



Public Services

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

January 31, 2020

Mr. Scott Underwood
Woodfield Acquisitions, LLC
300 Mountain Maple Drive
Caary, NC 27519

**Subject: Stormwater Management Permit No. 2017046R1
Woodfield Wilmington
High Density Development**

Dear Mr. Underwood:

The City of Wilmington Engineering Division has received a request for a revision to the Stormwater Management Permit for Woodfield Wilmington. 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 pavement parking plans. See approved plans dated January 30, 2020.

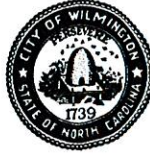
Please be aware all terms and conditions of the permit Issued on November 2, 2017 remain in full force and effect. Any additional changes to the approved plans must be approved by this office prior to construction. The issuance of the plan revision does not preclude the permittee from complying with 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,


for Sterling Cheatham, City Manager
City of Wilmington

cc: Richard Collier, PE, McKim & Creed
Brian Chambers, Senior Planner, City of Wilmington



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**unless noted otherwise*

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.):

Woodfield Wilmington

2. Location of Project (street address):

3828 & 3970 Independence Boulevard

City: Wilmington County: New Hanover Zip: 28412

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

Approx. 0.30 miles South along Independence Blvd. from the Carolina Beach Road (US 421) & Independence Blvd. Intersection.

II. PERMIT INFORMATION

1. Specify the type of project (check one): Low Density **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? Yes **No**

If yes, list all applicable Stormwater Permit Numbers:

City of Wilmington: _____ State – NCDENR/DWQ: _____

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

CAMA Major Sedimentation/Erosion Control
 NPDES Industrial Stormwater 404/401 Permit: Proposed Impacts: 0.127 Ac.

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:

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: Woodfield Acquisitions, LLC

Signing Official & Title: Scott Underwood

- a. Contact information for Applicant / Signing Official:

Street Address: 300 Mountain Maple Drive

City: Cary State: NC Zip: 27519

Phone: 919-740-8877 Fax: _____ Email: sunderwood@woodfieldinvestments.com

Mailing Address (if different than physical address): _____

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: Wilson Ki

Signing Official & Title: Wilson Ki, Owner

- a. Contact information for Property Owner:

Street Address: 1804 Martin Luther King Pkwy #207

City: Durham State: NC Zip: 27707

Phone: 910-232-3730 Fax: _____ Email: wilson@homelifeinc.com

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: _____

Signing Official & Title: _____

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.

Stormwater runoff will be treated using three wet detention ponds.

2. Total Property Area: 657,756 square feet

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: 657,756 square feet.

6. Existing Impervious Surface within Property Area: 0 square feet

7. Existing Impervious Surface to be Removed/Demolished: 0 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	106,960
Impervious Pavement	141,288
Pervious Pavement (adj. total, with % credit applied)	0
Impervious Sidewalks	16,367
Pervious Sidewalks (adj. total, with % credit applied)	0
Other (describe) Pool Amenity Area	8775
Future Development	0
Total Onsite Newly Constructed Impervious Surface	273,390

10. Total Onsite Impervious Surface

(Existing Impervious Surface to remain + Onsite Newly Constructed Impervious Surface) = 273,390 square feet

11. Project percent of impervious area: (Total Onsite Impervious Surface / Total Project Area) x100 = 41.56 %

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

Impervious Pavement	10,577
Pervious Pavement (adj. total, with % credit applied)	
Impervious Sidewalks	16,044
Pervious Sidewalks (adj. total, with % credit applied)	
Other (describe)	
Total Offsite Newly Constructed Impervious Surface	26,621

13. Total Newly Constructed Impervious Surface
(Total Onsite + Offsite Newly Constructed Impervious Surface) = 300,011 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.

Basin Information	BMP # 1	BMP # 2	BMP # 3
Receiving Stream Name	Banards Creek	Banards Creek	Banards Creek
Receiving Stream Index Number	18-80	18-80	18-90
Stream Classification	C ; Sw	C ; Sw	C ; Sw
Total Drainage Area (sf)	160,301	166,399	68,389
On-Site Drainage Area (sf)	160,301	166,399	68,389
Off-Site Drainage Area (sf)	0	0	0
Total Impervious Area (sf)	118,378	112,966	42,046
Buildings/Lots (sf)	42220	53076	11664
Impervious Pavement (sf)	69,398	43,988	27902
Pervious Pavement (sf)	0	0	0
Impervious Sidewalks (sf)	6760	7127	2480
Pervious Sidewalks (sf)	0	0	0
Other (sf) Amenity Area	0	8775	0
Future Development (sf)	0	0	0
Existing Impervious to remain (sf)	0	0	0
Offsite (sf)	0	0	0
Percent Impervious Area (%)	73.80	67.89	61.48

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

N/A

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
212 Operations Center Dr
Wilmington, NC 28412

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: Eric Seidel, PE

Consulting Firm: McKim and Creed, Inc.

a. Contact information for consultant listed above:

Mailing Address: 243 N. Front Street

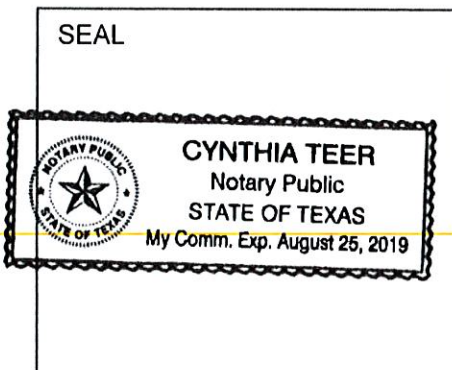
City: Wilmington State: NC Zip: 28401

Phone: 910-343-1048 Fax: 910-251-8282 Email: eseidel@mckimcreed.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) Wilson Ki, 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) Scott Underwood with (print or type name of organization listed in Contact Information, item 1) Woodfield Acquisitions, 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: 4/4/2017

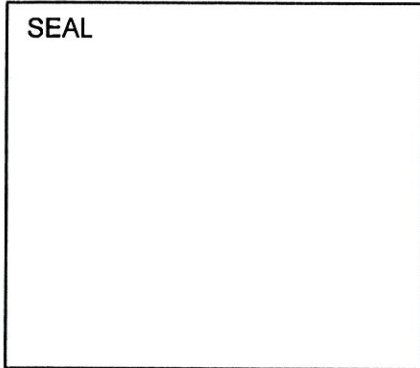
I, Cynthia Teer a Notary Public for the State of Texas, County of Polk, do hereby certify that Wilson Ki personally appeared before me this day of 4/4, 2017.

and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal,

Cynthia Lee
My commission expires: 8/25/2019

VIII. APPLICANT'S CERTIFICATION

I, (print or type name of person listed in Contact Information, item 1), Scott Underwood 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: _____

I, _____, a Notary Public for the State of _____, County of _____, do hereby certify that _____ personally appeared before me this day of _____, _____, and acknowledge the due execution of the application for a stormwater

permit. Witness my hand and official seal,

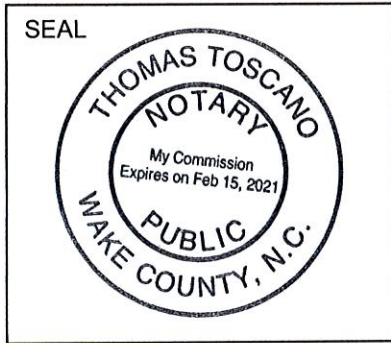
My commission expires: _____

and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal,

My commission expires: _____

VIII. APPLICANT'S CERTIFICATION

I, (print or type name of person listed in Contact Information, item 1) Scott Underwood 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.

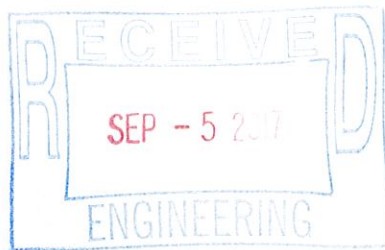


Signature: *M. Scott Underwood*
Date: 1/18/17

I, Thomas Toscano, a Notary Public for the State of North Carolina, County of Wake, do hereby certify that Michael Underwood personally appeared before me this day of Jan 18th, 2017, and acknowledge the due execution of the application for a stormwater

permit. Witness my hand and official seal,

Thomas Toscano
My commission expires: Feb 15, 2021



STORMWATER MANAGEMENT PERMIT APPLICATION FORM
401 CERTIFICATION APPLICATION FORM
WET DETENTION BASIN 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 of the required information.

I. PROJECT INFORMATION

Project name	Woodfield Wilmington Apartments
Contact person	Eric Seidel, PE
Phone number	(910) 218-2483
Date	9/4/2017
Drainage area number	1

II. DESIGN INFORMATION

Site Characteristics		
Drainage area	160,301 ft ²	
Impervious area, post-development	118,378 ft ²	
% impervious	73.85 %	No Pervious Concrete Included
Design rainfall depth	1.5 in	
Storage Volume: Non-SA Waters		
Minimum volume required	14,320 ft ³	OK
Volume provided	35,105 ft ³	OK, volume provided is equal to or in excess of volume required.
Storage Volume: SA Waters		
1.5" runoff volume	ft ³	
Pre-development 1-yr, 24-hr runoff	ft ³	
Post-development 1-yr, 24-hr runoff	ft ³	
Minimum volume required	ft ³	
Volume provided	ft ³	
Peak Flow Calculations		
Is the pre/post control of the 1yr 24hr storm peak flow required?	N (Y or N)	City of Wilmington SCS Routing
1-yr, 24-hr rainfall depth	in	
Rational C, pre-development	(unitless)	
Rational C, post-development	(unitless)	
Rainfall intensity: 1-yr, 24-hr storm	in/hr	
Pre-development 1-yr, 24-hr peak flow	3.40 ft ³ /sec	
Post-development 1-yr, 24-hr peak flow	9.25 ft ³ /sec	
Pre/Post 1-yr, 24-hr peak flow control	0.06 ft ³ /sec	
Elevations		
Temporary pool elevation	13.60 fmsl	
Permanent pool elevation	10.00 fmsl	
SHWT elevation (approx. at the perm. pool elevation)	10.00 fmsl	
Top of 10ft vegetated shelf elevation	10.50 fmsl	
Bottom of 10ft vegetated shelf elevation	9.50 fmsl	
Sediment cleanout, top elevation (bottom of pond)	2.00 fmsl	
Sediment cleanout, bottom elevation	1.00 fmsl	
Sediment storage provided	1.00 ft	
Is there additional volume stored above the state-required temp. pool?	Y (Y or N)	
Elevation of the top of the additional volume	13.6 fmsl	OK

II. DESIGN INFORMATION

Surface Areas

Area, temporary pool	12,062 ft ²	
Area REQUIRED, permanent pool	6,765 ft ²	6284 RAC 7/5/17
SA/DA ratio	4.22 (unitless)	3.92
Area PROVIDED, permanent pool, A _{perm_pool}	7,026 ft ²	OK
Area, bottom of 10ft vegetated shelf, A _{bot_shelf}	6,044 ft ²	
Area, sediment cleanout, top elevation (bottom of pond), A _{bot_pond}	1,280 ft ²	

Volumes

Volume, temporary pool	35,105 ft ³	OK
Volume, permanent pool, V _{perm_pool}	28,709 ft ³	
Volume, forebay (sum of forebays if more than one forebay)	5,601 ft ³	
Forebay % of permanent pool volume	19.5%	OK

SA/DA Table Data

Design TSS removal	%	See Attached 2017 SA/DA Calcs
Coastal SA/DA Table Used?	(Y or N)	
Mountain/Piedmont SA/DA Table Used?	(Y or N)	
SA/DA ratio	(unitless)	

Average depth (used in SA/DA table):

Calculation option 1 used? (See Figure 10-2b)	(Y or N)	
Volume, permanent pool, V _{perm_pool}	ft ³	
Area provided, permanent pool, A _{perm_pool}	ft ²	
Average depth calculated	ft	Need 3 ft min.
Average depth used in SA/DA, d _{av} , (Round to nearest 0.5ft)	ft	
Calculation option 2 used? (See Figure 10-2b)	(Y or N)	
Area provided, permanent pool, A _{perm_pool}	ft ²	
Area, bottom of 10ft vegetated shelf, A _{bot_shelf}	ft ²	
Area, sediment cleanout, top elevation (bottom of pond), A _{bot_pond}	ft ²	
"Depth" (distance b/w bottom of 10ft shelf and top of sediment)	ft	
Average depth calculated	ft	
Average depth used in SA/DA, d _{av} , (Round to nearest 0.5ft)	ft	

Drawdown Calculations

Drawdown through orifice?	Y	(Y or N)
Diameter of orifice (if circular)	1.75	in
Area of orifice (if non-circular)		in ²
Coefficient of discharge (C _D)	0.60	(unitless)
Driving head (H ₀)	0.63 ft	1.20
Drawdown through weir?		(Y or N)
Weir type		(unitless)
Coefficient of discharge (C _w)		(unitless)
Length of weir (L)		ft
Driving head (H)		ft
Pre-development 1-yr, 24-hr peak flow	3.40	ft ³ /sec
Post-development 1-yr, 24-hr peak flow	9.25	ft ³ /sec
Storage volume discharge rate (through discharge orifice or weir)	0.06 ft ³ /sec	0.09
Storage volume drawdown time	2.02 days	4.61 days OK, draws down in 2-5 days.

Additional Information

Vegetated side slopes	3 :1	OK
Vegetated shelf slope	6 :1	Insufficient shelf slope.
Vegetated shelf width	6.0 ft	Insufficient shelf length.
Length of flowpath to width ratio	3 :1	OK
Length to width ratio	2.0 :1	OK
Trash rack for overflow & orifice?	Y	(Y or N) OK
Freeboard provided	1.0 ft	OK
Vegetated filter provided?	N	(Y or N) OK
Recorded drainage easement provided?	Y	(Y or N) OK
Capures all runoff at ultimate build-out?	Y	(Y or N) OK
Drain mechanism for maintenance or emergencies is:	Emergency Pump	

STORMWATER MANAGEMENT PERMIT APPLICATION FORM
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WET DETENTION BASIN SUPPLEMENT

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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	Woodfield Wilmington Apartments
Contact person	Eric Seidel, PE
Phone number	(910) 218-2483
Date	9/4/2017
Drainage area number	2

II. DESIGN INFORMATION	
Site Characteristics	
Drainage area	166,399 ft ²
Impervious area, post-development	112,966 ft ²
% impervious	67.89 %
Design rainfall depth	1.5 in
Storage Volume: Non-SA Waters	
Minimum volume required	13,749 ft ³
Volume provided	26,007 ft ³
OK, volume provided is equal to or in excess of volume required.	
Storage Volume: SA Waters	
1.5" runoff volume	ft ³
Pre-development 1-yr, 24-hr runoff	ft ³
Post-development 1-yr, 24-hr runoff	ft ³
Minimum volume required	ft ³
Volume provided	ft ³
Peak Flow Calculations	
Is the pre/post control of the 1yr 24hr storm peak flow required?	N (Y or N) City of Wilmington SCS Routing
1-yr, 24-hr rainfall depth	in
Rational C, pre-development	(unitless)
Rational C, post-development	(unitless)
Rainfall intensity: 1-yr, 24-hr storm	in/hr
Pre-development 1-yr, 24-hr peak flow	3.53 ft ³ /sec
Post-development 1-yr, 24-hr peak flow	9.61 ft ³ /sec
Pre/Post 1-yr, 24-hr peak flow control	0.05 ft ³ /sec
Elevations	
Temporary pool elevation	16.10 fmsl
Permanent pool elevation	13.50 fmsl
SHWT elevation (approx. at the perm. pool elevation)	13.50 fmsl
Top of 10ft vegetated shelf elevation	14.00 fmsl
Bottom of 10ft vegetated shelf elevation	13.00 fmsl
Sediment cleanout, top elevation (bottom of pond)	5.00 fmsl
Sediment cleanout, bottom elevation	4.00 fmsl
Sediment storage provided	1.00 ft
Is there additional volume stored above the state-required temp. pool?	Y (Y or N)
Elevation of the top of the additional volume	16.1 fmsl
OK	

II. DESIGN INFORMATION

Surface Areas

Area, temporary pool	11,979 ft ²	
Area REQUIRED, permanent pool	5,358 6,523 ft ²	
SA/DA ratio	3.22 (unitless) 3.92	
Area PROVIDED, permanent pool, A _{perm_pool}	7,376 ft ²	OK
Area, bottom of 10ft vegetated shelf, A _{bot_shelf}	4,646 ft ²	
Area, sediment cleanout, top elevation (bottom of pond), A _{bot_pond}	330 ft ²	

flac
9/15/17

Volumes

Volume, temporary pool	26,007 ft ³	OK
Volume, permanent pool, V _{perm_pool}	25,568 ft ³	
Volume, forebay (sum of forebays if more than one forebay)	5,012 ft ³	
Forebay % of permanent pool volume	19.6%	OK

SA/DA Table Data

Design TSS removal	%	See Attached 2017 SA/DA Calcs
Coastal SA/DA Table Used?	(Y or N)	
Mountain/Piedmont SA/DA Table Used?	(Y or N)	
SA/DA ratio	(unitless)	

Average depth (used in SA/DA table):

Calculation option 1 used? (See Figure 10-2b)	(Y or N)	
Volume, permanent pool, V _{perm_pool}	ft ³	
Area provided, permanent pool, A _{perm_pool}	ft ²	
Average depth calculated	ft	Need 3 ft min.
Average depth used in SA/DA, d _{av} (Round to nearest 0.5ft)	ft	
Calculation option 2 used? (See Figure 10-2b)	(Y or N)	
Area provided, permanent pool, A _{perm_pool}	ft ²	
Area, bottom of 10ft vegetated shelf, A _{bot_shelf}	ft ²	
Area, sediment cleanout, top elevation (bottom of pond), A _{bot_pond}	ft ²	
"Depth" (distance b/w bottom of 10ft shelf and top of sediment)	ft	
Average depth calculated	ft	
Average depth used in SA/DA, d _{av} (Round to nearest 0.5ft)	ft	

Drawdown Calculations

Drawdown through orifice?	Y	(Y or N)
Diameter of orifice (if circular)	1.60	in
Area of orifice (if non-circular)		in ²
Coefficient of discharge (C _D)	0.60	(unitless)
Driving head (H _b)	0.47 0.87	ft
Drawdown through weir?		(Y or N)
Weir type		(unitless)
Coefficient of discharge (C _w)		(unitless)
Length of weir (L)		ft
Driving head (H)		ft
Pre-development 1-yr, 24-hr peak flow	3.53	ft ³ /sec
Post-development 1-yr, 24-hr peak flow	9.61	ft ³ /sec
Storage volume discharge rate (through discharge orifice or weir)	0.05 0.06	ft ³ /sec
Storage volume drawdown time	3.40 4.81	days

OK, draws down in 2-5 days.

Additional Information

Vegetated side slopes	3 :1	OK
Vegetated shelf slope	6 :1	Insufficient shelf slope.
Vegetated shelf width	6.0 ft	Insufficient shelf length.
Length of flowpath to width ratio	4 :1	OK
Length to width ratio	4.0 :1	OK
Trash rack for overflow & orifice?	Y	(Y or N) OK
Freeboard provided	1.0 ft	OK
Vegetated filter provided?	N	(Y or N) OK
Recorded drainage easement provided?	Y	(Y or N) OK
Capures all runoff at ultimate build-out?	Y	(Y or N) OK
Drain mechanism for maintenance or emergencies is:	Emergency Pump	

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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	Woodfield Wilmington Apartments
Contact person	Eric Seidel, PE
Phone number	(910) 218-2483
Date	9/4/2017
Drainage area number	3

II. DESIGN INFORMATION	
------------------------	--

Site Characteristics	
Drainage area	68,389 ft ²
Impervious area, post-development	42,046 ft ²
% impervious	61.48 %
Design rainfall depth	1.5 in
Storage Volume: Non-SA Waters	
Minimum volume required	5,158 ft ³ OK
Volume provided	12,384 ft ³ OK, volume provided is equal to or in excess of volume required.
Storage Volume: SA Waters	
1.5" runoff volume	ft ³
Pre-development 1-yr, 24-hr runoff	ft ³
Post-development 1-yr, 24-hr runoff	ft ³
Minimum volume required	ft ³
Volume provided	ft ³
Peak Flow Calculations	
Is the pre/post control of the 1yr 24hr storm peak flow required?	N (Y or N) City of Wilmington SCS Routing
1-yr, 24-hr rainfall depth	in
Rational C, pre-development	(unitless)
Rational C, post-development	(unitless)
Rainfall intensity: 1-yr, 24-hr storm	in/hr
Pre-development 1-yr, 24-hr peak flow	1.22 ft ³ /sec
Post-development 1-yr, 24-hr peak flow	3.50 ft ³ /sec
Pre/Post 1-yr, 24-hr peak flow control	0.02 ft ³ /sec
Elevations	
Temporary pool elevation	19.40 fmsl
Permanent pool elevation	17.50 fmsl
SHWT elevation (approx. at the perm. pool elevation)	17.50 fmsl
Top of 10ft vegetated shelf elevation	18.00 fmsl
Bottom of 10ft vegetated shelf elevation	17.00 fmsl
Sediment cleanout, top elevation (bottom of pond)	12.00 fmsl
Sediment cleanout, bottom elevation	11.00 fmsl
Sediment storage provided	1.00 ft
Is there additional volume stored above the state-required temp. pool?	Y (Y or N)
Elevation of the top of the additional volume	19.4 fmsl OK

II. DESIGN INFORMATION

Surface Areas

Area, temporary pool	7,448 ft ²	
Area REQUIRED, permanent pool	3,153 ft ²	
SA/DA ratio	4.61 (unitless)	
Area PROVIDED, permanent pool, A _{perm_pool}	3,642 ft ²	OK
Area, bottom of 10ft vegetated shelf, A _{bot_shelf}	2,643 ft ²	
Area, sediment cleanout, top elevation (bottom of pond), A _{bot_pond}	345 ft ²	

Volumes

Volume, temporary pool	12,384 ft ³	OK
Volume, permanent pool, V _{perm_pool}	10,305 ft ³	
Volume, forebay (sum of forebays if more than one forebay)	1,969 ft ³	
Forebay % of permanent pool volume	19.1% %	OK

SA/DA Table Data

Design TSS removal	%	See Attached 2017 SA/DA Calcs
Coastal SA/DA Table Used?	(Y or N)	
Mountain/Piedmont SA/DA Table Used?	(Y or N)	
SA/DA ratio	(unitless)	
Average depth (used in SA/DA table):		
Calculation option 1 used? (See Figure 10-2b)	(Y or N)	
Volume, permanent pool, V _{perm_pool}	ft ³	
Area provided, permanent pool, A _{perm_pool}	ft ²	
Average depth calculated	ft	Need 3 ft min.
Average depth used in SA/DA, d _{av} , (Round to nearest 0.5ft)	ft	
Calculation option 2 used? (See Figure 10-2b)	(Y or N)	
Area provided, permanent pool, A _{perm_pool}	ft ²	
Area, bottom of 10ft vegetated shelf, A _{bot_shelf}	ft ²	
Area, sediment cleanout, top elevation (bottom of pond), A _{bot_pond}	ft ²	
"Depth" (distance b/w bottom of 10ft shelf and top of sediment)	ft	
Average depth calculated	ft	
Average depth used in SA/DA, d _{av} , (Round to nearest 0.5ft)	ft	

Drawdown Calculations

Drawdown through orifice?	Y	(Y or N)
Diameter of orifice (if circular)	1.25	in
Area of orifice (if non-circular)		in ²
Coefficient of discharge (C _D)	0.60	(unitless)
Driving head (H ₀)	0.30 0.63	ft
Drawdown through weir?		(Y or N)
Weir type		(unitless)
Coefficient of discharge (C _w)		(unitless)
Length of weir (L)		ft
Driving head (H)		ft
Pre-development 1-yr, 24-hr peak flow	1.22	ft ³ /sec
Post-development 1-yr, 24-hr peak flow	3.50	ft ³ /sec
Storage volume discharge rate (through discharge orifice or weir)	0.02 0.03	ft ³ /sec
Storage volume drawdown time	2.66 4.39	days

*plac
9/5/17*

OK, draws down in 2-5 days.
4.39 days

Additional Information

Vegetated side slopes	3 :1	OK
Vegetated shelf slope	6 :1	Insufficient shelf slope.
Vegetated shelf width	6.0 ft	Insufficient shelf length.
Length of flowpath to width ratio	5 :1	OK
Length to width ratio	3.0 :1	OK
Trash rack for overflow & orifice?	Y	(Y or N) OK
Freeboard provided	1.0 ft	OK
Vegetated filter provided?	N	(Y or N) OK
Recorded drainage easement provided?	Y	(Y or N) OK
Capures all runoff at ultimate build-out?	Y	(Y or N) OK
Drain mechanism for maintenance or emergencies is:	Emergency Pump	

Wet Detention 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.

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

This system (check one):

does does not incorporate a vegetated filter at the outlet.

This system (check one):

does does not incorporate pretreatment other than a forebay.

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 1.5 inches**. 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 side slopes of the wet detention 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.
	Vegetation is too short or too long.	Maintain vegetation at a height of approximately six inches.

Permit Number: _____
 (to be provided by City of Wilmington)
 BMP Drainage Basin #: _____

BMP element:	Potential problem:	How I will remediate the problem:
The inlet device: pipe or swale	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.
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
	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.
	Cattails or other invasive plants cover >25% of the veg't shelf. A monoculture of plants must be avoided)	Remove all invasives by physical removal or by wiping them with pesticide (do not spray) - consult a professional.
	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.
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.

Permit Number: _____
 (to be provided by City of Wilmington)
 BMP Drainage Basin #: _____

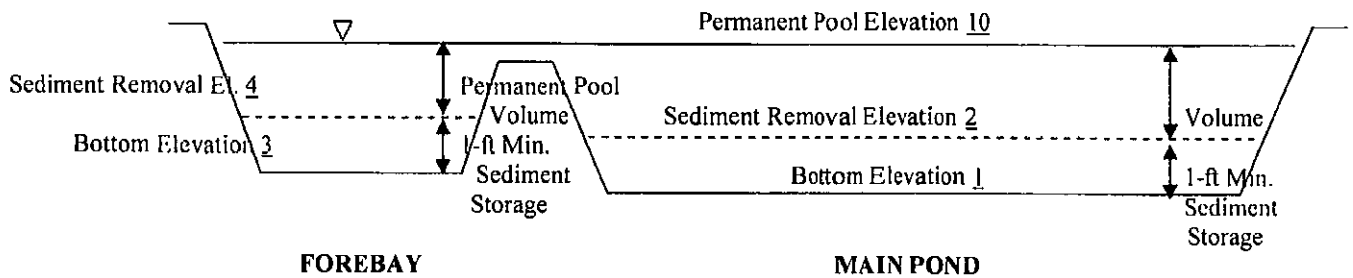
BMP element:	Potential problem:	How I will remediate the problem:
The main treatment area (continued)	Algal growth covers over 25% of the area.	Consult a professional to remove and control the algal growth.
	Cattails or other invasive plants cover >25% of the veg't shelf. A monoculture of plants must be avoided)	Remove all invasives by physical removal or by wiping them with pesticide (do not spray) - consult a professional.
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 Division of Water Quality Regional Office, or the 401 Oversight Unit at 919-733-1786.

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.

When the permanent pool depth reads 8 feet in the main pond, the sediment shall be removed.

When the permanent pool depth reads 6 feet in the forebay, the sediment shall be removed.

BASIN DIAGRAM
(fill in the blanks)



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: Woodfield Wilmington Apartments

BMP drainage basin number: 1

Print name: Woodfield Acquisitions, LLC / Scott Underwood

Title: Developer

Address: 300 Mountain Maple Drive

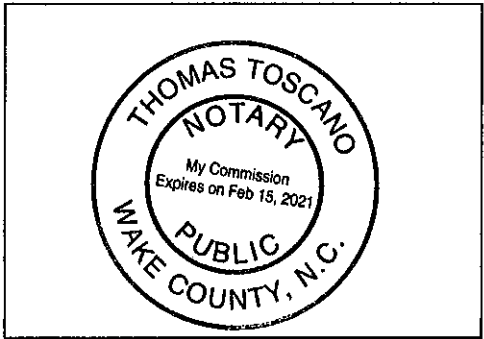
Phone: (919) 740-8877

Signature: *Michael Scott Underwood*

Date: 1/18/17

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, Thomas Toscano, a Notary Public for the State of North Carolina, County of Wake, do hereby certify that Michael Scott Underwood personally appeared before me this 18 day of January, 2017, and acknowledge the due execution of the forgoing wet detention basin maintenance requirements. Witness my hand and official seal. *Thomas Toscano*



SEAL

My commission expires Feb 15, 2021



Permit Number: _____
 (to be provided by City of Wilmington)
 BMP Drainage Basin #: _____

Wet Detention 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.

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

This system (check one):

does does not incorporate a vegetated filter at the outlet.

This system (check one):

does does not incorporate pretreatment other than a forebay.

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 1.5 inches**. 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 side slopes of the wet detention 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.
	Vegetation is too short or too long.	Maintain vegetation at a height of approximately six inches.

Permit Number: _____
 (to be provided by City of Wilmington)
 BMP Drainage Basin #: _____

BMP element:	Potential problem:	How I will remediate the problem:
The inlet device: pipe or swale	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.
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
	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.
	Cattails or other invasive plants cover >25% of the veg't shelf. A monoculture of plants must be avoided)	Remove all invasives by physical removal or by wiping them with pesticide (do not spray) – consult a professional.
	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.
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.

Permit Number: _____
 (to be provided by City of Wilmington)
 BMP Drainage Basin #: _____

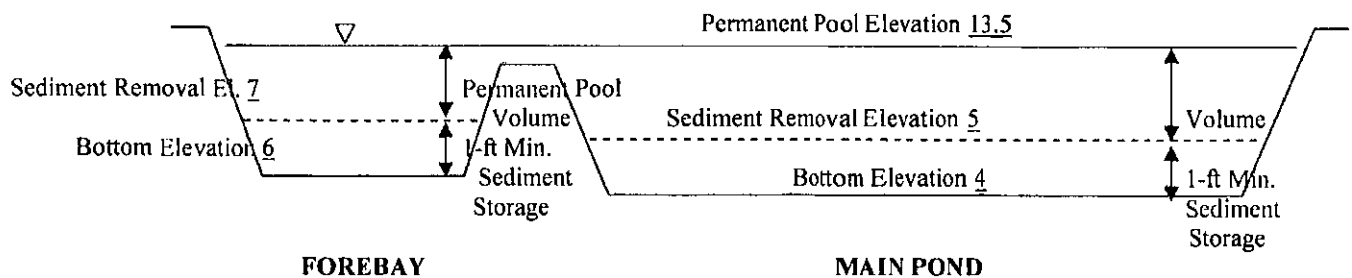
BMP element:	Potential problem:	How I will remediate the problem:
The main treatment area (continued)	Algal growth covers over 25% of the area.	Consult a professional to remove and control the algal growth.
	Cattails or other invasive plants cover >25% of the veg't shelf. A monoculture of plants must be avoided)	Remove all invasives by physical removal or by wiping them with pesticide (do not spray) - consult a professional.
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 Division of Water Quality Regional Office, or the 401 Oversight Unit at 919-733-1786.

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.

When the permanent pool depth reads 8.5 feet in the main pond, the sediment shall be removed.

When the permanent pool depth reads 6.5 feet in the forebay, the sediment shall be removed.

BASIN DIAGRAM
 (fill in the blanks)



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: Woodfield Wilmington Apartments

BMP drainage basin number: 2

Print name: Woodfield Acquisistions, LLC / Scott Underwood

Title: Developer

Address: 300 Mountain Maple Drive

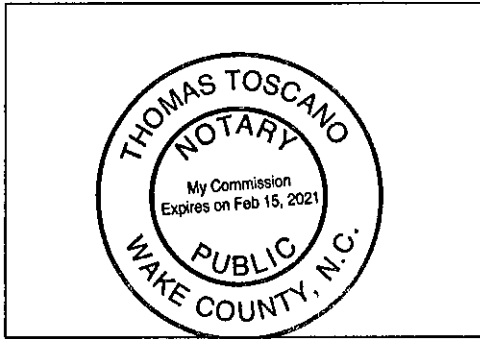
Phone: (919) 740-8877

Signature: *M. Scott Underwood*

Date: 1/12/17

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, Thomas Toscano, a Notary Public for the State of North Carolina, County of Wake, do hereby certify that Michael Scott Underwood personally appeared before me this 12 day of January, 2017, and acknowledge the due execution of the forgoing wet detention basin maintenance requirements. Witness my hand and official seal, *[Signature]*



SEAL

My commission expires Feb 15, 2021



Permit Number: _____
 (to be provided by City of Wilmington)
 BMP Drainage Basin #: _____

Wet Detention 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.

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

This system (check one):

does does not incorporate a vegetated filter at the outlet.

This system (check one):

does does not incorporate pretreatment other than a forebay.

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 1.5 inches**. 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 side slopes of the wet detention 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.
	Vegetation is too short or too long.	Maintain vegetation at a height of approximately six inches.

Permit Number: _____
 (to be provided by City of Wilmington)
 BMP Drainage Basin #: _____

BMP element:	Potential problem:	How I will remediate the problem:
The inlet device: pipe or swale	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.
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
	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.
	Cattails or other invasive plants cover >25% of the veg't shelf. A monoculture of plants must be avoided)	Remove all invasives by physical removal or by wiping them with pesticide (do not spray) - consult a professional.
	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.
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.

Permit Number: _____
 (to be provided by City of Wilmington)
 BMP Drainage Basin #: _____

BMP element:	Potential problem:	How I will remediate the problem:
The main treatment area (continued)	Algal growth covers over 25% of the area.	Consult a professional to remove and control the algal growth.
	Cattails or other invasive plants cover >25% of the veg't shelf. A monoculture of plants must be avoided)	Remove all invasives by physical removal or by wiping them with pesticide (do not spray) – consult a professional.
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 Division of Water Quality Regional Office, or the 401 Oversight Unit at 919-733-1786.

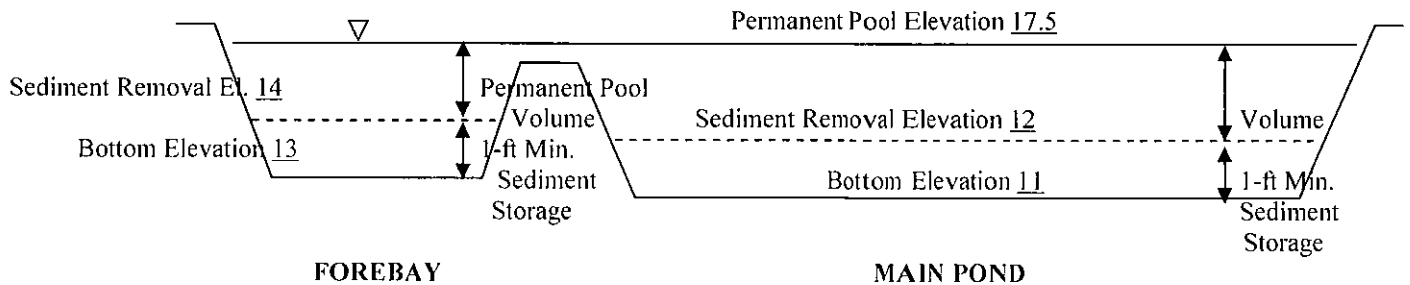
The measuring device used to determine the sediment elevation shall be such that it will give an accurate depth reading and not readily penetrate into accumulated sediments.

When the permanent pool depth reads 5.5 feet in the main pond, the sediment shall be removed.

When the permanent pool depth reads 3.5 feet in the forebay, the sediment shall be removed.

BASIN DIAGRAM

(fill in the blanks)



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: Woodfield Wilmington Apartments

BMP drainage basin number: 3

Print name: Woodfield Acquisistions, LLC / Scott Underwood

Title: Developer

Address: 300 Mountain Maple Drive

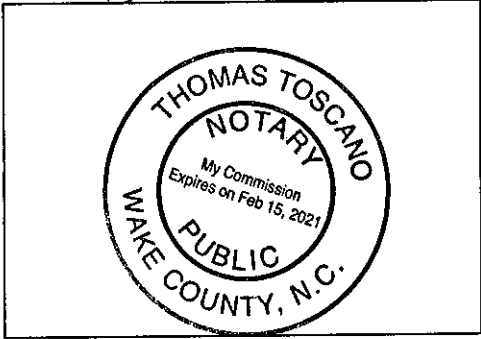
Phone: (919) 740-8877

Signature: *Michael Scott Underwood*

Date: 1/10/17

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, Thomas Toscano, a Notary Public for the State of North Carolina, County of Wake, do hereby certify that Michael Scott Underwood personally appeared before me this 18 day of January, 2017, and acknowledge the due execution of the forgoing wet detention basin maintenance requirements. Witness my hand and official seal.



SEAL

My commission expires Feb 15, 2021

Permeable Pavement 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.

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 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 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 Rutting, cracking or slumping or damaged structure	Vacuum sweep the pavement. 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.



Permit Number: _____
(to be provided by DWQ)

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 DWQ of any problems with the system or prior to any changes to the system or responsible party.

Project name: Woodfield Wilmington Apartments

BMP drainage area or lot number: A, B, C, D, E, F, G, H

Print name: WF Independence Boulevard, LLC / Scott Underwood

Title: Developer

Address: 11425 Horsemans Trail Raleigh, NC 27613

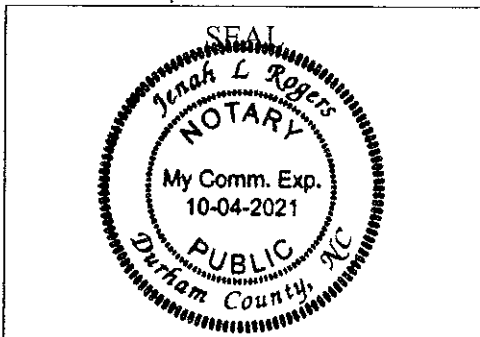
Phone: (919) 740-8877

Signature: M. Scott Underwood

Date: 6-21-17

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, Jenah L. Rogers, a Notary Public for the State of North Carolina, County of Durham, do hereby certify that M. Scott Underwood personally appeared before me this 21 day of June, 2017, and acknowledge the due execution of the forgoing permeable pavement maintenance requirements. Witness my hand and official seal, Jenah L. Rogers



My commission expires 10-04-2021



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

May 30, 2017

Via e-mail: TSchwenzfeier@mckimcreed.com

Tara Schwenzfeier
McKim & Creed, Inc.
243 N. Front Street
Wilmington, NC 28401

Re: Request for Administrative Variance – Woodfield Apartments

Dear Ms. Schwenzfeier:

On behalf of the City Engineer, I have reviewed your request for a variance and rendered the following decision:

Maximum Length of a Private Driveway (500/800 rule) Granted Denied

Technical Standard: Section VII (Traffic Engineering), C.4 (Private Driveways)
If the private driveway accesses a through street, the total length shall not exceed 500 linear feet. If the private drive does not access a through street, the combination of the public streets and private driveways shall not exceed 800 linear feet. The length of the driveway is measured along the vehicle path from the curb line of the intersecting street to the furthestmost end of the parking area.

Description: The applicant seeks relief from this requirement in three areas – predominantly in the front of Building #1, 4 spaces at the northern end of Building #2 and a parking area on the northwest corner of Building #3.

Justification: This is a large linear tract with no opportunity for a public street extension, making compliance with the rule challenging. The project has provided sufficient access for emergency vehicles with good internal circulation and access points off of a public street.

Please contact me at richard.christensen@wilmingtonnc.gov if you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read 'R. Christensen'.

Richard Christensen, PE
Project Engineer

cc: David Cowell, City Engineer, City of Wilmington
Bill McDow, Transportation Planning, City of Wilmington
Brian Chambers, Senior Associate Planner, City of Wilmington