



Public Services

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

May 10, 2021

Mr. William K. Schoettelkotte, Manager
GHK Cape Fear Development, LLC
1051 Military Cutoff Road-Suite 200
Wilmington, NC 28405

**Subject: Stormwater Management Permit No. 2019036R1
Woodlands Landing at Echo Farms
High Density Development**

Dear Mr. Schoettelkotte:

The City of Wilmington Engineering Division has received a request for a revision to the Stormwater Management Permit for Woodlands Landing at Echo Farms. Having reviewed the application and all supporting materials, the City of Wilmington has determined that the proposed revision meets the requirements of the City of Wilmington's Comprehensive Stormwater Ordinance.

The revisions include:

- Addition of the paved access drive at the southern end of Pond 3A-3. Impervious square footage of the driveway was subtracted from the future development allocation. No change to the SCM.

Please be aware all terms and conditions of the permit Issued on June 27, 2019 remain in full force and effect. Any additional changes to the approved plans must be approved by this office prior to construction. The issuance of the plan revision does not preclude the permittee from complying with all other applicable statutes, rules, regulations or ordinances which may have jurisdiction over the proposed activity and obtaining a permit or approval prior to construction.

The revised stamped, approved stormwater management drawings will be released for construction by the Wilmington Planning Division under separate cover. Please replace any old plan sheets from the approved set with the new, revised sheet. An electronic copy of the approved drawing set, permit, application and supplementary documents will be maintained by the Wilmington Engineering Division. If you have any questions, or need additional information, please contact Richard Christensen at (910) 341-7813 or richard.christensen@wilmingtonnc.gov

Sincerely,

Richard Christensen

for Sterling Cheatham, City Manager
City of Wilmington

cc: Robert Balland, PE, Paramounte Engineering, Inc.
Brian Chambers, Senior Planner, City of Wilmington



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STORMWATER MANAGEMENT PERMIT APPLICATION FORM
 (Form SWP 2.3)

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.):

Woodlands Landing at Echo Farms

2. Location of Project (street address):

4114 Echo Farms Boulevard

City: Wilmington County: New Hanover Zip: 28412

II. PERMIT INFORMATION

1. Specify the type of project (check one): Low Density High Density
 Offsite Stormwater System Drainage Plan Redevelopment Other

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

City of Wilmington: _____ State – NCDEQ/DEMLR: _____

2. Is the project currently covered (whole or in part) by an existing City or State (NCDEQ/DEMLR) Stormwater Permit? Yes No

If yes, list all applicable Stormwater Permit Numbers:

City of Wilmington: 2019036 State – NCDEQ/DEMLR: _____

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

CAMA Major Sedimentation/Erosion Control 404/401 Permit

III. CONTACT INFORMATION

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

Applicant / Organization: GHK Cape Fear Development LLC

Signing Official & Title: William K. Schoettelkotte - Manager

a. Contact information for Applicant / Signing Official:

Address: 1051 Military Cutoff Road - Suite 200

City: Wilmington

State: NC

Zip: 28405

Phone: 910-344-1000

Email: bill@capefearcommercial.com

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

The property owner/Purchaser (Skip to item 3)

Lessee (Attach a copy of the lease agreement and complete items 2 and 2a below)

Developer (Complete items 2 and 2a below.)

2. Print Property Owner's name and title (if different from the applicant).

Property Owner / Organization: Echo Farms, LLC c/o Matrix Development Group

Signing Official & Title: Joseph S. Taylor - Manager

a. Contact information for Property Owner:

Street Address: CN 400 Forsgate Drive

City: Cranbury

State: NJ

Zip: 08512

Phone: 732-521-2900

Email: bstapleton@matrixcompanies.com

3. (Optional) Other Contact name and title (such as a construction supervisor) who would like to be copied on all correspondence:

Other Contact Person / Organization: _____

Signing Official & Title: _____

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

Street Address: _____

City: _____

State: _____

Zip: _____

Phone: _____

Email: _____

4. Agent Authorization: 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: Robert Balland, PE

Consulting Firm: Paramounte Engineering, Inc

a. Contact information for consultant listed above:

Mailing Address: 122 Cinema Drive

City: Wilmington

State: NC

Zip: 28409

Phone: (910) 791-6707

Email: rballand@paramounte-eng.com

IV. PROJECT INFORMATION

1. Total Property Area: 807,945 square feet
2. Total Coastal Wetlands Area: 0 square feet
3. Total Surface Water Area: 36,441 square feet
4. Total Property Area (1) – Total Coastal Wetlands Area (2) – Total Surface Water Area (3) = Total Project Area: 771,504 square feet.
5. Existing Impervious Surface within Project Area: 20,860 square feet
6. Existing Impervious Surface to be Removed/Demolished: 20,860 square feet
7. Existing Impervious Surface to Remain: 0 square feet
8. Total Onsite (within property boundary) Newly Constructed Impervious Surface (in square feet):

Buildings/Lots	111,100
Impervious Pavement	150,000
Pervious Pavement (total area / adjusted area w credit applied)	0.0 /
Impervious Sidewalks	57,664
Pervious Sidewalks (total area / adjusted area w credit applied)	/
Other (Describe)	
Future Development	61,481
Total Onsite Newly Constructed Impervious Surface	380,245

9. Total Onsite Impervious Surface
(Existing Impervious Surface to remain + Onsite Newly Constructed Impervious Surface) 380,245 square feet
10. Net Change in Onsite Impervious Surface (+ for net increase, - for net decrease) 0.0 square feet
11. Project percent of impervious area: (Total Onsite Impervious Surface / Total Project Area) x100 = 49 %
12. Total Offsite Newly Constructed Impervious Area (in square feet):

Impervious Pavement	2,357
Pervious Pavement (total area / adjusted area w credit applied)	/
Impervious Sidewalks	1,056
Pervious Sidewalks (total area / adjusted area w credit applied)	/
Other (Describe)	
Total Offsite Newly Constructed Impervious Surface	3,413

13. Complete the following information for each Stormwater SCM drainage area. Low Density and Drainage Plan projects (with no permeable pavements) may omit this section and skip to Section V.

Basin Information	Wet Pond SCM # 3A-1	Wet Pond SCM # 3A-2	Wet Pond SCM # 3A-3
Receiving Stream Name	Barnards Creek	Barnards Creek	Barnards Creek
Receiving Stream Index Number	18-80	18-80	18-80
Stream Classification	C;Sw	C;Sw	C;Sw
Total Drainage Area (sf)	256133	268950	589732
On-Site Drainage Area (sf)	256133	265947	157543
Off-Site Drainage Area (sf)	0.0	3003	432189
Buildings/Lots (sf)	48,200	51,060	14,740
Impervious Pavement (sf)	82700	92,530	35,270
Pervious Pavement (total / adjusted) (sf)	/	/	/
Impervious Sidewalks (sf)	17,764	24,000	10,145
Pervious Sidewalks (total / adjusted) (sf)	/	/	/
Other (sf)			37,733
Future Development (sf)	3136		18,400
Existing Impervious to remain (sf)			
Offsite (sf)			152,650
Total Impervious Area (sf)	151,800	167,590	268938
Percent Impervious Area (%)	59.3%	62.4%	45.6%

Basin Information	Type of SCM SCM #	Type of SCM SCM #	Type of SCM SCM #
Receiving Stream Name			
Receiving Stream Index Number			
Stream Classification			
Total Drainage Area (sf)			
On-Site Drainage Area (sf)			
Off-Site Drainage Area (sf)			
Buildings/Lots (sf)			
Impervious Pavement (sf)			
Pervious Pavement (total / adjusted) (sf)	/	/	/
Impervious Sidewalks (sf)			
Pervious Sidewalks (total / adjusted) (sf)	/	/	/
Other (sf)			
Future Development (sf)			
Existing Impervious to remain (sf)			
Offsite (sf)			
Total Impervious Area (sf)			
Percent Impervious Area (%)			

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: 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

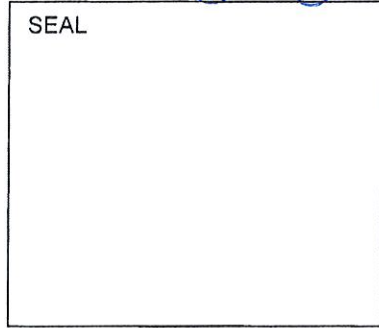
Phone: 910-791-6707 Fax: 910-791-6760 Email: bsmith@paramounte-eng.com

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) Joseph S. Taylor, 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) William W. Schoettelkotte with (print or type name of organization listed in Contact Information, item 1) GHK Cape Fear Development, LLC 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: [Handwritten Signature] Date: 11.6.2018




I, Lisa Balasni, a Notary Public for the State of NEW JERSEY, County of MERCER, do hereby certify that JOSEPH S. TAYLOR personally appeared before me this day of NOVEMBER 6, 2018, and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal,

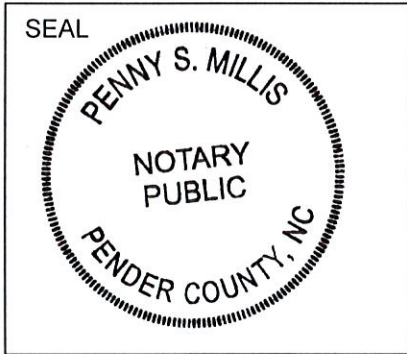
[Handwritten Signature] My commission expires:

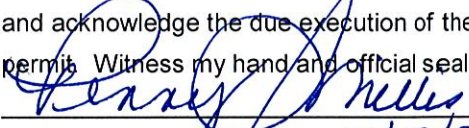
LISABALASNI NOTARY PUBLIC OF NEW JERSEY ID# 2115642 MY COMMISSION EXPIRES SEPT. 15, 2023

VIII. APPLICANT'S CERTIFICATION

I, (print or type name of person listed in Contact Information, item 1) William W. Schoettelkotte 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:  Date: 4/22/19



I, Penny S. Millis, a Notary Public for the State of North Carolina, County of Pender, do hereby certify that William W. Schoettelkotte personally appeared before me this day of 22, April, 2019, and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal,

My commission expires: 10/19/22

SUPPLEMENT-EZ FORM COVER PAGE

Please indicate the types, quantities and locations of SCMs that will be used on this project:

Quantity	Location(s)
Infiltration System	
Bioretention Cell Wet Pond	3A-1, 3A-2, & 3A-3 on Tract 3A
Stormwater Wetland	
Permeable Pavement	
Sand Filter	
Rainwater Harvesting	
Green Roof	
Level Spreader-Filter Strip	
Disconnected Impervious Surface	
Treatment Swale	
Dry Pond	

Project Name:

Woodlands Landing at Echo Farms

Address

4114 Echo Farms Blvd, Wilmington, NC

City / Town

Wilmington

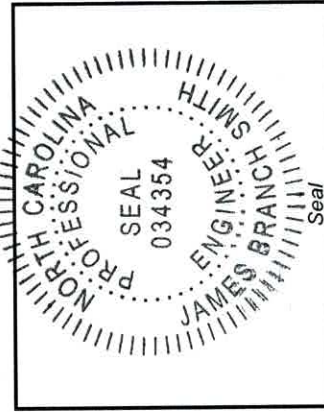
Designer information for this project:

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

Applicant:

Company:	Woodlands Landing, LLC
Contact:	William W. Schoettelkotte
Mailing Address:	1051 Military Cutoff Road - Suite 200
City, State, Zip:	Wilmington, NC 28405
Phone number(s):	910-344-1000
Email:	bill@capefearcommercial.com

Designer



** UPDATE 3A-3 BVA ALLOCATION*

J. Branch Smith
Signature of Designer

* 6-7-21
Date

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.

I am aware that there are significant penalties for submitting false information including the possibility of fines and imprisonment for knowing violations as well as a report being made to my professional board.

WET POND

Woodlands Landing at Echo Farms

THE DRAINAGE AREA		1	
Drainage area number	3A-1		
Total coastal wetlands area (sq ft)	sf	Break down of BUA in the drainage area (both new and existing):	59,100
Total surface water area (sq ft)	sf	- Parking / driveway (sq ft)	16,700
Total drainage area (sq ft)	256,133	- Sidewalk (sq ft)	48,200
BUA associated with existing development (sq ft)	sf	- Roof (sq ft)	23,600
Proposed new BUA (sq ft)	151,800	- Roadway (sq ft)	4,200
Percent BUA of drainage area	59.3%	- Other, please specify in the comment box below (sq ft)	151,800
COMPLIANCE WITH THE APPLICABLE STORMWATER PROGRAM			
Stormwater program(s) that apply (please specify):			
MDC [15A NCAC 02H .1053] - North Carolina coastal stormwater rules			
GENERAL MDC FROM 02H .1050			
#1 Is the SCM sized to treat the SW from all surfaces at build-out?	Yes	#7 If applicable, with the SCM be cleaned out after construction?	Yes
#2 Is the SCM located on or near contaminated soils?	No	#8 Does the maintenance access comply with General MDC (8)?	Yes
#3 What are the side slopes of the SCM (H:V)?	(3:1)	#9 Does the drainage easement comply with General MDC (9)?	Yes
#3 Does the SCM have retaining walls, gabion walls or other engineered side slopes?	No	#10 If the SCM is on a single family lot, does the plat comply with General MDC (10)?	No
#4 Are the inlets, outlets, and receiving stream protected from erosion (10-year storm)?	Yes	#11 Is there an O&M Agreement that complies with General MDC (11)?	Yes
#5 Is there a bypass for flows in excess of the design flow?	Yes	#12 Is there an O&M Plan that complies with General MDC (12)?	Yes
#6 What is the method for dewatering the SCM for maintenance?	Pump (preferred)	#13 Was the SCM designed by an NC licensed professional?	Yes
WET POND MDC FROM 02H .1053			
#1 Method used	SAIDA	#6 Width of the vegetated shelf (feet)	6 ft
#1 Surface area of the main permanent pool (square feet)	15,096	#6 Location of vegetated shelf	Submerged
#1 Volume of the main permanent pool (cubic feet)	42,025	#6 Elevation of top of shelf (fmsl)	12 ft
#2 Average depth of the main pool (feet)	3.8 ft	#6 Elevation of bottom of shelf (fmsl)	11 ft
#2 Was the vegetated shelf included in the calculation of average depth?	No	#6 Slope of vegetated shelf (H:V)	(6:1)
#2 Elevation of the bottom of the permanent pool (fmsl)	6.0 ft	#7 Diameter of drawdown orifice (inches)	2.0 in
#2 Elevation of the top of the permanent pool (fmsl)	12.0 ft	#7 Drawdown time for the temporary pool (hours)	101 hrs
#2 Elevation of the top of the temporary pool (fmsl)	13.0 ft	#7 Does the orifice drawdown from below the top surface of the permanent pool?	Yes
#3 Depth provided for sediment storage (inches)	12 in	#8 Does the pond minimize impacts to the receiving channel from the 1-yr. 24-hr storm?	Yes
#4 Are the inlet(s) and outlet located in a manner that avoids short-circuiting?	Yes	#9 Are fountains proposed?	No
#4 Describe any measures, such as berms or baffles, that will be taken to improve the flow path:		#9 If yes, is documentation provided per Wet Pond MDC (9)?	No
#5 Volume of the forebay (cubic feet)	7917	#10 Is a trash rack or other device provided to protect the outlet system?	Yes
#5 Is this 15-20% of the volume in the main pool?	Yes	#11 Are the dam and embankment planted in non-clumping turf grass?	No
#5 Depth of forebay at entrance (inches)	60 in	#11 Species of turf that will be used on the dam and embankment	see below
#5 Depth of forebay at exit (inches)	48 in	#11 Describe the planting plan for the vegetated shelf:	
#5 Does water flow out of the forebay in a non-erosive manner?	Yes	Bermuda Sod. Contractor to install a minimum of 3 species on the sloped shelf in a 6' x33' area (200sq) based on plant material and water depths. Suitable plants (plugs) will follow the pond details on the drawings.	
#5 Clean-out depth for forebay (inches)	48 in		
#5 Will the forebay be cleaned out when the depth is reduced to less than the above?	Yes		
ADDITIONAL INFORMATION			
Please use this space to provide any additional information about this wet pond that you think is relevant to the review.			

WET POND

Woodlands Landing at Echo Farms

THE DRAINAGE AREA

Drainage area number	3A-2		
Total coastal wetlands area (sq ft)	sf	Break down of BUA in the drainage area (both new and existing):	71,430
Total surface water area (sq ft)	sf	- Parking / driveway (sq ft)	24,000
Total drainage area (sq ft)	sf	- Sidewalk (sq ft)	51,060
BUA associated with existing development (sq ft)	sf	- Roof (sq ft)	21,100
Proposed new BUA (sq ft)	167,590	- Roadway (sq ft)	
Percent BUA of drainage area	62.3%	- Other, please specify in the comment box below (sq ft)	
		Total BUA (sq ft)	167,590

COMPLIANCE WITH THE APPLICABLE STORMWATER PROGRAM

Stormwater program(s) that apply (please specify):		Design rainfall depth (in)	1.5 in
MDC [15A NCAC 02H.1053] - North Carolina coastal stormwater rules		Minimum volume required (cu ft)	20,864
		Design volume of SCM (cu ft)	23,222

GENERAL MDC FROM 02H .1050

#1 Is the SCM sized to treat the SW from all surfaces at build-out?	Yes	#7 If applicable, with the SCM be cleaned out after construction?	Yes
#2 Is the SCM located on or near contaminated soils?	No	#8 Does the maintenance access comply with General MDC (8)?	Yes
#3 What are the side slopes of the SCM (H:V)?	(3:1)	#9 Does the drainage easement comply with General MDC (9)?	Yes
#4 Does the SCM have retaining walls, gabion walls or other engineered side slopes?	No	#10 If the SCM is on a single family lot, does the plat comply with General MDC (10)?	No
#5 Are the inlets, outlets, and receiving stream protected from erosion (10-year storm)?	Yes	#11 Is there an O&M Agreement that complies with General MDC (11)?	Yes
#6 Is there a bypass for flows in excess of the design flow?	Yes	#12 Is there an O&M Plan that complies with General MDC (12)?	Yes
#6 What is the method for dewatering the SCM for maintenance?	Pump (preferred)	#13 Was the SCM designed by an NC licensed professional?	Yes

WET POND MDC FROM 02H .1053

#1 Method used	SADA	#6 Width of the vegetated shelf (feet)	6 ft
#1 Surface area of the main permanent pool (square feet)	13,069	#6 Location of vegetated shelf	Submerged
#1 Volume of the main permanent pool (cubic feet)	41,301	#6 Elevation of top of shelf (fmsl)	11 ft
#2 Average depth of the main pool (feet)	3.9 ft	#6 Elevation of bottom of shelf (fmsl)	10 ft
#2 Was the vegetated shelf included in the calculation of average depth?	No	#6 Slope of vegetated shelf (H:V)	(6:1)
#2 Elevation of the bottom of the permanent pool (fmsl)	6.0 ft	#7 Diameter of drawdown orifice (inches)	2.5 in
#2 Elevation of the top of the permanent pool (fmsl)	11.0 ft	#7 Drawdown time for the temporary pool (hours)	64 hrs
#2 Elevation of the top of the temporary pool (fmsl)	12.25 ft	#7 Does the orifice drawdown from below the top surface of the permanent pool?	Yes
#3 Depth provided for sediment storage (inches)	12 in	#8 Does the pond minimize impacts to the receiving channel from the 1-yr, 24-hr storm?	Yes
#4 Are the inlet(s) and outlet located in a manner that avoids short-circuiting?	Yes	#9 Are fountains proposed?	No
#4 Describe any measures, such as berms or baffles, that will be taken to improve the flow path:		#9 If yes, is documentation provided per Wet Pond MDC (9)?	No
		#10 Is a trash rack or other device provided to protect the outlet system?	Yes
#5 Volume of the forebay (cubic feet)	7816	#11 Are the dam and embankment planted in non-clumping turf grass?	No
#5 Is this 15-20% of the volume in the main pool?	Yes	#11 Species of turf that will be used on the dam and embankment	see below
#5 Depth of forebay at entrance (inches)	48 in	#11 Describe the planting plan for the vegetated shelf:	
#5 Depth of forebay at exit (inches)	36 in	Bermuda Sod. Contractor to install a minimum of 3 species on the sloped shelf in a 6' x33' area (200sf) based on plant material and water depths. Suitable plants (plugs) will follow the pond details on the drawings.	
#5 Does water flow out of the forebay in a non-erosive manner?	Yes		
#5 Clean-out depth for forebay (inches)	36 in		
#5 Will the forebay be cleaned out when the depth is reduced to less than the above?	Yes		

ADDITIONAL INFORMATION

Please use this space to provide any additional information about this wet pond that you think is relevant to the review.
 - "Other" for breakdown of BUA is offsite sidewalk and roadway to be constructed for Tract 3A and draining to Pond 3A-2

RECEIVED
MAY 06 2019
ENGINEERING

WET POND

Woodlands Landing at Echo Farms

3

THE DRAINAGE AREA		3A-3	Break down of BUA in the drainage area (both new and existing):	
Drainage area number		3A-3	- Parking / Driveway / Roadway (sq ft)	35,270
Total coastal wetlands area (sq ft)		sf	- Sidewalk (sq ft)	10,145
Total surface water area (sq ft)		sf	- Roof (sq ft)	14,740
Total drainage area (sq ft)		sf	- Future (sq ft)	18,400
BUA associated with existing development (sq ft)		sf	- Other, please specify in the comment box below (sq ft)	190,383
Proposed new BUA (sq ft)		sf	Total BUA (sq ft)	268,938
Percent BUA of drainage area		45.6%		

COMPLIANCE WITH THE APPLICABLE STORMWATER PROGRAM

Stormwater program(s) that apply (please specify):		Design rainfall depth (in)	1.5 in
2017 Coastal SW Rules		Minimum volume required (cu ft)	33,437
		Design volume of SCM (cu ft)	40,461

GENERAL MDC FROM 02H .1050

#1 Is the SCM sized to treat the SW from all surfaces at build-out?	Yes	#7 If applicable, with the SCM be cleaned out after construction?	Yes
#2 Is the SCM located on or near contaminated soils?	No	#8 Does the maintenance access comply with General MDC (8)?	Yes
#3 What are the side slopes of the SCM (H:V)?	3:1, 6:1, 2:1	#9 Does the drainage easement comply with General MDC (9)?	Yes
#3 Does the SCM have retaining walls, gabion walls or other engineered side slopes?	No	#10 If the SCM is on a single family lot, does the plat comply with General MDC (10)?	No
#4 Are the inlets, outlets, and receiving stream protected from erosion (10-year storm)?	Yes	#11 Is there an O&M Agreement that complies with General MDC (11)?	Yes
#5 Is there a bypass for flows in excess of the design flow?	Yes	#12 Is there an O&M Plan that complies with General MDC (12)?	Yes
#6 What is the method for dewatering the SCM for maintenance?	Pump (preferred)	#13 Was the SCM designed by an NC licensed professional?	Yes

WET POND MDC FROM 02H .1053

#1 Method used	SA/DA	#6 Width of the vegetated shelf (feet)	6 ft
#1 Surface area of the main permanent pool (square feet)	13,944	#6 Location of vegetated shelf	Submerged
#1 Volume of the main permanent pool (cubic feet)	53,483	#6 Elevation of top of shelf (fmsl)	10 ft
#2 Average depth of the main pool (feet)	5.1 ft	#6 Elevation of bottom of shelf (fmsl)	9 ft
#2 Was the vegetated shelf included in the calculation of average depth?	No	#6 Slope of vegetated shelf (H:V)	(6:1)
#2 Elevation of the bottom of the permanent pool (fmsl) - SEDIMENT REMOVAL ELEV.	3.0 ft	#7 Diameter of drawdown orifice (inches)	3.0 in
#2 Elevation of the top of the permanent pool (fmsl)	10.0 ft	#7 Drawdown time for the temporary pool (hours)	55 hrs
#2 Elevation of the top of the temporary pool (fmsl)	12.00 ft	#7 Does the orifice drawdown from below the top surface of the permanent pool?	Yes
#3 Depth provided for sediment storage (inches)	12 in	#8 Does the pond minimize impacts to the receiving channel from the 1-yr, 24-hr storm?	Yes
#4 Are the inlet(s) and outlet located in a manner that avoids short-circuiting?	Yes	#9 Are fountains proposed?	No
#4 Describe any measures, such as berms or baffles, that will be taken to improve the flow path:	N/A	#9 If yes, is documentation provided per Wet Pond MDC (9)?	No
#5 Volume of the forebay (cubic feet)	8386	#10 Is a trash rack or other device provided to protect the outlet system?	Yes
#5 Is this 15-20% of the volume in the main pool?	Yes	#11 Are the dam and embankment planted in non-clumping turf grass?	Yes
#5 Depth of forebay at entrance (inches)	60 in	#11 Species of turf that will be used on the dam and embankment	Bermuda
#5 Depth of forebay at exit (inches)	48.00 in	#11 Describe the planting plan for the vegetated shelf:	Bermuda Sod. Contractor to install a minimum of 3 species on the sloped shelf in a 6' x33' area (200sf) based on plant material and water depths. Suitable plants (plugs) will follow the pond details on the drawings.
#5 Does water flow out of the forebay in a non-erosive manner?	Yes		
#5 Clean-out depth for forebay (inches)	48 in		
#5 Will the forebay be cleaned out when the depth is reduced to less than the above?	Yes		

ADDITIONAL INFORMATION

Please use this space to provide any additional information about this wet pond that you think is relevant to the review:

- "Other" listed in BUA above is impervious that is in Tract 3B of Echo Farms and the proposed multi-use path in the NHC Parks property surrounding the Tract 3A property. This BUA will drain to Pond 3A-3 in Tract 3A of Echo Farms.

Operation & Maintenance Agreement

Project Name: Woodlands Landing at Echo Farms
Project Location: 4114 Echo Farms Boulevard

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:		Location(s):	
Proprietary System	Quantity:		Location(s):	
Rainwater Harvesting	Quantity:		Location(s):	
Sand Filter	Quantity:		Location(s):	
Stormwater Wetland	Quantity:		Location(s):	
Wet Detention Basin	Quantity:	3	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.

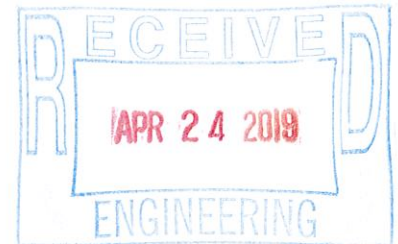
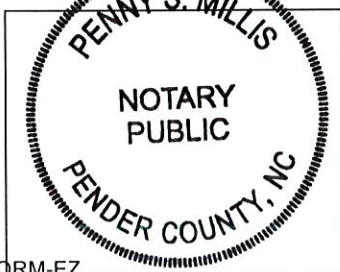
* Responsible Party:	Woodlands Landing, LLC
Title & Organization:	William W. Schoettelkotte - Manager
Street address:	1051 Military Cutoff Road, Suite 200
City, state, zip:	Wilmington, NC 28405
Phone number(s):	910-344-1000
Email:	bill@capefearcommercial.com

Signature: *[Signature]* Date: 4/22/19

I, Penny S. Millis, a Notary Public for the State of North Carolina
 County of Pender, do hereby certify that William W. Schoettel Kotte
 personally appeared before me this 22 day of April, 2019 and
 acknowledge the due execution of the Operations and Maintenance Agreement.

Witness my hand and official seal, *[Signature]*

My Commission expires 10/19/22



Wet Detention Pond Maintenance Requirements

The wet detention basin system is defined as the wet detention basin, pretreatment including forebays and the vegetated filter if one is provided.

Important maintenance procedures:

- Immediately after the wet detention basin is established, the plants on the vegetated shelf and perimeter of the basin should be watered twice weekly if needed, until the plants become established (commonly six weeks).
- No portion of the wet detention pond should be fertilized after the first initial fertilization that is required to establish the plants on the vegetated shelf.
- Stable groundcover should be maintained in the drainage area to reduce the sediment load to the wet detention basin.
- If the basin must be drained for an emergency or to perform maintenance, the flushing of sediment through the emergency drain should be minimized to the maximum extent practical.
- Once a year, a dam safety expert should inspect the embankment.

After the wet detention pond is established, it should be inspected **once a month and within 24 hours after every storm event greater than 1.0 inches (or 1.5 inches if in a Coastal County)**. Records of operation and maintenance should be kept in a known set location and must 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 BMP	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 a height of approximately six inches.
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 forebay	Sediment has accumulated to a depth greater than the original design depth for sediment storage.	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 pesticide is used, wipe it on the plants rather than spraying.
The vegetated shelf	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 a soil test indicates it is necessary.
	Weeds are present.	Remove the weeds, preferably by hand. If pesticide is used, wipe it on the plants rather than spraying.

Wet Detention Pond Maintenance Requirements (Continued)

The main treatment area	Sediment has accumulated to a depth greater than the original design sediment storage 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.
	Algal growth covers over 50% of the area.	Consult a professional to remove and control the algal growth.
	Cattails, phragmites or other invasive plants cover 50% of the basin surface.	Remove the plants by wiping them with pesticide (do not spray).
The embankment	Shrubs have started to grow on the embankment.	Remove shrubs immediately.
	Evidence of muskrat or beaver activity is present.	Use traps to remove muskrats and consult a professional to remove beavers.
	A tree has started to grow on the embankment.	Consult a dam safety specialist to remove the tree.
	An annual inspection by an appropriate professional shows that the embankment needs repair. (if applicable)	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 local NC Department of Environment and Natural Resources Regional Office.
<p align="center">The measuring device used to determine the sediment elevation shall be such that it will give an accurate depth reading and not readily penetrate into accumulated sediments.</p>		

Wet Detention Pond Design Summary

Wet Pond Diagram

WET POND ID	FOREBAY	MAIN POND	
3A-1	Permanent Pool El. 12	Permanent Pool El. 12	
	Temporary Pool El: 13	Temporary Pool El: 13	
Pretreatment other than forebay? No	Clean Out Depth: 4	Clean Out Depth: 6	
Has Veg. Filter? No	Sediment Removal El: 8	Sediment Removal El: 6	
	Bottom Elevation: 7	Bottom Elevation: 5	
3A-2	Permanent Pool El. 11	Permanent Pool El. 11	
	Temporary Pool El: 12.25	Temporary Pool El: 12.25	
Pretreatment other than forebay? No	Clean Out Depth: 3	Clean Out Depth: 5	
Has Veg. Filter? No	Sediment Removal El: 8	Sediment Removal El: 6	
	Bottom Elevation: 7	Bottom Elevation: 5	
3A-3	Permanent Pool El. 10	Permanent Pool El. 10	
	Temporary Pool El: 12	Temporary Pool El: 12	
Pretreatment other than forebay? No	Clean Out Depth: 4	Clean Out Depth: 7	
Has Veg. Filter? No	Sediment Removal El: 6	Sediment Removal El: 3	
	Bottom Elevation: 5	Bottom Elevation: 2	