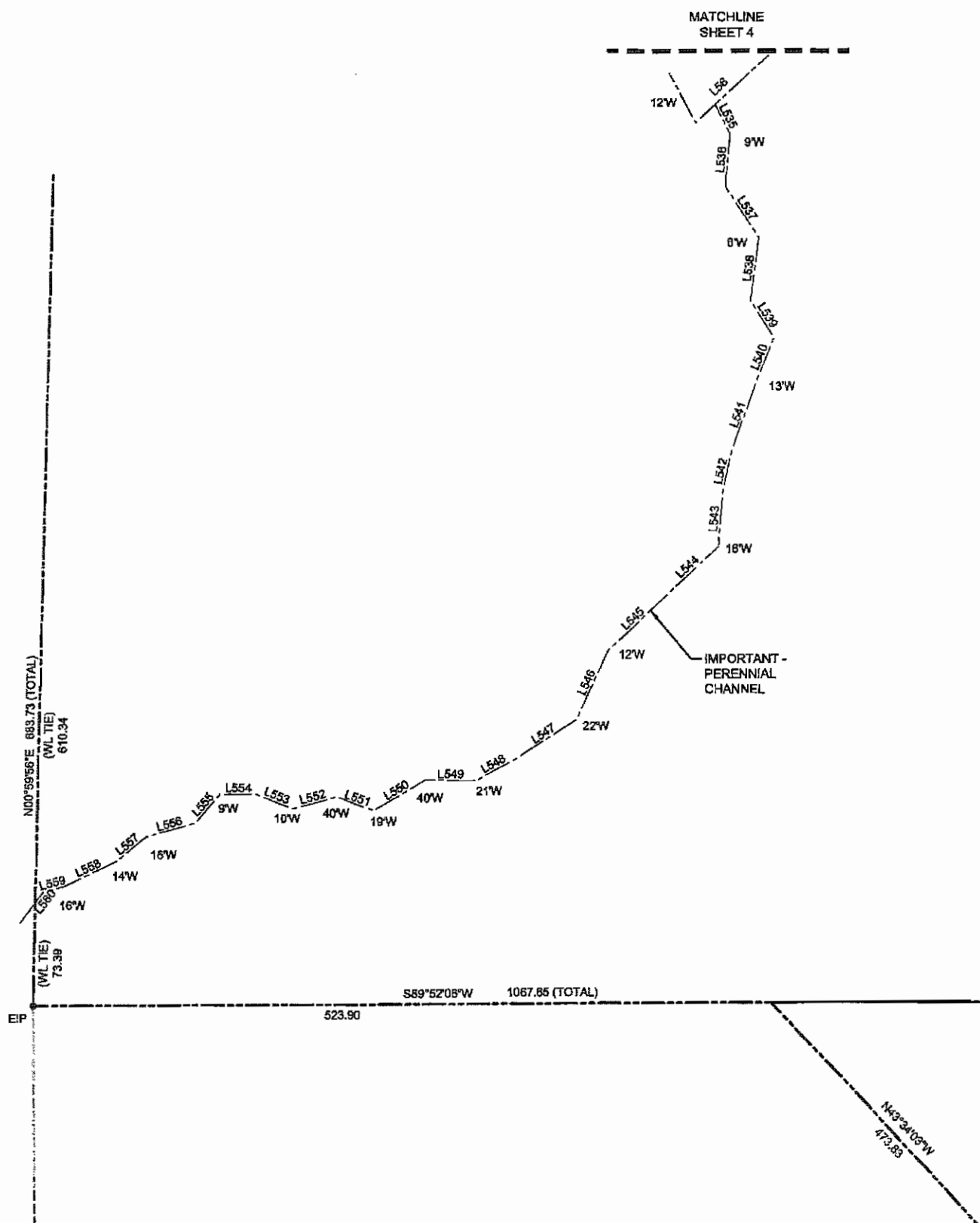
PS 2002 PG 397



SCALE: 1" = 100' (Horiz.)



NORTH





**Subject:** Westfall

**From:** Nick Robinson <robinson@bradshawrobinson.com>

**Date:** 10/4/2012 4:21 PM

**To:** jimerly@embarqmail.com

**CC:** David Gainey <dgainey@sandec.com>, Ginger <ginger@impactholdings.com>, Joe Faulkner <joe@cegroupinc.com>

Dear Mrs. Wiggins,

Our firm represents Westfall Associates, LLC. Thanks for your correspondence regarding the chimney and the possibility of a cemetery on the property.

Please feel free to make an appointment to come see the chimney site and to search for the possible cemeteries. Give me two days' notice for that. Of course, with regard to any found cemetery, Applicant will comply with the law regarding same.

Thanks.

Nick Robinson

Mr. Gainey--

Thank you for the Westfall plat and for the photos of the old chimney. It is very helpful for us to have the parcel number that you provided.

You asked what kind of map or documentation the historical association would like to have as part of the environmental impact statement for Westfall. We would like a map that shows all of the historical features--including structures, the remains of structures, walls, foundations, wells, old roads, and any other evidence of human habitation or impact on the land. Ideally these features would be photographed and information from former residents and neighbors would be gathered to help fill in information about the history of the area. Our goal is to preserve that information before all trace of the area's history is removed from the property.

The chimney you discovered would certainly be one of the sites that we would like to see documented. Any information you could provide about the previous owners of and use of the land would be helpful.

According to our records the existence of a cemetery on parcel 20092 (or thereabouts) was reported in 1989. There are few details other than that the cemetery was associated with the King family. No followup has been done to date. Since there are now plans to develop the property, and because the old chimney provides evidence of early habitation of the area, a thorough assessment of the area should be done to determine whether the burial site can be located before any disturbance of the area occurs. Burial sites were usually not far from easy access, so if traces of the old road that gave access to the house can be located, that would suggest promising areas to search. A rough location for the cemetery is shown on the county GIS, but it is based on a very general description. The location of the homestead and roads will give better clues about possible cemetery sites. Neighbors might also be aware of the cemetery location.

Before the area is disturbed, representatives of the historical association would like to visit the house site, and, of course, the cemetery if it is located, to more fully document those sites and any other areas where evidence of human habitation are still evident.

I don't know if it is relevant to your current inquiry, but according to our

records a cemetery was also reported on parcel 85633, for which the county GIS shows Westfall as the owner.

Please let us know how we can help with your assessment.

Jane Pyle and Beverly Wiggins  
Chatham County Historical Associatio

--

Nicolas P. Robinson  
Bradshaw & Robinson, LLP  
128 Hillsboro St.  
P.O. Box 607  
Pittsboro, NC 27312  
(919) 542-2400  
(f) (919) 542-1219



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Please let us know how we can help with your assessment.

Jane Pyle and Beverly Wiggins  
Chatham County Historical Association

----- Original Message -----

The one notable feature we found during our onsite investigation was an old chimney in the western portion of the property. I have attached a map with the existing conditions with the location of the chimney noted on the map. I have also included 2 pictures as a reference as well.

There are a number of parcel numbers associated with the site as a whole. I have included the parcel numbers below for the western portion of the site where the chimney is located.

AKPAR 20092  
PIN 9785-56-3026

Please let me know if you have any questions.

Thanks,

David Gainey  
Project Manager  
Soil and Environmental Consultants, PA  
Office 919-846-5900  
Fax 919-846-9467  
Cell 919-771-9136  
Visit us at SandEC.com

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-----Original Message-----

From: chatham historical [mailto:cchal881@gmail.com]

Sent: Wednesday, September 26, 2012 3:00 PM

To: David Gainey

Cc: Bev Wiggins

Subject: Re: Historical Inquiry

Mr. Gainey--

Thank you for your inquiry. We'd appreciate knowing the parcel number, any historical structures or cemeteries that you know about, and any prior history of development, if any. If you are working with a sketch design that you can share with us, that would be helpful. Everything is pretty informal at this stage; we looking for traces of the cultural history of the site and are trying to be of help to you.

--Jane Pyle, Chatham County Historical Association, Inc.

On 9/26/12, David Gainey <dgainey@sandec.com> wrote:

I would like to inquire about a site off of Lystra Road in order to complete an Environmental Impact Assessment for Chatham County. What type of map or documentation do you require for this type of inquiry. Thanks, David Gainey

David Gainey

Project Manager

Soil and Environmental Consultants, PA Office 919-846-5900 Fax

919-846-9467 Cell 919-771-9136 Visit us at

SandEC.com<<http://www.sandec.com/>>

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--  
Jim and Beverly Wiggins

[jimerly@embarqmail.com](mailto:jimerly@embarqmail.com)

-----Attachments:-----

Existing Conditions Exhibit.pdf

2.3 MB

AppendixC\_SitePhotos 4.pdf

270 KB



**TABLE 1A**

REVISED FOR CONDITIONAL USE PERMIT MODIFICATION

***NET LAND AREA COMPUTATION***

308.387 AC      Gross Land Area

28.98 AC      Land in Road Right-of-way

38.83 AC      100 Year Floodplain, Wetlands, Ponds > 1 AC  
Including Riparian Buffers

---

240.577 AC      Net Land Area Available (AC)

10,479,534.12 SF      Net Land Area Available for Dwelling Units

**Units Allowed**

262 UNITS      Dwelling Unit / 40,000 SF

242 UNITS      Proposed Dwelling Units

0.78 UNITS      Per Gross Acre

1.27 AC      Per Unit