

COMPREHENSIVE STORMWATER MANAGEMENT PERMIT

HIGH DENSITY DEVELOPMENT

SECTION 1 – APPROVAL

Having reviewed the application and all supporting materials, the City of Wilmington has determined that the application is complete and the proposed development meets the requirements of the City of Wilmington’s Comprehensive Stormwater Ordinance.

PERMIT HOLDER: **Corporation for Inquiry, Inc.**
PROJECT: **Cape Fear Center for Inquiry**
ADDRESS: **2525 Wonder Way**
PERMIT #: **2010018R3**
DATE: **12/08/2020**

Therefore, the above referenced site is hereby approved and subject to all conditions set forth in Section 2 of this approval and all applicable provisions of the City of Wilmington Comprehensive Stormwater Management Ordinance.

This permit shall be effective from the date of issuance until 12/08/2030 and shall be subject to the following specified conditions and limitations:

Section 2 - CONDITIONS

1. This approval is valid only for the stormwater management system as proposed on the approved parking expansion stormwater management plans dated 12/03/2020 & SCMs on construction drawings dated 10/15/2010 under permit #: 2010018.
2. The project will be limited to the amount and type of built-upon area indicated in Section IV of the Stormwater Management Application Form submitted as part of the approved stormwater permit application package, and per the approved plans.
3. This permit shall become void unless the facilities are constructed in accordance with the approved stormwater management plans, specifications and supporting documentation, including information provided in the application and supplements.
4. The runoff from all built-upon area within any permitted drainage area must be directed into the permitted stormwater control system for that drainage area.
5. The permittee shall submit a revised stormwater management application packet to the City of Wilmington and shall have received approval prior to construction, for any modification to the approved plans, including, but not limited to, those listed below:
 - a. Any revision to any item shown on the approved plans, including the stormwater management measures, built-upon area, details, etc.
 - b. Redesign or addition to the approved amount of built-upon area or to the drainage area.
 - c. Further subdivision, acquisition, lease or sale of any part of the project area.
 - d. Filling in, altering, or piping of any vegetative conveyance shown on the approved plan.
 - e. Construction of any permitted future areas shown on the approved plans.



Public Services

Engineering
212 Operations Center Drive
Wilmington, NC 28412
910 341-7807
910 341-5881 fax
wilmingtonnc.gov
Dial 711 TTY/Voice

6. A copy of the approved plans and specifications shall be maintained on file by the Permittee.
7. During construction, erosion shall be kept to a minimum and any eroded areas of the system will be repaired immediately.
8. If the stormwater system was used as an Erosion Control device, it must be restored to design condition prior to operation as a stormwater treatment device, and prior to issuance of any certificate of occupancy for the project.
9. All areas must be maintained in a permanently stabilized condition. If vegetated, permanent seeding requirements must follow the guidelines established in the North Carolina Erosion and Sediment Control Planning and Design Manual unless an alternative is specified and approved by the City of Wilmington.
10. All applicable operation & maintenance agreements and easements pertaining to each stormwater treatment system shall be referenced on the final plat and recorded with the Register of Deeds upon final plat approval. If no plat is recorded for the site the operation and maintenance agreements and easements shall be recorded with the Register of Deeds so as to appear in the chain of title of all subsequent purchasers under generally accepted searching standards.
11. The stormwater management system shall be constructed in its entirety, vegetated and operational for its intended use prior to the construction of any built-upon surface unless prior approval is obtained. City Staff must be notified of any deviation prior to construction of the built-upon surface. Any deviation request shall include justification and must propose an alternative timeline or construction sequence. Notification shall not constitute approval. Any alternative timeline approved by City staff shall become an enforceable component of this permit.
12. The permittee shall at all times provide the operation and maintenance necessary to assure the permitted stormwater system functions at optimum efficiency. The approved Operation and Maintenance Agreement must be followed in its entirety and maintenance must occur at the scheduled intervals including, but not limited to:
 - a. Scheduled inspections (interval noted on the agreement).
 - b. Sediment removal.
 - c. Mowing and revegetation of slopes and the vegetated areas.
 - d. Maintenance of landscape plants, including those within the landscape buffer and on the vegetated shelf.
 - e. Immediate repair of eroded areas, especially slopes.
 - f. Debris removal and unclogging of outlet structure, orifice device, flow spreader, catch basins and/or piping.
 - g. Access to the outlet structure must be available at all times.
13. Records of inspection, maintenance and repair for the permitted stormwater system must be kept by the permittee for at least 5 years from the date of record and made available upon request to authorized personnel of the City of Wilmington. The records will indicate the date, activity, name of person performing the work and what actions were taken.



Public Services

Engineering
212 Operations Center Drive
Wilmington, NC 28412
910 341-7807
910 341-5881 fax
wilmingtonnc.gov
Dial 711 TTY/Voice

14. Upon completion of construction, before a Certificate of Occupancy shall be granted, and prior to operation or intended use of this permitted facility, the applicant shall submit to the City of Wilmington as-built plans for all stormwater management facilities. The plans shall show the final design specifications and the field location, type, depth, invert and planted vegetation of all measures, controls and devices, as-installed. A certification shall be submitted, along with all supporting documentation that specifies, under seal that the as-built stormwater measures, controls and devices are in compliance with the approved stormwater management plans. A final inspection by City of Wilmington personnel will be required prior to issuance of a certificate of occupancy or operation of the permitted facility.
15. This permit is not transferable except after application and approval by the City of Wilmington. In the event of a change of ownership, name change or change of address the permittee must submit a completed Name/Ownership Change form to the City of Wilmington at least 30 days prior to the change. It shall be signed by all applicable parties, and be accompanied by all required supporting documentation. Submittal of a complete application shall not be construed as an approved application. The application will be reviewed on its own merits by the City of Wilmington and may or may not be approved. The project must be in compliance with the terms of this permit in order for the transfer request to be considered. The permittee is responsible for compliance with all permit conditions until such time as the City of Wilmington approves the transfer request. Neither the sale of the project nor the conveyance of common area to a third party should be considered as an approved transfer of the permit.
16. Failure to abide by the conditions and limitations contained in this permit may subject the Permittee to enforcement action by the City of Wilmington, in accordance with Sections 18-52 and 18-53 and any other applicable section of the Land Development Code.
17. The City of Wilmington may notify the permittee when the permitted site does not meet one or more of the minimum requirements of the permit. Within the time frame specified in the notice, the permittee shall submit a written time schedule to the City of Wilmington for modifying the site to meet minimum requirements. The permittee shall provide copies of revised plans and certification in writing to the City of Wilmington that the changes have been made.
18. The issuance of this permit does not preclude the Permittee from complying with any and all statutes, rules, regulations, or ordinances, which may be imposed by other government agencies (local, state, and federal) having jurisdiction.
19. In the event that the facilities fail to perform satisfactorily, including the creation of nuisance conditions, the Permittee shall take immediate corrective action, including those as may be required by the City of Wilmington, such as the construction of additional or replacement stormwater management systems.
20. The permittee grants City of Wilmington Staff permission to enter the property during normal business hours for the purpose of inspecting all components of the permitted stormwater management facility.



Public Services

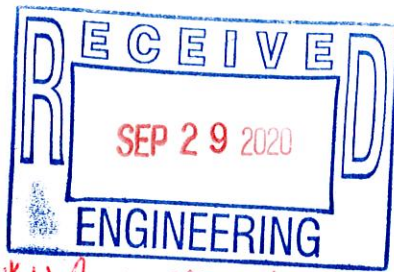
Engineering
212 Operations Center Drive
Wilmington, NC 28412
910 341-7807
910 341-5881 fax
wilmingtonnc.gov
Dial 711 TTY/Voice

21. The permit issued shall continue in force and effect until revoked or terminated by the City of Wilmington. The permit may be modified, revoked and reissued or terminated for cause. The filing of a request for a permit modification, revocation and re-issuance or termination does not stay any permit condition.
22. The approved stormwater management plans and all documentation submitted as part of the approved stormwater management permit application package for this project are incorporated by reference and are enforceable parts of the permit.
23. The permittee shall submit a renewal request with all required forms and documentation at least 180 days prior to the expiration date of this permit.
24. If any one or more of the conditions of this permit is found to be unenforceable or otherwise invalidated, all remaining conditions shall remain in full effect.

Stormwater Management Permit issued this the 8th day of December, 2020

A handwritten signature in blue ink, appearing to read 'S. Cheatham', is written over a horizontal line.

for Sterling Cheatham, City Manager
City of Wilmington



SWP2010018R2



Public Services
Engineering
414 Chestnut St, Suite 200
Wilmington, NC 28401
910 341-7807
910 341-5881 fax
wilmingtonnc.gov
Dial 711 TTY/Voice



* Unless otherwise Noted

STORMWATER MANAGEMENT PERMIT APPLICATION FORM
(Form SWP 2.2)

I. GENERAL INFORMATION

1. Project Name (subdivision, facility, or establishment name - should be consistent with project name on plans, specifications, letters, operation and maintenance agreements, etc.):

Cape Fear Center for Inquiry

2. Location of Project (street address):

2525 Wonder Way

City: Wilmington County: New Hanover Zip: 28401

3. Directions to project (from nearest major intersection):

Located 950-ft east of US 421 and US 117 along US 117 (Shipyard Blvd)

II. PERMIT INFORMATION

1. Specify the type of project (check one): [] Low Density [X] High Density
[] Drains to an Offsite Stormwater System [] Drainage Plan [] Other

If the project drains to an Offsite System, list the Stormwater Permit Number(s):

City of Wilmington: State - NCDENR/DWQ:

2. Is the project currently covered (whole or in part) by an existing City or State (NCDENR/DWQ) Stormwater Permit? [X] Yes [] No

If yes, list all applicable Stormwater Permit Numbers:

City of Wilmington: 2010-018 R2 State - NCDENR/DWQ:

3. Additional Project Permit Requirements (check all applicable):

[] CAMA Major [] Sedimentation/Erosion Control

[] NPDES Industrial Stormwater [] 404/401 Permit: Proposed Impacts:

If any of these permits have already been acquired please provide the Project Name, Project/Permit Number, issue date and the type of each permit:

NA

III. CONTACT INFORMATION

1. Print Applicant / Signing Official's name and title (specifically the developer, property owner, lessee, designated government official, individual, etc. who owns the project):

Applicant / Organization: Corporation for Inquiry, Inc.

Signing Official & Title: Katherine Coke

- a. Contact information for Applicant / Signing Official:

Street Address: 2525 Wonder Way

City: Wilmington State: NC Zip: 28401

Phone: 910-362-000 Fax: _____ Email: kcoke@cfc.net

Mailing Address (if different than physical address): Same as Above

City: _____ State: _____ Zip: _____

- b. Please check the appropriate box. The applicant listed above is:

- The property owner (Skip to item 3)
 Lessee* (Attach a copy of the lease agreement and complete items 2 and 2a below)
 Purchaser* (Attach a copy of the pending sales agreement and complete items 2 and 2a below)
 Developer* (Complete items 2 and 2a below.)

2. Print Property Owner's name and title below, if you are the lessee, purchaser, or developer. (This is the person who owns the property that the project is on.)

Property Owner / Organization: _____

Signing Official & Title: _____

- a. Contact information for Property Owner:

Street Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____ Email: _____

Mailing Address (if different than physical address): _____

City: _____ State: _____ Zip: _____

3. (Optional) Print the name and title of another contact such as the project's construction supervisor or another person who can answer questions about the project:

Other Contact Person / Organization: George Johnson / Consultant

Signing Official & Title: _____

3. a. (Optional) Print the name and title of another contact such as the project's construction supervisor or another person who can answer questions about the project:

Other Contact Person / Organization: SAME

Signing Official & Title: _____

b. Contact information for person listed in item 3.a. above:

Street Address: _____

City: _____ State: _____ Zip: _____

Mailing Address (if different than physical address): _____

City: _____ State: _____ Zip: _____

Phone: () _____ Fax: () _____

Email: _____

IV. PROJECT INFORMATION

1. In the space provided below, briefly summarize how the stormwater runoff will be treated.

A constructed wetland will treat a portion of the parking
a drive aisles. The two buildings and remaining
parking and drive aisles will be treated by infiltration
basins.

2. a. If claiming vested rights, identify supporting documents provided and the date they were approved:

- Approval of a Site Specific Development Plan Approval Date: _____
- Valid Building Permit N/A Issued Date: _____
- Other: _____ Date: _____

b. Identify the regulation(s) the project has been designed in accordance with:

- Coastal SW - 2008 Coastal SW - 1995

3. Stormwater runoff from this project drains to the CAPE FEAR Watershed.

4. Total Property Area: 5.31 acres

5. Total Coastal Wetlands Area: 0 acres

6. Total Surface Water Area: 0 acres

7. Total Property Area (4) – Total Coastal Wetlands Area (5) – Total Surface Water Area (6) =
Total Project Area ⁺: 5.31 acres.

+ Total project area shall be calculated to exclude the following: the normal pool of impounded structures, the area between the banks of streams and rivers, the area below the Normal High Water (NHW) line or Mean High Water (MHW) line, and coastal wetlands landward from the NHW (or MHW) line. The resultant project area is used to calculate overall percent built upon area (BUA). Non-coastal wetlands landward of the NHW (or MHW) line may be included in the total project area.



a. Contact information for person listed in item 3 above:

Street Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____ Email: _____

Mailing Address (if different than physical address): _____

City: _____ State: _____ Zip: _____

IV. PROJECT INFORMATION

1. In the space provided below, briefly summarize how the stormwater runoff will be treated.

2. Total Property Area: 47,954 square feet *Parking Expansion Only*

3. Total Coastal Wetlands Area: 0 square feet

4. Total Surface Water Area: 0 square feet

5. Total Property Area (2) – Total Coastal Wetlands Area (3) – Total Surface Water Area (4) = Total Project Area: 47,954 square feet.

6. Existing Impervious Surface within Property Area: 3,400 square feet

7. Existing Impervious Surface to be Removed/Demolished: 3,400 square feet

8. Existing Impervious Surface to Remain: 0 square feet

9. Total Onsite (within property boundary) Newly Constructed Impervious Surface (*in square feet*):

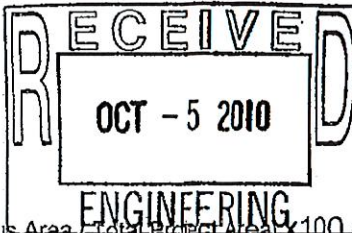
Buildings/Lots	
Impervious Pavement	
Pervious Pavement (adj. total, with 100 % credit applied)	0
Impervious Sidewalks	6,050
Pervious Sidewalks (adj. total, with % credit applied)	0
Other (describe) Curbing	1,500
Future Development	
Total Onsite Newly Constructed Impervious Surface	7,550

0 (27750)

10. Total Onsite Impervious Surface

(Existing Impervious Surface to remain + Onsite Newly Constructed Impervious Surface) = 7,550 square feet

11. Project percent of impervious area: (Total Onsite Impervious Surface / Total Project Area) x100 = 16 %



4a

8. Project percent of impervious area: $(\text{Total Impervious Area} / \text{Total Project Area}) \times 100 = 34\%$

9. How many drainage areas does the project have? 3 (For High Density, count 1 for each proposed engineered stormwater BMP. For Low Density and other projects, use 1 for the whole property area, unless utilizing Low Impact Design)

10. Complete the following information for each drainage area identified in the Project Information item 9. If there are more than four drainage areas in the project, attach an additional sheet with the information for each area provided in the same format as below.

Basin Information	Drainage Area 1 (Inf. Bas. 1)	Drainage Area 2 (Inf. Bas. 2)	Drainage Area 3 (Wetland)	Drainage Area
Receiving Stream Name	Greenfield Lake	Greenfield Lake	Greenfield Lake	
Stream Class *	C, Sw	C, Sw	C, Sw	
Total Drainage Area (sf)	16,624	59,985	35,112	
On-Site Drainage Area (sf)	16,624	59,985	35,112	
Off-Site Drainage Area (sf)	0	0	0	
Proposed Impervious Area** (sf)	11,151	49,387	16,213	
Percent Impervious Area** (total)	67	82	46	

Impervious** Surface Area	Drainage Area 1 (Inf. Bas. 1)	Drainage Area 2 (Inf. Bas. 2)	Drainage Area 3 (Wetland)	Drainage Area
On-Site Buildings / Lots (sf)	4,875	29,674	0	
On-Site Streets (sf)	0	0	0	
On-Site Parking (sf) and Drive Aides	6,251	17,240	12,871	
On-Site Sidewalks (sf)	25	2,473	3,342	
Other On-Site (sf)	0	0	0	
Future (sf)	0	0	0	
Off-Site (sf)	0	0	0	
Existing BUA *** (sf)	0	0	0	
Total (sf):	11,151	49,387	16,213	

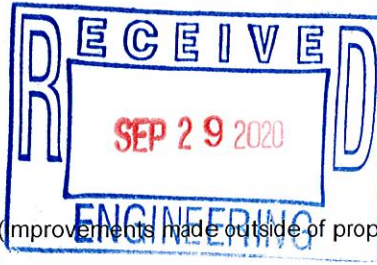
* Stream Class and Index Number can be determined at: <http://h2o.enr.state.nc.us/bims/reports/reportsWB.html>

** Impervious area is defined as the built upon area including, but not limited to, buildings, roads, parking areas, sidewalks, gravel areas, etc.

*** Report only that amount of existing BUA that will remain after development. Do not report any existing BUA that is to be removed and which will be replaced by new BUA.

10. How was the off-site impervious area listed above determined? Provide documentation:

N/A



12. Total Offsite Newly Constructed Impervious Area (improvements made outside of property boundary, in square feet):

Impervious Pavement	800
Pervious Pavement (adj. total, with % credit applied)	
Impervious Sidewalks	
Pervious Sidewalks (adj. total, with % credit applied)	
Other (describe)	
Total Offsite Newly Constructed Impervious Surface	800

13. Total Newly Constructed Impervious Surface
(Total Onsite + Offsite Newly Constructed Impervious Surface) = 8350 square feet

14. Complete the following information for each Stormwater BMP drainage area. If there are more than three drainage areas in the project, attach an additional sheet with the information for each area provided in the same format as below. Low Density projects may omit this section and skip to Section V.

Parking Expansion Only

Basin Information	Pervious Pavement BMP # 1	Infiltration Area BMP # 2	BMP #
Receiving Stream Name	UT Greenfield Creek	UT Greenfield Creek	
Receiving Stream Index Number			
Stream Classification	C;Sw	C; Sw	
Total Drainage Area (sf)	35750	37280	0
On-Site Drainage Area (sf)	35750	37280	
Off-Site Drainage Area (sf)			
Total Impervious Area (sf)	5800	2550	0
Buildings/Lots (sf)	0		
Impervious Pavement (sf)	800		
Pervious Pavement, 100 % credit (sf)	0 <i>(27,750)</i>		
Impervious Sidewalks (sf)	3500	2550	
Pervious Sidewalks, % credit (sf)			
Other (sf)	1500		
Future Development (sf)			
Existing Impervious to remain (sf)			
Offsite (sf)			
Percent Impervious Area (%)	16.2%	6.8%	

15. How was the off-site impervious area listed above determined? Provide documentation:

V. SUBMITTAL REQUIREMENTS

1. Supplemental and Operation & Maintenance Forms - One applicable City of Wilmington Stormwater BMP supplement form and checklist must be submitted for **each** BMP specified for this project. One applicable proposed operation and maintenance (O&M) form must be submitted for **each type** of stormwater BMP. Once approved, the operation and maintenance forms must be referenced on the final plat and recorded with the register of deeds office.
2. Deed Restrictions and Restrictive Covenants - For all subdivisions, outparcels, and future development, the appropriate property restrictions and protective covenants are required to be recorded prior to the sale of any lot. Due to variability in lot sizes or the proposed BUA allocations, a table listing each lot number, lot size, and the allowable built-upon area must be provided as an attachment to the completed and notarized deed restriction form. The appropriate deed restrictions and protective covenants forms can be downloaded at the link listed in section V (3). Download the latest versions for each submittal.

In instances where the applicant is different than the property owner, it is the responsibility of the property owner to sign the deed restrictions and protective covenants form while the applicant is responsible for ensuring that the deed restrictions are recorded.

By the notarized signature(s) below, the permit holder(s) certify that the recorded property restrictions and protective covenants for this project, if required, shall include all the items required in the permit and listed on the forms available on the website, that the covenants will be binding on all parties and persons claiming under them, that they will run with the land, that the required covenants cannot be changed or deleted without concurrence from the City of Wilmington, and that they will be recorded prior to the sale of any lot.

3. Only complete application packages will be accepted and reviewed by the City. A complete package includes all of the items listed on the City Engineering Plan Review Checklist, including the fee. Copies of the Engineering Plan Review Checklist, all Forms, Deed Restrictions as well as detailed instructions on how to complete this application form may be downloaded from:

<http://www.wilmingtonnc.gov/PublicServices/Engineering/PlanReview/StormwaterPermits.aspx>

The complete application package should be submitted to the following address:

City of Wilmington – Engineering
Plan Review Section
414 Chestnut Street, Suite 200
Wilmington, NC 28402

VI. CONSULTANT INFORMATION AND AUTHORIZATION

1. Applicant: Complete this section if you wish to designate authority to another individual and/or firm (such as a consulting engineer and /or firm) so that they may provide information on your behalf for this project (such as addressing requests for additional information).

Consulting Engineer: J. Branch Smith, PE

Consulting Firm: Paramounte Engineering, Inc.

a. Contact information for consultant listed above:

Mailing Address: 122 Cinema Drive

City: Wilmington State: NC Zip: 28403

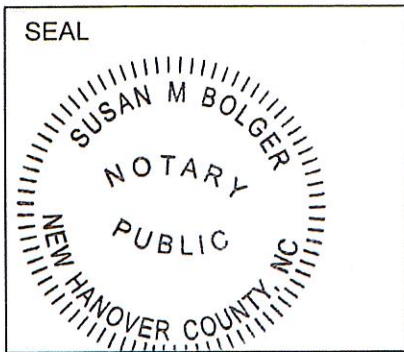
Phone: 910-791-6707 Fax: 910-791-6760 Email: bsmith@paramounte-eng.com

VII. PROPERTY OWNER AUTHORIZATION (If Section III(2) has been filled out, complete this section)

I, (print or type name of person listed in Contact Information, item 2) Corperation for Inquiry, Inc., certify that I own the property identified in this permit application, and thus give permission to (print or type name of person listed in Contact Information, item 1) Katherine A. Coke with (print or type name of organization listed in Contact Information, item 1) Corperation for Inquiry, Inc. to develop the project as currently proposed. A copy of the lease agreement or pending property sales contract has been provided with the submittal, which indicates the party responsible for the operation and maintenance of the stormwater system.

As the legal property owner I acknowledge, understand, and agree by my signature below, that if my designated agent (entity listed in Contact Information, item 1) dissolves their company and/or cancels or defaults on their lease agreement, or pending sale, responsibility for compliance with the City of Wilmington Stormwater Permit reverts back to me, the property owner. As the property owner, it is my responsibility to notify the City of Wilmington immediately and submit a completed Name/Ownership Change Form within 30 days; otherwise I will be operating a stormwater treatment facility without a valid permit. I understand that the operation of a stormwater treatment facility without a valid permit is a violation of the City of Wilmington Municipal Code of Ordinances and may result in appropriate enforcement including the assessment of civil penalties.

Signature: Kate A. Coke Date: 3/12/20

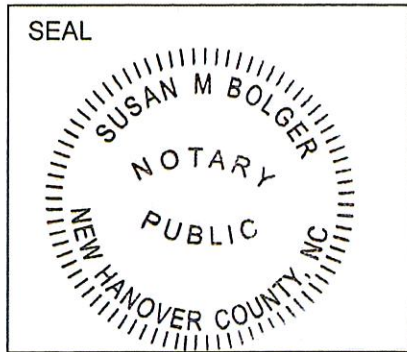


I, Susan M Bolger, a Notary Public for the State of North Carolina, County of New Hanover, do hereby certify that Katherine Coke personally appeared before me this day of March 2, 2020 and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal,
Susan M Bolger
My commission expires: 10/18/22

VIII. APPLICANT'S CERTIFICATION

I, (print or type name of person listed in Contact Information, item 1) Katherine Coke certify that the information included on this permit application form is, to the best of my knowledge, correct and that the project will be constructed in conformance with the approved plans, that the required deed restrictions and protective covenants will be recorded, and that the proposed project complies with the requirements of the applicable stormwater rules under.

Signature: Katherine Coke Date: 3/2/20



I, Susan M Bolger, a Notary Public for the State of North Carolina County of New Hanover, do hereby certify that Katherine Coke personally appeared before me this day of March 2, 2020, and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal,

Susan M Bolger
My commission expires: 10/18/22



**STORMWATER MANAGEMENT PERMIT APPLICATION FORM
401 CERTIFICATION APPLICATION FORM
INFILTRATION BASIN SUPPLEMENT**

Public Services
Engineering
414 Chestnut St, Suite 200
Wilmington, NC 28401
910 341-7807
910 341-8881 fax
wilmingtonnc.gov
Dist 711 TTY/Voice

This form must be filled out, printed and submitted.

The Required Items Checklist (Part III) must be printed, filled out and submitted along with all of the required information.

I. PROJECT INFORMATION

Project Name	Cape Fear Center for Inquiry
Contact Person	Brian Corrigan
Phone Number	910-362-9822
Date	2-Sep-10
Drainage Area Number	1

II. DESIGN INFORMATION

Site Characteristics

Drainage area	16,624.00	ft ²
Impervious area	11,151.00	ft ²
Percent impervious	0.67	%
Design rainfall depth	1.50	in

Peak Flow Calculations

1-yr, 24-hr rainfall depth	3.80	in
1-yr, 24-hr intensity	0.16	in/hr
Pre-development 1-yr, 24-hr discharge	0.01	ft ³ /sec
Post-development 1-yr, 24-hr discharge	0.04	ft ³ /sec
Pre/Post 1-yr, 24-hr peak flow control	0.03	ft ³ /sec

Storage Volume: Non-SA Waters

Minimum design volume required	1,351.00	ft ³
Design volume provided	4,761.00	ft ³

OK for non-SA waters

Storage Volume: SA Waters

1.5" runoff volume		ft ³
Pre-development 1-yr, 24-hr runoff volume		ft ³
Post-development 1-yr, 24-hr runoff volume		ft ³
Minimum required volume		ft ³
Volume provided		ft ³

Soils Report Summary

Soil type	sand	
Infiltration rate	0.97	in/hr
SHWT elevation	22.00	fmsl

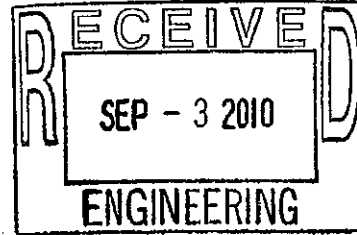
Basin Design Parameters

Drawdown time	0.53	days
Basin side slopes	0.00	:1
Basin bottom elevation	24.00	fmsl
Storage elevation	25.80	fmsl
Storage Surface Area	2,645.00	ft ²
Top elevation	27.00	fmsl

OK
Side Slopes are too steep, maximum 3:1
OK

Basin Bottom Dimensions

Basin length	115.00	ft
Basin width	24.00	ft
Bottom Surface Area	2,645.00	ft ²



Additional Information

Maximum runoff to each inlet to the basin?	0.37	ac-in	OK
Length of vegetative filter for overflow	NA	ft	OK
Distance to structure	83.00	ft	OK
Distance from surface waters	35.00	ft	OK for non-SA waters
Distance from water supply well(s)	NA	ft	OK
Separation from impervious soil layer	2.00	ft	OK
Naturally occurring soil above shwt	1.25	ft	OK
Bottom covered with 4-in of clean sand?	y	(Y or N)	OK
Proposed drainage easement provided?	y	(Y or N)	OK
Captures all runoff at ultimate build-out?	y	(Y or N)	OK
Bypass provided for larger storms?	y	(Y or N)	OK
Pretreatment device provided	y	Twelve inch sump in bottom of bypass box	



**STORMWATER MANAGEMENT PERMIT APPLICATION FORM
401 CERTIFICATION APPLICATION FORM
INFILTRATION BASIN SUPPLEMENT**

Public Services
Engineering
414 Chestnut St, Suite 200
Wilmington, NC 28401
910 341-7807
910 341-5881 fax
wilmington.nc.gov
Dial 711 TTY/Voice

This form must be filled out, printed and submitted.

The Required Items Checklist (Part III) must be printed, filled out and submitted along with all of the required information.

I. PROJECT INFORMATION

Project Name	Cape Fear Center for Inquiry
Contact Person	Brian Corrigan
Phone Number	910-362-9822
Date	24-Jun-10
Drainage Area Number	2

II. DESIGN INFORMATION

Site Characteristics

Drainage area	59,985.00	ft ²
Impervious area	49,387.00	ft ²
Percent impervious	0.82	%
Design rainfall depth	1.50	in

Peak Flow Calculations

1-yr, 24-hr rainfall depth	3.80	in
1-yr, 24-hr intensity	0.16	in/hr
Pre-development 1-yr, 24-hr discharge	0.04	ft ³ /sec
Post-development 1-yr, 24-hr discharge	0.18	ft ³ /sec
Pre/Post 1-yr, 24-hr peak flow control	0.14	ft ³ /sec

Storage Volume: Non-SA Waters

Minimum design volume required	5,921.00	ft ³
Design volume provided	6,243.00	ft ³

OK for non-SA waters

Storage Volume: SA Waters

1.5" runoff volume	_____	ft ³
Pre-development 1-yr, 24-hr runoff volume	_____	ft ³
Post-development 1-yr, 24-hr runoff volume	_____	ft ³
Minimum required volume	_____	ft ³
Volume provided	_____	ft ³

Soils Report Summary

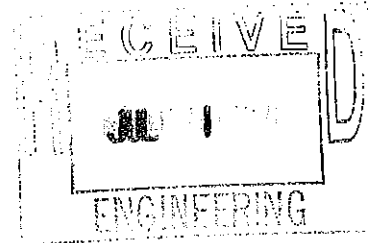
Soil type	sand	
Infiltration rate	24.40	in/hr
SHWT elevation	24.00	fmsl

Basin Design Parameters

Drawdown time	0.25	days	OK
Basin side slopes	3.00	:1	OK
Basin bottom elevation	26.00	fmsl	OK
Storage elevation	29.00	fmsl	
Storage Surface Area	4,813.00	ft ²	
Top elevation	30.00	fmsl	

Basin Bottom Dimensions

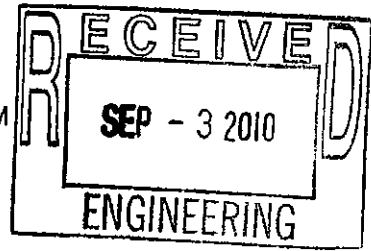
Basin length	180.00	ft
Basin width	31.00	ft
Bottom Surface Area	481.00	ft ²



Additional Information

Maximum runoff to each inlet to the basin?	1.60	ac-in	OK
Length of vegetative filter for overflow	NA	ft	OK
Distance to structure	35.00	ft	OK
Distance from surface waters	40.00	ft	OK for non-SA waters
Distance from water supply well(s)	NA	ft	OK
Separation from impervious soil layer	2.00	ft	OK
Naturally occurring soil above shwt	2.00	ft	OK
Bottom covered with 4-in of clean sand?	y	(Y or N)	OK
Proposed drainage easement provided?	y	(Y or N)	OK
Capures all runoff at ultimate build-out?	y	(Y or N)	OK
Bypass provided for larger storms?	y	(Y or N)	OK
Pretreatment device provided	y	Twelve inch sump in bottom of bypass box	

STORMWATER MANAGEMENT PERMIT APPLICATION FORM
401 CERTIFICATION APPLICATION FORM
WETLAND SUPPLEMENT



*This form must be filled out, printed and submitted.
The Required Items Checklist (Part III) must be printed, filled out and submitted along with all the required information.*

I. PROJECT INFORMATION

Project name	Cape Fear Center for Inquiry
Contact name	Brian Corrigan
Phone number	910-362-9822
Date	September 2, 2010
Drainage area number	3

II. DESIGN INFORMATION

Site Characteristics

Drainage area	35,112.00 ft ²
Impervious area	16,213.00 ft ²
Percent impervious	46.2% %
Design rainfall depth	1.50 inch

Peak Flow Calculations

1-yr, 24-hr rainfall depth	3.80 in
1-yr, 24-hr intensity	0.16 in/hr
Pre-development 1-yr, 24-hr runoff	0.03 ft ³ /sec
Post-development 1-yr, 24-hr runoff	0.07 ft ³ /sec
Pre/Post 1-yr, 24-hr peak control	0.04 ft ³ /sec

Storage Volume: Non-SA Waters

Minimum required volume	2,046.00 ft ³	
Volume provided (temporary pool volume)	6,171.00 ft ³	OK

Storage Volume: SA Waters Parameters

1.5" runoff volume	ft ³
Pre-development 1-yr, 24-hr runoff volume	ft ³
Post-development 1-yr, 24-hr runoff volume	ft ³
Minimum volume required	ft ³
Volume provided	ft ³

Outlet Design

Depth of temporary pool/ponding depth (D_{Plants})	12.00 in	OK
Drawdown time	2.30 days	OK
Diameter of orifice	1.50 in	OK
Coefficient of discharge (C_D) used in orifice diameter calculation	0.60 (unitless)	
Driving head (H_o) used in the orifice diameter calculation	0.33 ft	OK

Surface Areas of Wetland Zones

Surface Area of Entire Wetland	6,171.00 ft ²	OK
Shallow Land	2,465.00 ft ²	OK
The shallow land percentage is:	40% %	
Shallow Water	2,590.00 ft ²	OK
The shallow water percentage is:	42% %	
Deep Pool		
Forebay portion of deep pool (pretreatment)	653.00 ft ²	OK
The forebay surface area percentage is:	11% %	
Non-forebay portion of deep pool	463.00 ft ²	OK
The non-forebay deep pool surface area percentage is:	8% %	
Total of wetland zone areas	6,171.00 ft ²	OK
Add or subtract the following area from the zones	0.00 ft ²	

Topographic Zone Elevations

Temporary Pool Elevation (TPE)		
Shallow Land (top)	27.40 ft amsl	
Permanent Pool Elevation (PPE)		
Shallow Water/Deep Pool (top)	26.40 ft amsl	
Shallow Water bottom	26.10 ft amsl	
Most shallow point of deep pool's bottom	24.90 ft amsl	
Deepest point of deep pool's bottom	23.40 ft amsl	
Design must meet one of the following two options:		
This design meets Option #1,	Y	(Y or N)
Top of PPE is within 6" of SHWT, If yes:		
SHWT (Seasonally High Water Table)	26.90 ft amsl	OK
This design meets Option #2,		(Y or N)
Wetland has liner with permeability < 0.01 in/hr, If yes:		
Depth of topsoil above impermeable liner	in	

Topographic Zone Depths

Temporary Pool		
Shallow Land	12.00 in	OK
Permanent Pool		
Shallow Water	3.60 in	OK
Deep Pool (shallowest)	18.00 in	OK
Deep Pool (deepest)	36.00 in	OK

Planting Plan

Are cattails included in the planting plan?	N	(Y or N)	OK
<u>Number of Plants recommended in Shallow Water Area:</u>			
Herbaceous (4+ cubic-inch container)	650		
<u>Number of Plants recommended in Shallow Land Area:</u>			
Herbaceous (4+ cubic-inch container), OR	650		
Shrubs (1 gallon or larger), OR	104		
Trees (3 gallon or larger) and Herbaceous (4+ cubic-inch)	13	and	520
<u>Number of Plants provided in Shallow Water Area:</u>			
Herbaceous (4+ cubic-inch container)	650		OK
<u>Number of Plants provided in Shallow Land Area:</u>			
Herbaceous (4+ cubic-inch container)	650		OK
Shrubs (1 gallon or larger)	104		OK
Trees (3 gallon or larger) and	13		OK
Grass-like Herbaceous (4+ cubic-inch)	520		OK

Additional Information

Can the design volume be contained?	<u>Y</u> (Y or N)	OK
Does project drain to SA waters? If yes,	<u>N</u> (Y or N)	OK
What is the length of the vegetated filter?	<u> </u> ft	
Are calculations for supporting the design volume provided in the application?	<u>Y</u> (Y or N)	OK
Is BMP sized to handle all runoff from ultimate build-out?	<u>Y</u> (Y or N)	OK
Is the BMP located in a recorded drainage easement with a recorded access easement to a public Right of Way (ROW)?	<u>Y</u> (Y or N)	OK
The length to width ratio is:	<u>5.14</u> :1	OK
Approximate wetland length	<u>180.00</u> ft	
Approximate wetland width	<u>35.00</u> ft	
Approximate surface area using length and width provided	<u>6,300.00</u> ft ²	
Will the wetland be stabilized within 14 days of construction?	<u>Y</u> (Y or N)	OK

This approx. surface area is within this number of square feet of the entire wetland surface area reported above:

STORMWATER MANAGEMENT PERMIT APPLICATION FORM
 401 CERTIFICATION APPLICATION FORM
WETLAND SUPPLEMENT

This form must be filled out, printed and submitted.

The Required Items Checklist (Part III) must be printed, filled out and submitted along with all the required information.

Project name	Cape Fear Center for Inquiry
Contact name	Brian Corrigan
Phone number	910-362-9822
Date	October 13, 2010
Drainage area number	3

Site Characteristics

Drainage area	35,112.00 ft ²
Impervious area	16,213.00 ft ²
Percent impervious	46.2% %
Design rainfall depth	1.50 inch

Peak Flow Calculations

1-yr, 24-hr rainfall depth	3.80 in
1-yr, 24-hr intensity	0.16 in/hr
Pre-development 1-yr, 24-hr runoff	0.03 ft ³ /sec
Post-development 1-yr, 24-hr runoff	0.07 ft ³ /sec
Pre/Post 1-yr, 24-hr peak control	0.04 ft ³ /sec

Storage Volume: Non-SA Waters

Minimum required volume	2,046.00 ft ³
Volume provided (temporary pool volume)	6,171.00 ft ³

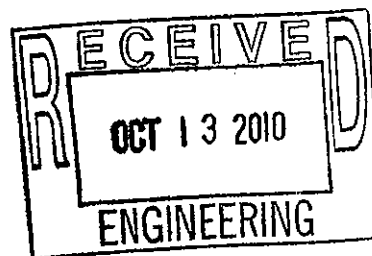
OK

Storage Volume: SA Waters Parameters

1.5" runoff volume	ft ³
Pre-development 1-yr, 24-hr runoff volume	ft ³
Post-development 1-yr, 24-hr runoff volume	ft ³
Minimum volume required	ft ³
Volume provided	ft ³

Outlet Design

Depth of temporary pool/ponding depth ($D_{P\text{lanis}}$)	12.00 in	OK
Drawdown time	2.30 days	OK
Diameter of orifice	1.50 in	OK
Coefficient of discharge (C_D) used in orifice diameter calculation	0.60 (unitless)	
Driving head (H_o) used in the orifice diameter calculation	0.33 ft	OK



Via email

Surface Areas of Wetland Zones

Surface Area of Entire Wetland	6,171.00 ft ²	OK
Shallow Land	2,465.00 ft ²	OK
The shallow land percentage is:	40% %	
Shallow Water	2,590.00 ft ²	OK
The shallow water percentage is:	42% %	
Deep Pool		
Forebay portion of deep pool (pretreatment)	653.00 ft ²	OK
The forebay surface area percentage is:	11% %	
Non-forebay portion of deep pool	463.00 ft ²	OK
The non-forebay deep pool surface area percentage is:	8% %	
Total of wetland zone areas	6,171.00 ft ²	OK
Add or subtract the following area from the zones	0.00 ft ²	

Topographic Zone Elevations

Temporary Pool Elevation (TPE)		
Shallow Land (top)	27.40 ft amsl	
Permanent Pool Elevation (PPE)		
Shallow Water/Deep Pool (top)	26.40 ft amsl	
Shallow Water bottom	26.10 ft amsl	
Most shallow point of deep pool's bottom	24.90 ft amsl	
Deepest point of deep pool's bottom	23.40 ft amsl	
Design must meet one of the following two options:		
This design meets Option #1,		
Top of PPE is within 6" of SHWT, If yes:	Y (Y or N)	
SHWT (Seasonally High Water Table)	26.90 ft amsl	OK
This design meets Option #2,		
Wetland has liner with permeability < 0.01 in/hr, If yes:	(Y or N)	
Depth of topsoil above impermeable liner	in	

Topographic Zone Depths

Temporary Pool		
Shallow Land	12.00 in	OK
Permanent Pool		
Shallow Water	3.60 in	OK
Deep Pool (shallowest)	18.00 in	OK
Deep Pool (deepest)	36.00 in	OK

Planting Plan

Are cattails included in the planting plan?	N (Y or N)	OK
<u>Number of Plants recommended in Shallow Water Area:</u>		
Herbaceous (4 ⁺ cubic-inch container)	650	
<u>Number of Plants recommended in Shallow Land Area:</u>		
Herbaceous (4 ⁺ cubic-inch container), OR	650	
Shrubs (1 gallon or larger), OR	104	
Trees (3 gallon or larger) and Herbaceous (4+ cubic-inch)	13	and 520
<u>Number of Plants provided in Shallow Water Area:</u>		
Herbaceous (4 ⁺ cubic-inch container)	650	OK
<u>Number of Plants provided in Shallow Land Area:</u>		
Herbaceous (4 ⁺ cubic-inch container)	650	OK
Shrubs (1 gallon or larger)	104	OK
Trees (3 gallon or larger) and	13	OK
Grass-like Herbaceous (4+ cubic-inch)	520	OK

Additional Information

Can the design volume be contained?

Y (Y or N)

OK

Does project drain to SA waters? If yes,

N (Y or N)

OK

What is the length of the vegetated filter?

ft

Are calculations for supporting the design volume provided in the application?

Y (Y or N)

OK

Is BMP sized to handle all runoff from ultimate build-out?

Y (Y or N)

OK

Is the BMP located in a recorded drainage easement with a recorded access easement to a public Right of Way (ROW)?

Y (Y or N)

OK

The length to width ratio is:

5.14 :1

OK

Approximate wetland length

180.00 ft

Approximate wetland width

35.00 ft

Approximate surface area using length and width provided

6,300.00 ft²

This approx. surface area is within this number of square feet of the entire wetland surface area reported above:

Will the wetland be stabilized within 14 days of construction?

Y (Y or N)

OK

SUPPLEMENT-EZ COVER PAGE

Parking Expansion

FORMS LOADED



PROJECT INFORMATION		
1	Project Name	Cape Fear Center for Inquiry Parking Lot
2	Project Area (ac)	1.1
3	Coastal Wetland Area (ac)	0
4	Surface Water Area (ac)	0
5	Is this project High or Low Density?	High
6	Does this project use an off-site SCM?	No

COMPLIANCE WITH 02H .1003(4)		
7	Width of vegetated setbacks provided (feet)	-
8	Will the vegetated setback remain vegetated?	
9	Is BUA other than as listed in .1003(4)(c-d) out of the setback?	
10	Is streambank stabilization proposed on this project?	

NUMBER AND TYPE OF SCMs:		
11	Infiltration System	0
12	Bioretention Cell	0
13	Wet Pond	0
14	Stormwater Wetland	0
15	Permeable Pavement	1
16	Sand Filter	0
17	Rainwater Harvesting (RWH)	0
18	Green Roof	0
19	Level Spreader-Filter Strip (LS-FS)	0
20	Disconnected Impervious Surface (DIS)	0
21	Treatment Swale	0
22	Dry Pond	0
23	StormFilter	0
24	Silva Cell	0
25	Bayfilter	0
26	Filterra	0

FORMS LOADED

DESIGNER CERTIFICATION		
27	Name and Title:	J. Branch Smith, PE
28	Organization:	Paramounte Engineering
29	Street address:	122 Cinema Drive
30	City, State, Zip:	Wilmington NC 28403
31	Phone number(s):	910-791-6707
32	Email:	bsmith@paramounte-eng.com

Certification Statement:
 I certify, under penalty of law that this Supplement-EZ form and all supporting information were prepared under my direction or supervision; that the information provided in the form is, to the best of my knowledge and belief, true, accurate, and complete; and that the engineering plans, specifications, operation and maintenance agreements and other supporting information are consistent with the information provided here.

J. Branch Smith

Signature of Designer

Date

DRAINAGE AREAS

1	Is this a high density project?	Yes
2	If so, number of drainage areas/SCMs	2
3	Is all/part of this project subject to previous rule versions?	No

FORMS LOADED

DRAINAGE AREA INFORMATION		Entire Site	1	2
4	Type of SCM		Pervious Pvmt	Passive Infiltration
5	Total BUA in project (sq ft)	8350 sf	5800 sf	2550 sf
6	New BUA on subdivided lots (subject to permitting) (sq ft)			
7	New BUA outside of subdivided lots (subject to permitting) (sf)			
8	Offsite - total area (sq ft)			
9	Offsite BUA (sq ft)			
10	Breakdown of new BUA outside subdivided lots:			
	- Parking (sq ft)	2300 sf	2300 sf	
	- Sidewalk (sq ft)	6050 sf	3500 sf	2550 sf
	- Roof (sq ft)			
	- Roadway (sq ft)			
	- Future (sq ft)			
	- Other, please specify in the comment box below (sq ft)			
11	New infiltrating permeable pavement on subdivided lots (sq ft)	27750 sf	27750 sf	
12	New infiltrating permeable pavement outside of subdivided lots (sq ft)			
13	Existing BUA that will remain (not subject to permitting) (sq ft)			
14	Existing BUA that is already permitted (sq ft)			
15	Existing BUA that will be removed (sq ft)			
16	Percent BUA		16%	7%
17	Design storm (inches)		1.5 in	1.5 in
18	Design volume of SCM (cu ft)		876 cf	520 cf
19	Calculation method for design volume		Simple	Simple

ADDITIONAL INFORMATION	
20	Please use this space to provide any additional information about the drainage area(s):

PERMEABLE PAVEMENT

1	Drainage area number	1
2	Design volume of SCM (cu ft)	
3	Area of permeable pavement to be installed (square feet)	27750 sf
4	Area of screened roof runoff that is directed to pavement (square feet)	sf
5	Area of additional built-upon area runoff that is directed to pavement (square feet)	5800 sf
6	Area of incidental, unavoidable runoff from adjacent stable pervious areas (square feet)	sf

GENERAL MDC FROM 02H .1050

7	Is the SCM sized to treat the SW from all surfaces at build-out?	Yes
8	Is the SCM located away from contaminated soils?	Yes
5	What are the side slopes of the SCM (H:V)?	1:1
6	Does the SCM have retaining walls, gabion walls or other engineered side slopes?	No
7	Are the inlets, outlets, and receiving stream protected from erosion (10-year storm)?	
8	Is there an overflow or bypass for inflow volume in excess of the design volume?	
9	What is the method for dewatering the SCM for maintenance?	Other
10	If applicable, will the SCM be cleaned out after construction?	
11	Does the maintenance access comply with General MDC (8)?	Yes
12	Does the drainage easement comply with General MDC (9)?	Yes
13	If the SCM is on a single family lot, does (will?) the plat comply with General MDC (10)?	
14	Is there an O&M Agreement that complies with General MDC (11)?	Yes
15	Is there an O&M Plan that complies with General MDC (12)?	Yes
16	Does the SCM follow the device specific MDC?	Yes
17	Was the SCM designed by an NC licensed professional?	Yes

PERMEABLE PAVEMENT MDC FROM 02H .1055

18	Is this a detention or infiltration permeable pavement system?	Infiltration
19	Proposed slope of the subgrade surface (%)	1.80%
20	Are terraces or baffles provided?	No
21	SHWT elevation (fmsl)	37.00
22	Storage elevation of the design rainfall depth (fmsl)	Yes
23	Will toxic pollutants be stored or handled on or near the permeable pavement?	No
24	Does the proposed pavement surface comply with .1055(6)?	Yes
25	Will runoff from pervious surfaces be directed away from the pavement?	Yes
26	Maximum adjacent area directed to a single point onto the permeable pavement (sq ft)	800 sf
27	Is at least one observation well per terrace been provided at the low point(s)?	Yes
28	Have edge restraints been provided?	Yes
29	Will the subgrade be graded when dry?	Yes
30	Will the permeable pavement be protected from sediment during construction?	Yes
31	Will an in-situ permeability test be conducted after site stabilization?	Yes

For Infiltrating Pavement Systems

32	Was the soil investigated in the footprint and at the elevation of the subgrade?	Yes
33	Soil infiltration rate (in/hr)	> 10
34	Is a detailed hydrogeologic study attached if the separation is between 1 and 2 feet?	No
35	Is additional media being added to the soil profile?	No
36	Proposed slope of the subgrade surface (%)	1.80%
37	Top of the subgrade (bottom of the aggregate) (fmsl)	39.75
38	Dewatering time (hours)	1 hrs

For Detention Pavement Systems

39	Drawdown time (hours)	
----	-----------------------	--

Aggregate

40	Aggregate depth (in)	6 in
41	Aggregate porosity (n)	0.40
42	Size of aggregate to be used in the subbase	No. 57
43	Will the aggregate be washed?	Yes

ADDITIONAL INFORMATION

44	Please use this space to provide any additional information about the permeable pavement system(s):	
----	-----------------------------------------------------------------------------------------------------	--

Infiltration Basin Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP elements noted in the inspection will be corrected, repaired or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the removal efficiency of the BMP.

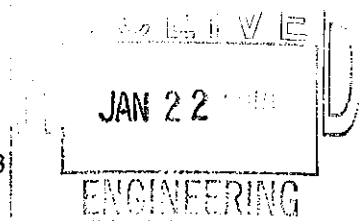
Important maintenance procedures:

- The drainage area will be carefully managed to reduce the sediment load to the infiltration basin.
- Immediately after the infiltration basin is established, the vegetation will be watered twice weekly if needed until the plants become established (commonly six weeks).
- No portion of the infiltration basin will be fertilized after the initial fertilization that is required to establish the vegetation.
- The vegetation in and around the basin will be maintained at a height of approximately six inches.

After the infiltration basin is established, it will be inspected once a quarter and within 24 hours after every storm event greater than 1.5 inches. Records of operation and maintenance will be kept in a known set location and will be available upon request.

Inspection activities shall be performed as follows. Any problems that are found shall be repaired immediately.

BMP element:	Potential problem:	How I will remediate the problem:
The entire BMP	Trash/debris is present.	Remove the trash/debris.
The perimeter of the infiltration basin	Areas of bare soil and/or erosive gullies have formed.	Regrade the soil if necessary to remove the gully, and then plant a ground cover and water until it is established. Provide lime and a one-time fertilizer application.
The inlet device: pipe or swale	The pipe is clogged (if applicable).	Unclog the pipe. Dispose of the sediment off-site.
	The pipe is cracked or otherwise damaged (if applicable).	Replace the pipe.
	Erosion is occurring in the swale (if applicable).	Regrade the swale if necessary to smooth it over and provide erosion control devices such as reinforced turf matting or riprap to avoid future problems with erosion.



BMP element:	Potential problem:	How I will remediate the problem:
The forebay	Sediment has accumulated and reduced the depth to 75% of the original design depth.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and dispose of it in a location where it will not cause impacts to streams or the BMP.
	Erosion has occurred or riprap is displaced.	Provide additional erosion protection such as reinforced turf matting or riprap if needed to prevent future erosion problems.
	Weeds are present.	Remove the weeds, preferably by hand. If pesticides are used, wipe them on the plants rather than spraying.
The main treatment area	A visible layer of sediment has accumulated.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and dispose of it in a location where it will not cause impacts to streams or the BMP. Replace any media that was removed in the process. Revegetate disturbed areas immediately.
	Water is standing more than 5 days after a storm event.	Replace the top few inches of filter media and see if this corrects the standing water problem. If so, revegetate immediately. If not, consult an appropriate professional for a more extensive repair.
	Weeds and noxious plants are growing in the main treatment area.	Remove the plants by hand or by wiping them with pesticide (do not spray).
The embankment	Shrubs or trees have started to grow on the embankment.	Remove shrubs or trees immediately.
	An annual inspection by an appropriate professional shows that the embankment needs repair.	Make all needed repairs.
The outlet device	Clogging has occurred.	Clean out the outlet device. Dispose of the sediment off-site.
	The outlet device is damaged	Repair or replace the outlet device.
The receiving water	Erosion or other signs of damage have occurred at the outlet.	Contact the NC Division of Water Quality 401 Oversight Unit at 919-733-1786.

Permit Number: _____
(to be provided by City of Wilmington)

I acknowledge and agree by my signature below that I am responsible for the performance of the maintenance procedures listed above. I agree to notify the City of Wilmington of any problems with the system or prior to any changes to the system or responsible party.

Project name: CAPE FEAR CENTER FOR INQUIRY
BMP drainage basin number: 1 (INFILTRATION BASIN 1)

Print name: BRIAN CORRIGAN CORPORATION FOR INQUIRY, INC.

Title: DIRECTOR

Address: 3131-B RANDALL PARKWAY, WILM, NC

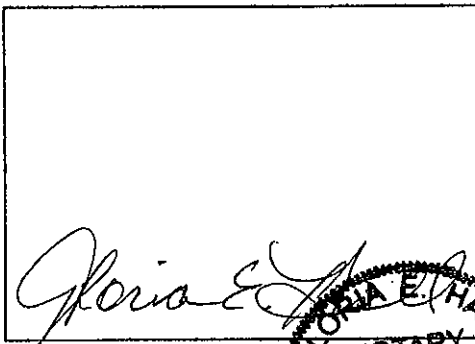
Phone: 910-362-0000

Signature: *Brian Corrigan*

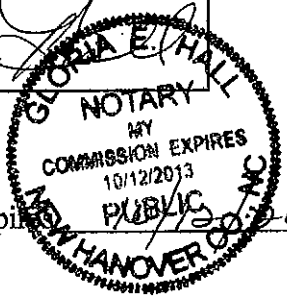
Date: 1/21/10

Note: The legally responsible party should not be a homeowners association unless more than 50% of the lots have been sold and a resident of the subdivision has been named the president.

I, Gloria E. Hall, a Notary Public for the State of North Carolina, County of New Hanover, do hereby certify that BRIAN CORRIGAN personally appeared before me this 21st day of January, 2010, and acknowledge the due execution of the forgoing infiltration basin maintenance requirements. Witness my hand and official seal,



Gloria E. Hall
SEAL



My commission expires 10/12/2013

Infiltration Basin Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP elements noted in the inspection will be corrected, repaired or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the removal efficiency of the BMP.

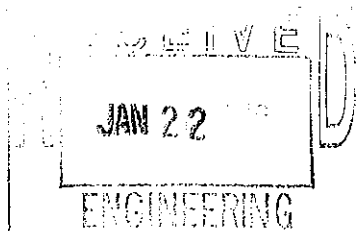
Important maintenance procedures:

- The drainage area will be carefully managed to reduce the sediment load to the infiltration basin.
- Immediately after the infiltration basin is established, the vegetation will be watered twice weekly if needed until the plants become established (commonly six weeks).
- No portion of the infiltration basin will be fertilized after the initial fertilization that is required to establish the vegetation.
- The vegetation in and around the basin will be maintained at a height of approximately six inches.

After the infiltration basin is established, it will be inspected **once a quarter and within 24 hours after every storm event greater than 1.5 inches**. Records of operation and maintenance will be kept in a known set location and will be available upon request.

Inspection activities shall be performed as follows. Any problems that are found shall be repaired immediately.

BMP element:	Potential problem:	How I will remediate the problem:
The entire BMP	Trash/debris is present.	Remove the trash/debris.
The perimeter of the infiltration basin	Areas of bare soil and/or erosive gullies have formed.	Regrade the soil if necessary to remove the gully, and then plant a ground cover and water until it is established. Provide lime and a one-time fertilizer application.
The inlet device: pipe or swale	The pipe is clogged (if applicable).	Unclog the pipe. Dispose of the sediment off-site.
	The pipe is cracked or otherwise damaged (if applicable).	Replace the pipe.
	Erosion is occurring in the swale (if applicable).	Regrade the swale if necessary to smooth it over and provide erosion control devices such as reinforced turf matting or riprap to avoid future problems with erosion.



BMP element:	Potential problem:	How I will remediate the problem:
The forebay	Sediment has accumulated and reduced the depth to 75% of the original design depth.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and dispose of it in a location where it will not cause impacts to streams or the BMP.
	Erosion has occurred or riprap is displaced.	Provide additional erosion protection such as reinforced turf matting or riprap if needed to prevent future erosion problems.
	Weeds are present.	Remove the weeds, preferably by hand. If pesticides are used, wipe them on the plants rather than spraying.
The main treatment area	A visible layer of sediment has accumulated.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and dispose of it in a location where it will not cause impacts to streams or the BMP. Replace any media that was removed in the process. Revegetate disturbed areas immediately.
	Water is standing more than 5 days after a storm event.	Replace the top few inches of filter media and see if this corrects the standing water problem. If so, revegetate immediately. If not, consult an appropriate professional for a more extensive repair.
	Weeds and noxious plants are growing in the main treatment area.	Remove the plants by hand or by wiping them with pesticide (do not spray).
The embankment	Shrubs or trees have started to grow on the embankment.	Remove shrubs or trees immediately.
	An annual inspection by an appropriate professional shows that the embankment needs repair.	Make all needed repairs.
The outlet device	Clogging has occurred.	Clean out the outlet device. Dispose of the sediment off-site.
	The outlet device is damaged	Repair or replace the outlet device.
The receiving water	Erosion or other signs of damage have occurred at the outlet.	Contact the NC Division of Water Quality 401 Oversight Unit at 919-733-1786.

Permit Number: _____
(to be provided by City of Wilmington)

I acknowledge and agree by my signature below that I am responsible for the performance of the maintenance procedures listed above. I agree to notify the City of Wilmington of any problems with the system or prior to any changes to the system or responsible party.

Project name: CAPE FEAR CENTER FOR INQUIRY

BMP drainage basin number: 2 (INFILTRATION BASIN 2)

Print name: BRIAN CORRIGAN CORPORATION FOR INQUIRY, INC.

Title: DIRECTOR

Address: 3131-B RANDALL PARKWAY, WILM, NC

Phone: 910-362-0000

Signature: *Brian Corrigan*

Date: 1/21/10

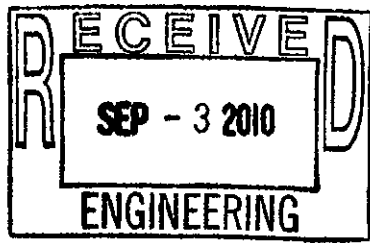
Note: The legally responsible party should not be a homeowners association unless more than 50% of the lots have been sold and a resident of the subdivision has been named the president.

I, Gloria E. Hall, a Notary Public for the State of North Carolina, County of New Hanover, do hereby certify that BRIAN CORRIGAN personally appeared before me this 21st day of January, 2010, and acknowledge the due execution of the forgoing infiltration basin maintenance requirements. Witness my hand and official seal,

Gloria E. Hall
SEAL



My commission expires 10/12/2013



Permit Number: _____
(to be provided by City of Wilmington)

BMP Drainage Basin #: _____

Stormwater Wetland Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP elements noted in the inspection will be corrected, repaired or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the removal efficiency of the BMP.

Important maintenance procedures:

- Immediately following construction of the stormwater wetland, bi-weekly inspections will be conducted and wetland plants will be watered bi-weekly until vegetation becomes established (commonly six weeks).
- No portion of the stormwater wetland will be fertilized after the first initial fertilization that is required to establish the wetland plants.
- Stable groundcover will be maintained in the drainage area to reduce the sediment load to the wetland.
- Once a year, a dam safety expert should inspect the embankment.

After the stormwater wetland is established, I will inspect it **monthly and within 24 hours after every storm event greater than 1.5 inches**. Records of operation and maintenance will be kept in a known set location and will be available upon request.

Inspection activities shall be performed as follows. Any problems that are found shall be repaired immediately.

BMP element:	Potential problem:	How I will remediate the problem:
Entire BMP	Trash/debris is present.	Remove the trash/debris.
Perimeter of wetland	Areas of bare soil and/or erosive gullies have formed.	Regrade the soil if necessary to remove the gully, and then plant a ground cover and water until it is established. Provide lime and a one-time fertilizer application.
	Vegetation is too short or too long.	Maintain vegetation at an appropriate height.
Inlet device: pipe or swale	The pipe is clogged (if applicable).	Unclog the pipe. Dispose of the sediment offsite.
	The pipe is cracked or otherwise damaged (if applicable).	Replace the pipe.
	Erosion is occurring in the swale (if applicable).	Regrade the swale if necessary to smooth it over and provide erosion control devices such as reinforced turf matting or riprap to avoid future problems with erosion.

BMP element:	Potential problem:	How I will remediate the problem:
Forebay	Sediment has accumulated in the forebay to a depth that inhibits the forebay from functioning well.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and dispose of it in a location where it will not cause impacts to streams or the BMP.
	Erosion has occurred.	Provide additional erosion protection such as reinforced turf matting or riprap if needed to prevent future erosion problems.
	Weeds are present.	Remove the weeds, preferably by hand. If a pesticide is used, wipe it on the plants rather than spraying.
	Shallow land remains flooded more than 5 days after a storm event.	Unclog the outlet device immediately.
	Plants are dead, diseased or dying.	Determine the source of the problem: soils, hydrology, disease, etc. Remedy the problem and replace plants. Provide a one-time fertilizer application to establish the ground cover if necessary.
	Sediment has accumulated and reduced the depth to 75% of the original design depth of the deep pools.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and dispose of it in a location where it will not cause impacts to streams or the BMP.
Embankment	A tree has started to grow on the embankment.	Consult a dam safety specialist to remove the tree.
	An annual inspection by appropriate professional shows that the embankment needs repair.	Make all needed repairs.
	Evidence of muskrat or beaver activity is present.	Consult a professional to remove muskrats or beavers.
Wetland Vegetation	Algal growth covers over 50% of the deep pool and shallow water areas.	Consult a professional to remove and control the algal growth.
	Cattails or other invasive plants cover >25% of the deep pool and shallow water areas (a mono-culture of plants must be avoided)	Remove all invasives by physical removal or by wiping them with pesticide (do not spray) - consult a professional.
	The plant community and coverage is significantly (>25%) different from approved landscape plan.	Restore plant vegetation to approved condition. If landscape plan needs to be adjusted to specify vegetation more appropriate for site conditions, contact City Stormwater or Engineering Staff.
	Best professional practices show that pruning is needed to maintain optimal plant health.	Prune according to best professional practices.
	Plants are dead, diseased or dying.	Determine the source of the problem: soils, hydrology, disease, etc. Remedy the problem and replace plants. Provide a one-time fertilizer application to establish the ground cover if necessary.

Permit Number: _____
(to be provided by City of Wilmington)

BMP element:	Potential problem:	How I will remediate the problem:
Micropool	Sediment has accumulated and reduced the depth to 75% of the original design depth.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and dispose of it in a location where it will not cause impacts to streams or the BMP.
Outlet device	Clogging has occurred.	Clean out the outlet device. Dispose of the sediment off-site.
	The outlet device is damaged	Repair or replace the outlet device.
Receiving water	Erosion or other signs of damage have occurred at the outlet.	Contact the NC Division of Water Quality 401 Oversight Unit at 919-733-1786.

I acknowledge and agree by my signature below that I am responsible for the performance of the maintenance procedures listed above. I agree to notify the City of Wilmington of any problems with the system or prior to any changes to the system or responsible party.

Project name: Cape Fear Center for Inquiry

BMP drainage basin number: Stormwater Wetland

Print name: Brian Corrigan

Title: Director

Address: 3131-B Randall Parkway, Wilmington, NC 28403

Phone: 910-362-0000

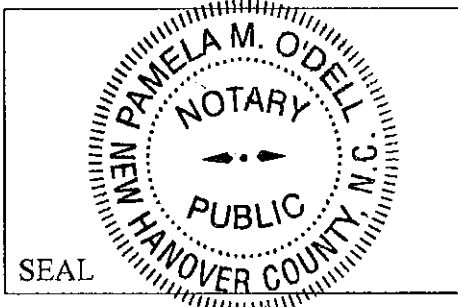
Signature: *Brian P. Corrigan*

Date: 9/2/10

Note: The legally responsible party should not be a homeowners association unless more than 50% of the lots have been sold and a resident of the subdivision has been named the president.

I, Pamela M. O'Dell, a Notary Public for the State of North Carolina County of New Hanover, do hereby certify that Brian P. Corrigan personally appeared before me this 2nd day of Sept., 2010, and acknowledge the due execution of the forgoing stormwater wetland maintenance requirements. Witness my hand and official seal,

Pamela M. O'Dell



My commission expires 3-26-2013

Operation & Maintenance Agreement

Project Name: Cape Fear Center for Inquiry Parking Expansion
Project Location: 2525 Wonder Way

Cover Page

Maintenance records shall be kept on the following BMP(s). This maintenance record shall be kept in a log in a known set location. Any deficient BMP elements noted in the inspection will be corrected, repaired, or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the pollutant removal efficiency of the BMP(s).

The BMP(s) on this project include (check all that apply & corresponding O&M tables will be added automatically):

Bioretention Cell	Quantity:		Location(s):	
Dry Detention Basin	Quantity:		Location(s):	
Grassed Swale	Quantity:		Location(s):	
Green Roof	Quantity:		Location(s):	
Infiltration Basin	Quantity:		Location(s):	
Infiltration Trench	Quantity:		Location(s):	
Level Spreader/VFS	Quantity:		Location(s):	
Permeable Pavement	Quantity:	1	Location(s):	Parking Lot
Proprietary System	Quantity:		Location(s):	
Rainwater Harvesting	Quantity:		Location(s):	
Sand Filter	Quantity:		Location(s):	
Stormwater Wetland	Quantity:		Location(s):	
Wet Detention Basin	Quantity:		Location(s):	
Disconnected Impervious Area	Present:	No	Location(s):	
User Defined BMP	Present:	No	Location(s):	

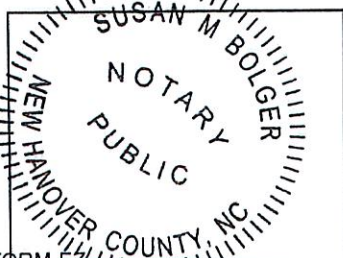
I acknowledge and agree by my signature below that I am responsible for the performance of the maintenance procedures listed for each BMP above, and attached O&M tables. I agree to notify NCDENR of any problems with the system or prior to any changes to the system or responsible party.

* Responsible Party:	Corporation for Inquiry, Inc.
Title & Organization:	Katherine Coke
Street address:	2525 Wonder Way
City, state, zip:	Wilmington, NC 28401
Phone number(s):	(910) 362-0000
Email:	kcoke@cfc.net

Signature: Katherine A. Coke Date: 3/12/20

I, Susan M Bolger, a Notary Public for the State of North Carolina
 County of New Hanover, do hereby certify that Katherine Coke
 personally appeared before me this 2 day of March, 2020 and
 acknowledge the due execution of the Operations and Maintenance Agreement.

Witness my hand and official seal, Susan M Bolger



At all times, the pavement shall be kept free of:

- Debris and particulate matter through frequent blowing that removes such debris, particularly during the fall and spring.
- Piles of soil, sand, mulch, building materials or other materials that could deposit particulates on the pavement.
- Piles of snow and ice.
- Chemicals of all kinds, including deicers.

The permeable pavement will be inspected **once a quarter**. Records of operation and maintenance will be kept in a known set location and will be available upon request.

Inspection activities shall be performed as follows. Any problems that are found shall be repaired immediately.

BMP element:	Potential problem:	How to remediate the problem:
The entire BMP	Trash/debris is present.	Remove the trash/debris.
The perimeter of the permeable pavement	Areas of bare soil and/or erosive gullies	Regrade the soil if necessary to remove the gully, then plant ground cover and water until established.
	A vegetated area drains toward the pavement.	Regrade the area so that it drains away from the pavement, then plant ground cover and water until established.
The inlet device	The pipe is clogged.	Unclog the pipe. Dispose of the sediment off-site.
	The pipe is cracked or otherwise damaged.	Replace the pipe.
	Erosion is occurring in the swale.	Regrade the swale if necessary to smooth it over and provide erosion control devices such as reinforced turf matting or riprap to avoid future problems with erosion.
	Stone verge is clogged or covered in sediment (if applicable).	Remove sediment and replace with clean stone.
The surface of the permeable pavement	Trash/debris present	Remove the trash/debris.
	Weeds	Do not pull the weeds (may pull out media as well). Spray them with a systemic herbicide such as glyphosate and then return within the week to remove them by hand. (Another option is to pour boiling water on them or steam them.)
	Sediment	Vacuum sweep the pavement.
	Rutting, cracking or slumping or damaged structure	Consult an appropriate professional.
Observation well	Water present more than five days after a storm event	Clean out clogged underdrain pipes. Consult an appropriate professional for clogged soil subgrade.
Educational sign	Missing or is damaged.	Replace the sign.
The outlet device	Clogging has occurred.	Clean out the outlet device. Dispose of the sediment off-site.
	The outlet device is damaged	Repair or replace the outlet device.
The receiving water	Erosion or other signs of damage have occurred at the outlet.	Contact the local NC Department of Environment and Natural Resources Regional Office.