



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
441 G STREET NW
WASHINGTON DC 20314

03/09/2026

Regulatory Wilmington District

South Spot, LLC
C/O Peter Kauffman
107 S Osprey Ave
Sarasota, FL 34236
Via Email: pkauffman@ospavpartners.com

Dear Mr. Kauffman:

This is an automated response from the U.S. Army Corps of Engineers' Regulatory Request System to your request for confirmation that a Department of the Army (DA) permit is not required for your proposed project. The proposed project is to Proposed activities with project:

Proposed roadway crossing #1 - approx. 140 lf/3,000 sf
Proposed ditch connection #2 - no impact?
Proposed pipe connection #3 - approx.. 8 of 6 diameter pipe (4 sf)
Proposed pipe connection #4 - approx.. 13 of 30 diameter pipe (32.5 sf)
Proposed ditch maintenance #5 - approx.. 870 lf/17,300 sf

. The project/review area is located at Powells Point, NC 27966. The project has been assigned a Regulatory Request System Tracking Number 38338. This file number should be referenced in all communication concerning this project.

Based on the information you provided, the proposed activities are not prohibited by or otherwise subject to regulation under Section 404 of the Clean Water Act (CWA) pursuant to Section 404(f) of the CWA and the implementing regulations at 33 CFR 323.4. It is your responsibility to review the statutory exemptions carefully to ensure that your proposed work will be completed in accordance with all of the requirements of the applicable exemptions.

This letter does not obviate the need to obtain other Federal, State, and local permits that may be required for your activities. This letter does not address or include any consideration of geographic jurisdiction of aquatic resources and may not be

interpreted as such. Should you desire an official U.S. Army Corps of Engineers (USACE) determination that jurisdictional “waters of the United States” and/or “navigable waters of the United States,” are present or absent at a particular site, you may submit a Request for Jurisdictional Determination / Aquatic Resource Delineation through the Regulatory Request System at: <https://rrs.usace.army.mil/rrs>.

This letter is based solely on the information you provided as of 03/09/2026 and has not been verified by the USACE. It is your responsibility to ensure that the activities are completed in accordance with all requirements of the relevant exemptions referenced above. Note that performing the activity outside of the specifications of the exemptions could result in a violation of the of Section 404 of the CWA, and may result in enforcement action. Your electronic request and associated responses will be retained by the Corps and may be used for enforcement purposes.

If you have any questions concerning this correspondence, please contact the Wilmington District at 252-740-5719 or you may visit the District’s website at <http://www.saw.usace.army.mil/Missions/RegulatoryPermitProgram.aspx> for additional information concerning the regulatory program. Please reference this Tracking Number 38338 in all comments and/or inquiries relating to this project.

cc: Doug Dorman, Atlantic Environmental Consultants, LLC via dougdaec@gmail.com



NORTH CAROLINA
Environmental Quality

JOSH STEIN
Governor

D. REID WILSON
Secretary

WILLIAM E. TOBY VINSON, JR.
Director

March 13, 2026

South Spot, LLC
Attn: Peter Kauffman - Manager
P.O. Box 633
Nags Head, NC 27959

**Subject: Stormwater Management Permit SW7260301
Seaside Meadows
Subdivision Project with High and Low Density
Currituck County**

Dear Peter Kauffman:

The Division of Energy, Mineral and Land Resources received a complete Post-Construction Stormwater Management Permit Application for the subject project on March 11, 2026. Staff review of the plans and specifications has determined that the project, as proposed, complies with the Stormwater Regulations set forth in Title 15A NCAC 2H.1000 amended on January 1, 2017 (2017 Rules). We are hereby forwarding Permit No. SW7260301 dated March 13, 2026 for the construction, operation and maintenance of the built-upon areas (BUA), stormwater control measures (SCMs), and vegetated conveyances or areas associated with the subject project.

This permit shall be effective from the date of issuance until **March 12, 2034** and does not supersede any other agency permit that may be required. The project shall be subject to the conditions and limitations as specified therein. Failure to comply with these requirements will result in future compliance problems. Please note that this permit is not transferable except after notice to and approval by the Division.

If any parts, requirements, or limitations contained in this permit are unacceptable, you have the right to request an adjudicatory hearing by filing a written petition with the Office of Administrative Hearings (OAH). The written petition must conform to Chapter 150B of the North Carolina General Statutes and must be filed with the OAH within thirty (30) days of receipt of this permit. You should contact the OAH with all questions regarding the filing fee (if a filing fee is required) and/or the details of the filing process at 6714 Mail Service Center, Raleigh, NC 27699-6714, or via telephone at 919-431-3000, or visit their website at www.NCOAH.com. Unless such demands are made this permit shall be final and binding.

If you have any questions concerning this permit, please contact Carl Dunn in the Washington Regional Office, at 252-948-3959 or carl.dunn@deq.nc.gov.

Sincerely,

William Carl Dunn, PE
Division of Energy, Mineral and Land Resources

Enclosures: Attachment A – Designer's Certification Form
Application Documents

cc: David Deel, PE – Deel Engineering (dadeeleng@gmail.com)
Currituck County Inspections – Bill Newns (Bill.Newns@CurrituckCountyNC.gov)
Washington Regional Office Designer's Certification Form



North Carolina Department of Environmental Quality | Division of Energy, Mineral and Land Resources
Washington Regional Office | 943 Washington Square Mall | Washington, North Carolina 27889
252.946.6481

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF ENERGY, MINERAL AND LAND RESOURCES

POST-CONSTRUCTION STORMWATER MANAGEMENT PERMIT

SUBDIVISION DEVELOPMENT WITH AREAS OF BOTH HIGH AND LOW DENSITY

In compliance with the provisions of Article 21 of Chapter 143, General Statutes of North Carolina as amended, and other applicable Laws, Rules, and Regulations promulgated and adopted by the North Carolina Environmental Management Commission, including 15A NCAC 02H.1000 amended on January 1, 2017 (2017 Rules) (the "stormwater rules"),

PERMISSION IS HEREBY GRANTED TO

South Spot, LLC

Seaside Meadows

South Spot Road, Powell's Point, Currituck County

FOR THE

construction, management, operation and maintenance of built-upon area (BUA) draining to one (1) Wet Pond ("stormwater control measures" or "SCMs") and a low density area (the "low density area"), discharging to Class SC waters as outlined in the application, approved stormwater management plans, supplement(s), calculations, operation and maintenance agreement, recorded documents, specifications, and other supporting data (the "approved plans and specifications") as attached and/or on file with and approved by the Division of Energy, Mineral and Land Resources (the "Division" or "DEMLR"). The project shall be constructed, operated and maintained in accordance with these approved plans and specifications. The approved plans and specifications are incorporated by reference and are enforceable part of this permit.

This permit shall be effective from the date of issuance until March 12, 2034 and shall be subject to the following specified conditions and limitations. The permit issued shall continue in force and effect until the permittee files a request with the Division for a permit modification, transfer, renewal, or rescission; however, these actions do not stay any condition. The issuance of this permit does not prohibit the Director from reopening and modifying the permit, revoking and reissuing the permit, or terminating the permit for cause as allowed by the laws, rules, and regulations contained in 15A NCAC 02H.1000 and NCGS 143-215.1 et.al.

1. **BUA REQUIREMENTS.** The maximum amount of BUA allowed for the entire project is 648,290 square feet, which includes 7,048 square feet of off-site BUA. The runoff from all BUA within the permitted high density drainage area of this project must be directed into the permitted SCM. The BUA requirements and allocations for this project are as follows:

- a. HIGH DENSITY AREA SCM BUA LIMITS (DA1). The SCM has been designed to handle the runoff from 597,597 square feet of BUA within the delineated drainage area, which includes 7,048 square feet of off-site BUA. This permit does not provide any allocation of BUA for future development within the delineated drainage area.
 - b. LOW DENSITY AREA BUA LIMITS (DA1). The low density area, also referred to as Drainage Area (DA2) in the approved plans and specifications, must not exceed 24% per the requirements of the stormwater rules. Within this low density area, this permit approves a percent BUA of 10.5% and the construction of a total of 50,693 square feet of BUA, which includes 5,000 square feet for future BUA allocation within this low density area.
 - c. BUA FOR INDIVIDUAL LOTS. Each of the 55 lots are limited to a maximum amount of 7,500 square feet of BUA as indicated in this permit and as indicated in the approved plans and specifications. **The maximum BUA assigned to each lot via this permit and the recorded deed restrictions and protective covenants may not be increased or decreased by either the individual lot owner or the permittee unless and until the permittee notifies the Division and obtains written approval from the Division.**
 - d. CAMA AECs. Where a project or lot is located within CAMA's Area of Environmental Concern (AEC), the Division of Coastal Management (DCM) may calculate a different maximum BUA based on CAMA regulations. The more restrictive BUA limit will apply to the project.
2. PERVIOUS AREA IMPROVEMENTS. At this time, none of the pervious area improvements listed in G.S. 143-214.7(b2) or the Stormwater Design Manual have been proposed for this project. Pervious area improvements will be allowed in this project if documentation is provided demonstrating those improvements meet the requirements of the stormwater rule.
 3. SCM REQUIREMENTS. The SCM requirements for this project are as follows:
 - a. SCM DESIGN. The SCM is permitted based on the design criteria presented in the sealed, signed and dated supplement and as shown in the approved plans and specifications. This SCM must be provided and maintained at the design condition.
 - b. PLANTING PLAN. The SCM landscape planting plan shown in the approved plans shall be followed in its entirety during construction. After the plants are established, the operation and maintenance agreement must be followed.
 - c. FOUNTAINS. At this time, a decorative spray fountain has not been proposed within the wet pond. Decorative spray fountains will be allowed in the wet pond if documentation is provided demonstrating that the proposed fountain will not cause resuspension of sediment within the pond or cause erosion of the pond side slopes.
 - d. IRRIGATION. If the wet pond is to be used for irrigation, it is recommended that some water be maintained in the permanent pool, the vegetated shelf is planted with appropriate species that can handle fluctuating conditions, and human health issues are addressed

4. **LOW DENSITY AREA REQUIREMENTS.** The low density area requirements for this project are as follows:
 - a. **LOW DENSITY AND CONVEYANCE DESIGN.** The low density area is permitted based on the design criteria presented in the sealed, signed and dated supplement and as shown in the approved plans and specifications. This low density area and conveyances must be provided and maintained at the design condition.
 - b. **PIPING.** Other than the piping shown on the approved plans, only minimal amounts of piping under driveways and roads is allowed within the low density area when it cannot be avoided. No additional piping is allowed.
 - c. **DISPERSED FLOW.** The low density area has maximized dispersed flow of stormwater runoff through vegetated areas and minimized the channelization of flow.
 - d. **VEGETATED CONVEYANCES.** Stormwater runoff that could not be released as dispersed flow may be transported by vegetated conveyances with minimum side slopes of 3:1 (H:V) designed to not erode during the peak flow from the 10-year storm event as defined in the stormwater rules and approved by the Division.
5. **STORMWATER OUTLETS.** The peak flow from the 10-year storm event shall not cause erosion downslope of the discharge point.
6. **NON-ENFORCEABLE SCMS.** The west wet pond labeled as Tig-Ma-Tar Management Pond shown on the plans is **not** required by the Division and has not been demonstrated to meet the Minimum Design Criteria and therefore is not considered a part of the approved stormwater treatment system. This additional measure is incorporated only by reference and is not enforceable parts of the permit.
7. **VEGETATED SETBACKS.** A 50-foot wide vegetative setback must be provided and maintained in grass or other vegetation adjacent to all surface waters as shown on the approved plans. The setback is measured horizontally from the normal pool elevation of impounded structures, from the top of bank of each side of streams or rivers, and from the mean high waterline of tidal waters, perpendicular to the shoreline.
 - a. **BUA IN THE VEGETATED SETBACK.** BUA may not be added to the vegetated setback except as shown on the approved plans or in the following instances where the BUA has been minimized and channelizing runoff from the BUA is avoided:
 - i. Water dependent structures; and
 - ii. Minimal footprint uses such as poles, signs, utility appurtenances, and security lights that cannot practically be located elsewhere.
 - b. **RELEASE OF STORMWATER NOT TREATED IN AN SCM.** Stormwater that is not treated in an SCM, such as in the low density area (including roof drains), must be released at the edge of the vegetated setback and allowed to flow through the setback as dispersed flow.
8. **RECORDED DOCUMENT REQUIREMENTS.** The stormwater rules require the following documents to be recorded with the Office of the Register of Deeds prior to the sale of individual lots or groups of lots:

- a. **EASEMENTS.** All SCMs, stormwater collection systems, vegetated conveyances, and maintenance access located on property owned by other persons or entities must be located in permanent recorded easements or drainage easements as shown on the approved plans.
- b. **OPERATION AND MAINTENANCE AGREEMENT.** The operation and maintenance agreement must be recorded with the Office of the Register of Deeds.
- c. **FINAL PLATS.** If a final plat is recorded, it must reference the operation and maintenance agreement and must also show all public rights-of-way, dedicated common areas, and/or permanent drainage easements, in accordance with the approved plans.
- d. **DEED RESTRICTIONS AND PROTECTIVE COVENANTS.** The permittee shall record deed restrictions and protective covenants prior to the issuance of a certificate of occupancy to ensure the permit conditions and the approved plans and specifications are maintained in perpetuity. Recorded deed restrictions and protective covenants must include, at a minimum, the following statements related to stormwater management:
 - i. The following covenants are intended to ensure ongoing compliance with Stormwater Management Permit Number SW7260301, as issued by the Division of Energy, Mineral and Land Resources (the "Division") under 15A NCAC 02H.1000, effective January 1, 2017.
 - ii. The State of North Carolina is made a beneficiary of these covenants to the extent necessary to maintain compliance with the Stormwater Management Permit.
 - iii. These covenants are to run with the land and be binding on all persons and parties claiming under them.
 - iv. The covenants pertaining to stormwater may not be altered or rescinded without the express written consent of the Division.
 - v. Alteration of the drainage as shown on the approved plans may not take place without the concurrence of the Division.
 - vi. The maximum built-upon area (BUA) per lot is 7,500 square feet. This allotted amount includes any BUA constructed within the lot property boundaries, and that portion of the right-of-way between the front lot line and the edge of the pavement not shown on the approved plans. BUA has the same meaning as G.S. 143-214.7, as amended.
 - vii. For those lots within the CAMA Area of Environmental Concern, where DCM calculates a different maximum lot BUA, the governing maximum lot BUA shall be the more restrictive of the two amounts.
 - viii. The maximum allowable BUA shall not be exceeded on any lot until the permit is modified to ensure compliance with the stormwater rules, permit, and the approved plans and specifications.
 - ix. All runoff from the BUA on the lot must drain into the permitted system. This may be accomplished via grading, a stormwater collection system and/or a vegetated conveyance.
 - x. Within the low density area, filling in, piping or altering any vegetated conveyances (ditches, swales, etc.) associated with the development, except for average driveway crossings, is prohibited by any persons.
 - xi. A 50-foot wide vegetative setback (previously referred to as a buffer) must be provided and maintained adjacent to all surface waters in accordance with 15A NCAC 02H.1003(4) and the approved plans.
 - xii. Within the low density area, all roof drains shall be released no closer than at the edge of the 50-foot wide vegetated setback and allowed to flow through the setback as dispersed flow. At no time shall stormwater runoff be piped into or through the setback.
 - xiii. Any individual or entity found to be in noncompliance with the provisions of a stormwater management permit or the requirements of the stormwater rules is subject to enforcement procedures as set forth in NCGS 143, Article 21.

9. CONSTRUCTION. During construction, erosion shall be kept to a minimum and any eroded areas of the on-site stormwater system will be repaired immediately.
 - a. PROJECT CONSTRUCTION, OPERATION AND MAINTENANCE. During construction, all operation and maintenance for the project shall follow the Erosion Control Plan requirements until the Sediment-Erosion Control devices are converted to SCMs or no longer needed. Once the device is converted to a SCM, the permittee shall provide and perform the operation and maintenance as outlined in the applicable section below.
 - b. SCM RESTORATION. If one or more of the SCMs are used as an Erosion Control device and/or removed or destroyed during construction, it must be restored to the approved design condition prior to close-out of the erosion control plan and/or project completion and/or transfer of the permit. Upon restoration, a new or updated certification will be required for the SCM(s) and a copy must be submitted to the appropriate DEQ regional office.
 - c. FINAL GRADING. The vegetated areas and vegetated conveyances located within the low density area shall be entirely constructed and vegetated. Once the final grading is completed and the site is stabilized, the permittee shall provide and perform the operation and maintenance as outlined in the applicable section below.
10. MODIFICATIONS. No person or entity, including the permittee, shall alter any component shown in the approved plans and specifications, except for minimum driveway crossings. Prior to the construction of any modification to the approved plans, the permittee shall submit to the Director, and shall have received approval for modified plans, specifications, and calculations including, but not limited to, those listed below. For changes to the project or SCM that impact the certifications, a new or updated certification(s), as applicable, will be required and a copy must be submitted to the appropriate DEQ regional office upon completion of the modification.
 - a. Any modification to the approved plans and specifications, regardless of size including the SCM(s), BUA, details, etc.
 - b. Redesign or addition to the approved amount of BUA or to the drainage area.
 - c. Further development, subdivision, acquisition, lease or sale of any, all or part of the project and/or property area as reported in the approved plans and specifications.
 - d. Altering, modifying, removing, relocating, redirecting, regrading, or resizing of any component of the approved SCM(s), stormwater collection system and/or vegetative conveyance shown on the approved plan, except for minimum driveway crossings.
 - e. The construction of any allocated future BUA.
 - f. Adding the option to use infiltrating permeable pavement or #57 stone within the lots as a pervious surface. The request may require a proposed amendment to the deed restrictions and protective covenants for the subdivision to be submitted and recorded.
 - g. The construction of any infiltrating permeable pavement, #57 stone area, public trails, or landscaping material within the common areas to be considered a pervious surface that were not included in the approved plans and specifications.
 - h. Other modifications as determined by the Director.

11. **DESIGNER'S CERTIFICATION.** Upon completion of the project, the permittee shall determine if the project is in compliance with the approved plans and take the necessary following actions:
 - a. If the permittee determines that the project is in compliance with the approved plans, then within 45 days of completion, the permittee shall submit to the Division one hard copy and one electronic copy of the following:
 - i. The completed and signed Designer's Certification provided in Attachment A noting any deviations from the approved plans and specifications. Deviations may require approval from the Division;
 - ii. A copy of the recorded operation and maintenance agreement;
 - iii. Unless already provided, a copy of the recorded deed restrictions and protective covenants; and
 - iv. A copy of the recorded plat delineating the public rights-of-way, dedicated common areas and/or permanent recorded easements, when applicable.
 - b. If the permittee determines that the project is not in compliance with the approved plans, the permittee shall submit an application to modify the permit within 30 days of completion of the project or provide a plan of action, with a timeline, to bring the site into compliance.
12. **OPERATION AND MAINTENANCE.** The permittee shall provide and perform the operation and maintenance necessary, as listed in the signed operation and maintenance agreement(s), to assure that all components of the permitted on-site stormwater system are maintained at the approved design condition. The approved operation and maintenance agreement must be followed in its entirety and maintenance must occur at the scheduled intervals.
 - a. **CORRECTIVE ACTIONS REQUIRED.** If the facilities fail to perform satisfactorily or in the event that the low density area fails to meet the requirements of low density, the permittee shall take immediate corrective actions. This includes actions required by the Division and the stormwater rules such as the construction of additional or replacement on-site stormwater systems. These additional or replacement measures shall receive a permit from the Division prior to construction.
 - b. **MAINTENANCE RECORDS.** Records of maintenance activities must be kept and made available upon request to authorized personnel of the Division. The records will indicate the date, activity, name of person performing the work and what actions were taken.
13. **PERMIT RENEWAL.** A permit renewal request must be submitted at least 180 days prior to the expiration date of this permit. The renewal request must include the appropriate application, documentation and the processing fee as outlined in 15A NCAC 02H.1045(3).
14. **CHANGES TO THE PROJECT NAME, PERMITTEE NAME OR CONTACT INFORMATION.** The permittee shall submit a completed Permit Information Update Application Form to the Division within 30 days to making any one of these changes.
15. **TRANSFER.** This permit is not transferable to any person or entity except after notice to and approval by the Director. Neither the sale of the project and/or property, in whole or in part, nor the conveyance of common area to a third party constitutes an approved transfer of the permit.

- a. **TRANSFER REQUEST.** The transfer request must include the appropriate application, documentation and the processing fee as outlined in 15A NCAC 02H.1045(2). This request must be submitted within 90 days of the permit holder meeting one or more of the following:
 - i. A natural person who is deceased;
 - ii. A partnership, limited liability corporation, corporation, or any other business association that has been dissolved;
 - iii. A person or entity who has been lawfully and finally divested of title to the property on which the permitted activity is occurring or will occur through foreclosure, bankruptcy, or other legal proceeding.
 - iv. A person or entity who has sold the property, in whole or in part, on which the permitted activity is occurring or will occur, except in the case of an individual residential lot sale that is made subject to the recorded deed restrictions and protective covenants;
 - v. The assignment of declarant rights to another individual or entity;
 - vi. The sale or conveyance of the common areas to a Homeowner's or Property Owner's Association, subject to the requirements of NCGS 143-214.7(c2);
 - b. **TRANSFER INSPECTION.** Prior to transfer of the permit, a file review and site inspection will be conducted by Division personnel to ensure the permit conditions have been met and that the project and the on-site stormwater system complies with the permit conditions. Records of maintenance activities performed to date may be requested. Projects not in compliance with the permit will not be transferred until all permit and/or general statute conditions are met.
16. **COMPLIANCE.** The permittee is responsible for complying with the terms and conditions of this permit and the approved plans and specifications until the Division approves the transfer request.
- a. **REVIEWING AND MONITORING EACH LOT FOR COMPLIANCE.** The permittee is responsible for verifying that the proposed BUA on each individual lot, within each drainage area and for the entire project does not exceed the maximum amount allowed by this permit. The permittee shall review all individual lot plans for new construction and all subsequent modifications and additions for compliance. The plans reviewed must include all proposed BUA, grading, and driveway pipe placement. The permittee shall not approve any lot plans where the maximum allowed BUA limit has been exceeded or where modifications are proposed to the grading and/or to the stormwater collection system and/or to the vegetated conveyance unless and until a permit modification has been approved by the Division. The permittee shall review and routinely monitor the project and each lot to ensure continued compliance with the conditions of the permit, the approved plans and specifications, and the recorded deed restrictions and protective covenants. The permittee shall notify any lot owner that is found to be in noncompliance with the conditions of this permit in writing and shall require timely resolution.
 - b. **ARCHITECTURAL REVIEW BOARD (ARB) OR COMMITTEE (ARC).** The permittee may establish an ARB or ARC or other group to conduct individual lot reviews on the permittee's behalf. However, any approval given on behalf of the permittee does not relieve the permittee of the responsibility to maintain compliance with the conditions of the permit and the approved plans and specifications.
 - c. **APPROVED PLANS AND SPECIFICATIONS.** A copy of this permit, approved plans, application, supplements, operation and maintenance agreement, all applicable recorded documents, and specifications shall be maintained on file by the permittee at all times.

- d. MAINTENANCE ACCESS. SCMs, stormwater collection systems, and vegetated conveyances must be accessible for inspection, operation, maintenance and repair as shown on the approved plans.
- e. DIVISION ACCESS. The permittee grants Division Staff permission to enter the property during normal business hours to inspect all components of the permitted project.
- f. ENFORCEMENT. Any individual or entity found to be in noncompliance with the provisions of a stormwater management permit or the requirements of the stormwater rules is subject to enforcement procedures as set forth in NCGS 143 Article 21.
- g. ANNUAL CERTIFICATION. The permittee shall electronically submit to the Division an annual certification completed by either the permittee or their designee confirming the projects conformance with permit conditions.
- h. OBTAINING COMPLIANCE. The Director may notify the permittee when the permitted site does not meet one or more of the minimum requirements of the permit. Within the time frame specified in the notice, the permittee shall submit a written time schedule to the Director for modifying the site to meet minimum requirements. The permittee shall provide copies of modified plans and certification in writing to the Director that the changes have been made.
- i. OTHER PERMITS. The issuance of this permit does not preclude the permittee from obtaining and complying with any and all other permits or approvals that are required for this development to take place, as required by any statutes, rules, regulations, or ordinances, which are imposed by any other Local, State or Federal government agency having jurisdiction. Any activities undertaken at this site that cause a water quality violation or undertaken prior to receipt of the necessary permits or approvals to do so are considered violations of NCGS 143-215.1, and subject to enforcement procedures pursuant to NCGS 143-215.6.

Permit issued this the 13th day of March 2026.

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION



For William E. Toby Vinson, Jr., PE, CPM, Director
Division of Energy, Mineral and Land Resources
By Authority of the Environmental Management Commission

Permit Number SW7260301

Attachment A

Certification Forms

The following blank Designer Certification forms are included and specific for this project:

- As-Built Permittee Certification
- As-Built Designer's Certification General MDC
- As-Built Designer's Certification for Wet Pond Project
- As-Built Designer's Certification for Low Density Projects

A separate certification is required for each SCM. These blank certification forms may be copied and used, as needed, for each SCM and/or as a partial certification to address a section or phase of the project.

AS-BUILT PERMITTEE CERTIFICATION

I hereby state that I am the current permittee for the project named above, and I certify by my signature below, that the project meets the below listed Final Submittal Requirements found in NCAC 02H.1042(4) and the terms, conditions and provisions listed in the permit documents, plans and specifications on file with or provided to the Division.

Check here if this is a partial certification. Section/phase/SCM

#?

Check here if this is part of a Fast Track As-built Package Submittal.

Printed Name _____ Signature _____

I, _____, a Notary Public in the State of _____

County of _____, do hereby certify that _____

personally appeared before me this _____ day of _____, 20 _____

and acknowledge the due execution of this as-built certification. (SEAL)

Witness my hand and official seal

My commission expires _____

Permittee's Certification NCAC .1042(4)	Completed / Provided	N/A
A. DEED RESTRICTIONS / BUA RECORDS		
1. The deed restrictions and protective covenants have been recorded and contain the necessary language to ensure that the project is maintained consistent with the stormwater regulations and with the permit conditions.	Y or N	
2. A copy of the recorded deed restrictions and protective covenants has been provided to the Division.	Y or N	
3. Records which track the BUA on each lot are being kept. (See Note 1)	Y or N	
B. MAINTENANCE ACCESS		
1. The SCMs are accessible for inspection, maintenance and repair.	Y or N	
2. The access is a minimum of 10 feet wide.	Y or N	
3. The access extends to the nearest public right-of-way.	Y or N	
C. EASEMENTS		
1. The SCMs and the components of the runoff collection / conveyance system are located in recorded drainage easements.	Y or N	
2. A copy of the recorded plat(s) is provided.	Y or N	
D. SINGLE FAMILY RESIDENTIAL LOTS - Plats for residential lots that have an SCM include the following:	Y or N	
1. The specific location of the SCM on the lot.	Y or N	
2. A typical detail for the SCM.	Y or N	
3. A note that the SCM is required to meet stormwater regulations and that the lot owner is subject to enforcement action as set forth in	Y or N	

NCGS 143 Article 21 if the SCM is removed, relocated or altered without prior approval.		
E. OPERATION AND MAINTENANCE AGREEMENT	Y or N	
1. The O&M Agreement is referenced on the final recorded plat.	Y or N	
2. The O&M Agreement is recorded with the Register of Deeds and appears in the chain of title.	Y or N	
F. OPERATION AND MAINTENANCE PLAN – maintenance records are being kept in a known set location for each SCM and are available for review.	Y or N	
	Completed / Provided	N/A
G. DESIGNER'S CERTIFICATION FORM – has been provided to the Division.	Y or N	

Note 1- Acceptable records include ARC approvals, as-built surveys, and county tax records.

Provide an explanation for every requirement that was not met, and for every "N/A" below. Attach additional sheets as needed.

AS-BUILT DESIGNER'S CERTIFICATION FOR WET DETENTION POND PROJECT

I hereby state that I am a licensed professional and I certify by my signature and seal below, that I have observed the construction of the project named above to the best of my abilities with all due care and diligence, and that the project meets all of the MDC found in NCAC 02H.1053, in accordance with the permit documents, plans and specifications on file with or provided to the Division, except as noted on the "AS-BUILT" drawings, such that the intent of the stormwater rules and the general statutes has been preserved.

- Check here if this is a partial certification. Section/phase/SCM #? _____
- Check here if this is part of a Fast-Track As-Built Package Submittal per .1044(3).
- Check here if the Designer did not observe the construction, but is certifying the project.
- Check here if pictures of the SCM are provided.

Printed Name _____ Signature _____

NC Registration Number _____ Date _____

SEAL:

Consultant's Mailing Address:

 City/State/ZIP _____
 Phone Number _____
 Consultant's Email address:

① Circle N if the as-built value differs from the Plan/permit. If N is circled, provide an explanation on page 2
 ②N/E = not evaluated (provide explanation on page 2) ③N/A = not applicable to this project or SCM.
 This Certification must be completed in conjunction with the General MDC certification under NCAC 02H.1050

Consultant's Certification (MDC .1053)	①As-built	②N/E	③N/A
A. Forebay / Depths / Fountain			
1. The available Sediment storage is consistent with the approved plan and is a minimum of 6 in.	Y or N		
2. Water flow over the forebay berm into the main pond occurs at a non-erosive velocity.	Y or N		
3. The provided Forebay Volume is 15%-20% of the main pool volume.	Y or N		
4. The Forebay entrance elevation is deeper than the exit elevation into the pond.	Y or N		
5. The Average Design Depth of the main pond below the permanent pool elevation is consistent with the permitted value?	Y or N		
6. Fountain documentation is provided.	Y or N		
B. Side slopes / Banks / Vegetated Shelf			
1. The width of the Vegetated Shelf is consistent with the approved plans and is a minimum of 6 feet.	Y or N		
2. The slope of the Vegetated Shelf is consistent with the approved plans and is no steeper than 6:1.	Y or N		
C. As-built Main Pool / Areas / Volumes / Elevations			

1. The permanent pool surface area provided is consistent with the permitted value.	Y or N		
2. The Temporary Pool Volume provided is consistent with the permitted value.	Y or N		
3. The permanent pool elevation is consistent with the permitted value.	Y or N		
	①As-built	②N/E	③N/A
4. The temporary pool elevation is consistent with the permitted value.	Y or N		
D. Inlets / Outlet / Drawdown			
1. The design volume draws down in 2-5 days.	Y or N		
2. The size of the Orifice is consistent with the permitted value.	Y or N		
3. A trash rack is provided on the outlet structure.	Y or N		
4. Hydrologic impacts to the receiving channel are minimized from the 1 yr 24 hr storm discharge?	Y or N		
5. The inlets and the outlet location are situated per the approved plan and avoid short-circuiting.	Y or N		
E. Vegetation			
1. The vegetated shelf has been planted with a minimum of 3 diverse species.	Y or N		
2. The vegetated shelf plant density is consistent with the approved plans and is no less than 50 plants per 200 sf or no less than 24 inches on center.	Y or N		

Provide an explanation for every MDC that was not met, and for every item marked "N/A" or "N/E" below. Attach additional pages as needed:

AS-BUILT DESIGNER'S CERTIFICATION FOR LOW DENSITY PROJECTS

I hereby state that I am a licensed professional and I certify by my signature and seal below, that I have observed the construction of the project named above to the best of my abilities with all due care and diligence, and that the project meets all of the MDC found in 15A NCAC 02H.1003, in accordance with the permit documents, plans and specifications on file with or provided to the Division, except as noted on the "AS-BUILT" drawings, such that the intent of the stormwater rules and the general statutes has been preserved.

- Check here if this is a partial certification. Section or phase _____
- Check here if this is part of a Fast-Track As-Built Package Submittal per 15A NCAC 02H .1044(3).
- Check here if the Designer did not observe the construction but is certifying the project.
- Check here if pictures of the project are provided.

Printed Name _____ Signature _____

NC Registration Number _____ Date _____

SEAL:

Consultant's Mailing Address: _____

City: _____ State: _____ Zip: _____

Phone: (____) _____

Consultant's Email address: _____

① Circle N if the as-built value differs from the Plan/permit. If N is circled, provide an explanation on page 3.
 ② N/E = Not Evaluated (provide explanation on page 2). ③ N/A = Not Applicable to this project/plan.

Consultant's Certification (MDC 15A NCAC 02H .1003)			
Project Density and Built-Upon Area	①As-built	②N/E	③N/A
1. The project has areas of high density based on natural drainage area boundaries, variations in land use or construction phasing.	Y or N		
2. The project's built-upon area does not exceed the maximum limit specified in the permit.	Y or N		
Dispersed Flow	①As-built	②N/E	③N/A
1. The project maximizes dispersed flow through vegetated areas and minimizes channelized flow.	Y or N		
Vegetated Conveyances	①As-built	②N/E	③N/A
1. Stormwater that is not released as dispersed flow is transported by vegetated conveyances.	Y or N		
2. The project has a minimal amount of non-vegetated conveyances to reduce erosion.	Y or N		
3. Other than minimal piping under driveways and roads, no piping has been added beyond what is shown on the approved plans.	Y or N		
4. Side slopes are no steeper than 3H:1V.	Y or N		
5. The conveyance does not erode in response to the peak flow from the 10-year storm.	Y or N		
Curb outlet systems (if applicable)	①As-built	②N/E	③N/A
1. The swale or vegetated area can carry the peak flow from the 10-year storm at a non-erosive velocity.	Y or N		

2. The longitudinal slope of the swale or vegetated areas does not exceed 5%.	Y or N		
3. The swale has a trapezoidal cross-section and a minimum bottom width of two feet.	Y or N		
4. The minimum length of the swale or vegetated area is 100 feet.	Y or N		
5. Side slopes are no steeper than 3H:1V.	Y or N		
6. The project utilizes treatment swales designed per Section .1061 in lieu of the curb outlet system requirements.	Y or N		
Vegetated Setbacks (if applicable)	①As-built	②N/E	③N/A
1. The width of the vegetated setback is at least 50'.	Y or N		
2. The width of the vegetated setback has been measured from the normal pool of impounded waters, the MHW line of tidal waters, or the top of bank of each side of rivers or streams.	Y or N		
3. The vegetated setback is maintained in grass or other vegetation.	Y or N		
4. BUA that meets the requirements of NCGS 143-214.7(b2)(2) is located in the setback.	Y or N		
5. BUA that does NOT meet the requirements of NCGS 143-214.7(b2)(2) located within the setback and is limited to: <ul style="list-style-type: none"> • Publicly-funded linear projects (road, greenway, or sidewalk) • Water dependent structures • Minimal footprint uses such as poles, signs, utility appurtenances, and security lights. 	Y or N		
6. The amount of BUA within the setback is minimized, and channeling of the runoff from the BUA has been avoided.	Y or N		
7. Stormwater is not discharged (via swale or pipe) through a vegetated setback. Stormwater is released at the edge of the setback and allowed to flow through the setback as dispersed flow.	Y or N		
Outlets	①As-built	②N/E	③N/A
1. Stormwater outlets do not cause erosion downslope of the discharge point during the peak flow from the 10-year storm.	Y or N		
Variations	①As-built	②N/E	③N/A
1. The project has variations from the MDC that were not previously approved. (Modification may be required.)	Y or N		
Deed restrictions (if applicable)	①As-built	②N/E	③N/A
1. Deed restrictions are recorded and ensure that the project and the BUA will be maintained in perpetuity consistent with the permit, approved plans, and specifications.	Y or N		
For Subdivisions Only (Residential or Commercial)	①As-built	②N/E	③N/A
1. The number of platted lots is consistent with the approved plans.	Y or N		
2. The project area is consistent with the approved plans.	Y or N		
3. The layout of the lots and streets is consistent with the approved plan.	Y or N		
4. The width / radius of streets, paved accesses, cul-de-sacs and sidewalk is consistent with the approved plan.	Y or N		
5. No piping, other than those minimum amounts needed under a driveway or under a road, has been added.	Y or N		
6. The lot grading, road grading, vegetated conveyances, piping, inverts, and elevations are consistent with the approved plans.	Y or N		

Provide an explanation below for every MDC that was not met, and for every item marked "N/A" or "N/E." Attach additional pages as needed.

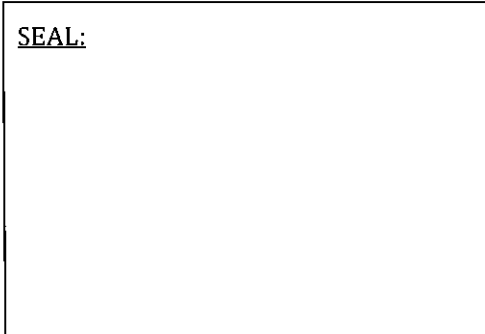
AS-BUILT DESIGNER'S CERTIFICATION GENERAL MDC

I hereby state that I am a licensed professional and I certify by my signature and seal below, that I have observed the construction of the project named above to the best of my abilities with all due care and diligence, and that the project meets the below listed General MDC found in NCAC 02H.1050 in accordance with the permit documents, plans and specifications on file with or provided to the Division, except as noted on the "AS-BUILT" drawings, such that the intent of the stormwater rules and statutes has been preserved.

- Check here if this is a partial certification. Section/phase/SCM _____
- #? _____
- Check here if this is a part of a Fast-Track As-Built Package Submittal per .1044(3).
- Check here if the designer did not observe the construction, but is certifying the project.
- Check here if pictures of the SCM are provided.

Printed Name _____ Signature _____

NC Registration Number _____ Date _____



Consultant's Mailing Address:

City/State/ZIP _____

Phone Number _____

Consultant's Email address: _____

① Circle N if the as-built value differs from the Plan. If N is circled, provide an explanation on Page 2.
 ②N/E = not evaluated (provide explanation on page 2) ③N/A = not applicable to this SCM or project.

Consultant's Certification NCAC .1003((3) & General MDC .1050	①As-built	②N/ E	③N/A
A. TREATMENT REQUIREMENTS			
1. The SCM achieves runoff treatment.	Y or N		
2. The SCM achieves runoff volume match.	Y or N		
3. Runoff from offsite areas and/or existing BUA is bypassed.	Y or N		
4. Runoff from offsite areas and/or existing BUA is directed into the permitted SCM and is accounted for at the full build-out potential.	Y or N		
5. The project controls runoff through an offsite permitted SCM that meets the requirements of the MDC.	Y or N		

6. The net area of new BUA increase for an existing project has been accounted for at the appropriate design storm level.	Y or N		
7. The SCM(s) meets all the specific minimum design criteria.	Y or N		
B. VEGETATED SETBACKS / BUA			
1. The width of the vegetated setback has been measured from the normal pool of impounded waters, the MHW line of tidal waters, or the top of bank of each side of rivers or streams.	Y or N		
2. The vegetated setback is maintained in grass or other vegetation.	Y or N		
3. BUA that meets the requirements of NCGS 143-214.7 (b2)(2) is located in the setback.	Y or N		
	①As-built	②N/ E	③N/A
4. BUA that does not meet the requirements of NCGS 143-214.7 (b2)(2) is located within the setback and is limited to: a. Publicly funded linear projects (road, greenway sidewalk) b. Water-dependent structures c. Minimal footprint uses (utility poles, signs, security lighting and appurtenances)	Y or N		
5. Stormwater that is not treated in an SCM is released at the edge of the setback and allowed to flow through the setback as dispersed flow.	Y or N		
C. STORMWATER OUTLETS – the outlet handles the peak flow from the 10 year storm with no downslope erosion.	Y or N		
D. VARIATIONS			
1. A variation (alternative) from the stormwater rule provisions has been implemented.	Y or N		
2. The variation provides equal or better stormwater control and equal or better protection of surface waters.	Y or N		
E. COMPLIANCE WITH OTHER REGULATORY PROGRAMS has been met.	Y or N		
F. SIZING -the volume of the SCM takes the runoff from all surfaces into account and is sufficient to handle the required storm depth.	Y or N		
G. CONTAMINATED SOILS – infiltrating SCM's are not located in or on areas with contaminated soils.	Y or N		
H. SIDE SLOPES			
1. Vegetated side slopes are no steeper than 3H:1V.	Y or N		
2. Side slopes include retaining walls, gabion walls, or other surfaces that are steeper than 3H:1V.	Y or N		
3. Vegetated side slopes are steeper than 3H:1V (provide supporting documents for soils and vegetation).	Y or N		
I. EROSION PROTECTION			
1. The inlets do not cause erosion in the SCM.	Y or N		
2. The outlet does not cause erosion downslope of the discharge point during the peak flow from the 10 year storm.	Y or N		
J. EXCESS FLOWS – An overflow / bypass has been provided.	Y or N		

K. DEWATERING – A method to drawdown standing water has been provided to facilitate maintenance and inspection.	Y or N		
L. CLEANOUT AFTER CONSTRUCTION – the SCM has been cleaned out and converted to its approved design state.	Y or N		
M. MAINTENANCE ACCESS			
1. The SCM is accessible for maintenance and repair.	Y or N		
2. The access does not include lateral or incline slopes >3:1.	Y or N		
N. DESIGNER QUALIFICATIONS (FAST-TRACK PERMIT) – The designer is licensed under Chapters 89A, 89C, 89E, or 89F of the General Statutes.	Y or N		

Provide an explanation for every MDC that was not met, and for every item marked "N/A" or "N/E", below. Attach additional pages as needed:

JOSH STEIN
Governor

D. REID WILSON
Secretary

WILLIAM E. TOBY VINSON, JR.
Director



March 16, 2026

LETTER OF APPROVAL

South Spot, LLC
2522 S Croatan Hwy
Nags Head, NC 27954

RE: Project Name: Seaside Meadows
Permit Number: CURRI-2026-0155
Acres Approved: 61.5
County: Currituck
City: Powells Point
Address: 8315 Caratoke Hwy
River Basin: Pasquotank
Stream Classification: SC: Aquatic Life, Secondary Contact Recreation, Tidal Salt Water
Plan Type: New Plan – Residential Subdivision Including 55 Lots, Streets with Portions as Roadside Ditches and Curb/Gutter, Waterline Extension and Stormwater BMP, 20-Acre Land Exposure

Dear South Spot, LLC,

This office has received and reviewed the subject erosion and sedimentation control plan. We find the plan to be acceptable and hereby issue this Letter of Approval. The enclosed Certificate of Approval must be posted at the job site. This plan shall expire three (3) years following the date of approval, if no land disturbing activity has been undertaken, as is required by Title 15A NCAC 4B .0129.

As of April 1, 2019, all new construction activities are required to complete and submit an electronic Notice of Intent (eNOI) form requesting a COC under the NCG010000 Construction Stormwater General Permit. You must apply for coverage by submitting a "Construction Stormwater – NCG01 (Subject to the SPCA) in the [AccessDEQ Portal](#). Once your application is complete, you will receive an invoice for the \$127 annual permit fee and can submit payment through the AccessDEQ Portal. Once the fee is processed and the application approved, you will receive the COC via email. As the Financially Responsible Party shown on the FRO form submitted for this project, you MUST obtain the COC prior to commencement of any land disturbing activity. Please direct questions about the eNOI form to the [Stormwater Program staff](#) in the Raleigh central office. If the owner/operator of this project changes in the future, the new responsible party must obtain a new COC.



North Carolina Department of Environmental Quality
Division of Energy, Mineral and Land Resources | Washington Regional Office
943 Washington Square Mall | Washington, North Carolina 27889
252.948.3800

Title 15A NCAC 4B .0118(a) and the NCG01 permit require that the following documentation be kept on file at the job site:

1. The approved E&SC plan as well as any approved deviation.
2. The NCG01 permit and the COC, once it is received.
3. Records of inspections made during the previous 12 months.

Also, this letter gives the notice required by G.S. 113A-61.1(a) of our right of periodic inspection to ensure compliance with the approved plan.

North Carolina's Sedimentation Pollution Control Act is performance-oriented, requiring protection of existing natural resources and adjoining properties. If, following the commencement of this project, the erosion and sedimentation control plan is inadequate to meet the requirements of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statute 113A-51 through 66), this office may require revisions to the plan and implementation of the revisions to ensure compliance with the Act.

Acceptance and approval of this plan is conditioned upon your compliance with Federal and State water quality laws, regulations, and rules. In addition, local city or county ordinances or rules may also apply to this land-disturbing activity. This approval does not supersede any other permit or approval.

Please note that this approval is based in part on the accuracy of the information provided in the Financial Responsibility Form and on the plan which you provided. You are requested to file an amended form if there is any change in the information included on the form.

Your cooperation is appreciated.

Sincerely,

Ginger Turner

Ginger Y. Turner, PE for
Samir Dumpor, PE
Regional Engineer
Land Quality Section

General Comments

1. This permit allows for a land disturbance, as called for on the application plan, not to exceed **61.5** acres. Exceeding that acreage will be a violation of this permit and would require a revised plan and additional application fee. Land disturbance should be conducted in a manner to minimize land exposure, preferably limited exposure to approximately 20 acres at a time as noted in the plans. Any addition in impervious surface, over that already noted on the approved plan, would also require a revised plan to verify the appropriateness of the erosion control measures and stormwater retention measures (NCGS 113A-54.1(b)).
2. Additional measures may be required - the applicant is responsible for the control of sediment on-site. If the approved erosion and sedimentation control measures prove insufficient, the applicant must take those additional steps necessary to stop sediment from leaving this site (NCGS 113A-57(3); 15A NCAC 4B .0115). Each sediment storage device must be inspected after each storm event (NCGS 113A54.1(e)). Maintenance and/or clean out is necessary anytime the device is at 50% capacity. All sediment storage measures will remain on site and functional until all grading and final landscaping of the project is complete (15A NCAC 04B .0113).
3. The applicant is responsible for obtaining any and all permits and approvals necessary for the development of this project prior to the commencement of this land disturbing activity. This could include our agency's Stormwater regulations and the Division of Water Resources' enforcement requirements within Section 401 of the Clean Water Act, the U.S. Army Corps of Engineers' jurisdiction of Section 404 of the Clean Water Act, the Division of Coastal Management's CAMA requirements, the Division of Solid Waste Management's landfill regulations, the Environmental Protection Agency and/or The U.S. Army Corps of Engineers jurisdiction of the Clean Water Act, local County or Municipalities' ordinances, or others that may be required. This approval cannot supersede any other permit or approval; however, in the case of a Cease-and-Desist Order from the Corps of Engineers, that Order would only apply to wetland areas. All highlands would still have to be in compliance with the N.C. Sedimentation Pollution Control Act.
4. If any area on site falls within the jurisdiction of Section 401 or 404 of the Clean Water Act, the applicant is responsible for compliance with the requirements of the Division of Water Resources (DWR), the Corps of Engineers and the Environmental Protection Agency (EPA) respectively. Any erosion control measures that fall within jurisdictional wetland areas must be approved by the aforementioned agencies prior to installation. The Land Quality Section must be notified of a relocation of the measures in question to the transition point between the wetlands and the uplands to assure that the migration of sediment will not occur. If that relocation presents a problem or contradicts any requirements of either DWR, the Corps, or the EPA, it is the responsibility of the applicant to inform the Land Quality Section regional office so that an adequate contingency plan can be made to ensure sufficient erosion control remains on site. Failure to do so will be considered a violation of this approval (NCGS 113A-54.1(b)).
5. Any off-site borrow and waste required for this project must come from a site with an approved erosion control plan, a site regulated under the Mining Act of 1971, or a landfill regulated by the Division of Solid Waste Management. Trash/debris from demolition activities or generated by any activities on site must be disposed of at a facility regulated by the Division of Solid Waste Management or per Division of Solid Waste Management or Division of Water Resources rules and regulations. [15A NCAC 4B .0110]

6. A graveled construction entrance must be located at each point of access and egress available to construction vehicles during the grading and construction phases of this project. Access and egress from the project site at a point without a graveled entrance will be considered a violation of this approval. Routine maintenance of the entrances is critical (113A-54.1(b)).
7. If sediment traps and basins are shown on the plan as the primary sedimentation and erosion control devices on this project, it is necessary that the traps and basins and their collection systems be installed before any other grading takes place on site, and that every structure that receives more than one acre of drainage is built so that each dewater only from the surface (NCG010000). If that proves to be impractical, a revised plan must be submitted and approved that addresses erosion and sediment control needs during the interim period until the traps and basins are fully functioning (113A-54.1(b)).
8. Any and all existing ditches on this project site are assumed to be left undisturbed by the proposed development unless otherwise noted. The removal of vegetation within any existing ditch or channel is prohibited unless the ditch or channel is to be regraded with side slopes of 2 horizontal to 1 vertical or less steep (15A NCAC 04B .0124 (d)). Bank slopes may be mowed but stripping of vegetation is considered new earth work and is subject to the same erosion control requirements as new ditches (NCGS 113A52(6)).
9. As a condition of the NPDES General Stormwater Permit (NCG010000), the financially responsible party shall comply with the NCG01 Ground Stabilization and Materials Handling requirements that became effective April 1, 2019. The NCG01 Ground Stabilization and Materials Handling standard detail can be printed from the deq.nc.gov/NCG01 website.
10. As a condition of the NPDES General Stormwater Permit (NCG010000), the financially responsible party shall comply with the NCG01 Self-Inspection, Recordkeeping and Reporting requirements that became effective April 1, 2019. The NCG01 Self-Inspection, Recordkeeping and Reporting standard details can be printed from the deq.nc.gov/NCG01 website.
11. As a part of routine monitoring of the approved land-disturbing activity, the financially responsible party shall ensure inspections of the area covered by the approved plan after each phase of the plan has been completed and after establishment of temporary ground cover in accordance with North Carolina General Statute 113A-54.1(e).
12. The NCG01 has a yearly fee and our office often receives closure inspection requests days prior to yearly NCG01 fee payment due dates. Be advised the project requires a closure inspection report by DEMLR prior to filing the Notice of Termination (NOT) to terminate NCG01 coverage. The closure inspection should not be requested until after the site has achieved full vegetative stabilization and measures have been removed. The removal of temporary ESC measures, including basins, requires prior approval. Often, a full growing season is necessary between initial seeding/mulching and removal of measures. Please plan your construction accordingly to avoid contacting our office prematurely for a closure inspection. Also be advised you may be asked for representative site pictures prior to a closure inspection.



NORTH CAROLINA
Environmental Quality

JOSH STEIN
Governor

D. REID WILSON
Secretary

RICHARD E. ROGERS, JR.
Director

April 22, 2026

CURRITUCK COUNTY
ATTN: REBECCA GAY, COUNTY MANAGER
153 COURTHOUSE ROAD, SUITE 204
CURRITUCK, NC 27929

Re: **Authorization to Construct (This is not a Final Approval)**

Issue Date: April 22, 2026
SEASIDE MEADOWS

Serial No.: 26-00189 Water System No.: NC0427010
Currituck County

Dear Applicant:

This letter is to confirm that a complete Engineer's Report and a Water System Management Plan have been received, and that engineering plans and specifications have been approved by the Department for **SEASIDE MEADOWS, Serial No.: 26-00189**.

The "Authorization to Construct" is valid for 36 months from the issue date. Authorization to construct may be extended if the Rules Governing Public Water Systems [15A NCAC 18C] and site conditions have not changed (see Rule .0305). The "Authorization to Construct" and the engineering plans and specifications approval letter shall be posted at the primary entrance of the job site before and during construction.

Upon completion of the construction or modification, **and prior to placing the new construction or modification into service**, the applicant must submit an Engineer's Certification and Applicant's Certification to the Public Water Supply Section.

- **Engineer's Certification:** in accordance with Rule .0303(a), the applicant shall submit a certification statement signed and sealed by a registered professional engineer stating that construction was completed in accordance with approved engineering plans and specifications, including any provisions stipulated in the Department's engineering plan and specification approval letter.
- **Applicant's Certification:** in accordance with Rule .0303(c), the applicant shall submit a signed certification statement indicating that the requirements for an Operation and Maintenance Plan and Emergency Management Plan have been satisfied in accordance with Rule .0307(d) and (e) and that the system has a certified operator in accordance with Rule .1300. The "Applicant's Certification" form is available at <http://www.ncwater.org/> (click on Public Water Supply Section, Plan Review, Plan Review Forms).

Certifications can be sent by mail or attachment to an e-mail message to **PWSSection.PlanReview@deq.nc.gov**.

If this "Authorization to Construct" is for a new public water system, the owner must submit a completed **application for an Operating Permit** and the appropriate fee. For a copy of the application for an Operating Permit please call (919) 707-9076.

Once the certifications and permit application and fee (if applicable) are received and determined adequate, the Department will issue a Final Approval letter to the applicant. In accordance with Rule .0309(a), **no portion of this project shall be placed into service until the Department has issued Final Approval**.

Please contact us at (919) 707-9100 if you have any questions or need additional information.

Sincerely,

Rebecca Sadosky, Ph.D., Chief
Public Water Supply Section
Division of Water Resources, NCDEQ

cc: JAMIE MIDGETTE, P.E., Regional Engineer
BISSELL PROFESSIONAL GROUP



North Carolina Department of Environmental Quality | Division of Water Resources
512 North Salisbury Street | 1634 Mail Service Center | Raleigh, North Carolina 27699-1634
919.707.9100

North Carolina Department of Environmental Quality
Division of Water Resources

Authorization to Construct

Project Applicant:	CURRITUCK COUNTY
Public Water System Name:	CURRITUCK COUNTY WATER SYSTEM
Water System No.:	NC0427010
Project Name:	SEASIDE MEADOWS
Serial No.:	26-00189
Issue Date:	April 22, 2026
Expiration Date:	36 Months after Issue Date

In accordance with 15A NCAC 18C .0305, this Authorization to Construct must be posted at the primary entrance to the job site during construction.

MARK BISSELL
BISSELL PROFESSIONAL GROUP
P.O. BOX 1068
KITTY HAWK, NC 27949



NORTH CAROLINA
Environmental Quality

April 22, 2026

JOSH STEIN

Governor

D. REID WILSON

Secretary

RICHARD E. ROGERS, JR.

Director

Currituck County
Attention: Rebecca Gay, County Manager
153 Courthouse Rd., Suite 204
Currituck, NC 27929

Re: Engineering Plans Approval
Distribution Extension
Seaside Meadows
CURRITUCK COUNTY WATER SYSTEM
Water System No.: NC0427010
Currituck County
Serial No.: 26-00189

Dear Applicant:

Enclosed please find one copy of the "Application for Approval..." together with one copy of the referenced engineering plans bearing the Division of Water Resources stamp of approval for the referenced project. These engineering plans are approved under Division of Water Resources Serial Number, 26-00189 dated April 22, 2026.

Engineering plans prepared by Mark Bissell, P.E. call for the installation of approximately 4,430 linear feet of 8-inch water main, 1,235 linear feet of 4-inch water main, fire hydrants, valves, and associated appurtenances along Pinebrook Lane, Whistlewood Drive, and Danbury Lane in Powells Point, Currituck County. The proposed 8-inch water main along Pinebrook Lane will connect to the existing 10-inch water main along Caratoke Highway. Construction of this project must be in accordance with Currituck County Water System's standard specifications.

Please note that in accordance with 15A NCAC 18C .0309(a), no construction, alteration, or expansion of a water system shall be placed into service or made available for human consumption until the Public Water Supply Section has issued Final Approval. Final Approval will be issued and mailed to the applicant upon receipt of both an Engineer's Certification and an Applicant's Certification submitted in accordance with 15A NCAC 18C .0303 (a) and (c).

These plans in the foregoing application are approved insofar as the protection of public health is concerned as provided in the rules, standards and criteria adopted under the authority of Chapter 130A-317 of the General Statutes. This approval does not constitute a warranty of the design, construction or future operation of the water system.



North Carolina Department of Environmental Quality | Division of Water Resources
512 North Salisbury Street | 1634 Mail Service Center | Raleigh, North Carolina 27699-1634
919.707.9100

Currituck County
Attention: Rebecca Gay, County Manager
Page 2 of 2
April 22, 2026

One copy of the "Application for Approval..." and a copy of the plans with a seal of approval from the department are enclosed. One copy of the approved documents in a digital format is being forwarded to our Washington Regional Office. Another copy is being retained in our records.

If the Public Water Supply Section can be of further service, please call (919) 707-9100.

Sincerely,



Rebecca Sadosky, Ph.D., Chief
Public Water Supply Section
Division of Water Resources

RS/AT

Enclosures: Approval Documents

cc: Jamie Midgett, P.E., Washington Regional Office (via email)
Currituck County Health Department
Bissell Professional Group



North Carolina Department of Environmental Quality | Division of Water Resources
512 North Salisbury Street | 1634 Mail Service Center | Raleigh, North Carolina 27699-1634
919.707.9100



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JOSH STEIN
GOVERNOR

DANIEL H. JOHNSON
SECRETARY

May 22, 2026

**Driveway Permit ID:
D011-027-26-00018**

Subject: Driveway Permit – Seaside Meadows
County: Currituck

South Spot, LLC.
2522 S. Croatan Hwy Ste 1C
Nags Head, NC 27959

Dear Applicant,

Attached for your files is a copy of a Commercial Driveway Permit, which has been properly executed. Please note any comments, which may appear on the permit form.

Please feel free to contact the District Office at (252) 621-6400 if you have any questions.

Sincerely,

DocuSigned by:

930880FAC40F45A...

Caitlin A. Spear, PE
District Engineer

Attachments

Cc: Division Engineer
County Maintenance Engineer



Street and Driveway Access Permit General Provisions

Our mission is to safely and efficiently manage and facilitate, as much as practicable, the accommodation of street and driveway accesses along NCDOT Highways, while protecting our public infrastructure.

Pre-Construction Notices

- PCN 1** Approval may be rescinded upon failure to follow any of the provisions in this permit and may be considered a violation of the Street and Driveway Access Permit.
- PCN 2** Prior to beginning work, the Applicant shall contact the Road Maintenance Supervisor for the corresponding county, to provide or verify the proposed pipe diameter. Please see the last page of the General Provisions for Contact Information
- PCN 3** Prior to beginning work, it is the requirement of the Applicant to contact the appropriate Utility Companies involved and make arrangements to adjust or relocate any utilities that conflict with the proposed work.
- PCN 4** It shall be the responsibility of the Applicant to determine the location of utilities within the permitted area. NCGS § 87-115 through § 87-130 of the Underground Utility Safety and Damage Prevention Act requires underground utilities to be located by calling 811 prior to construction. The Applicant shall be responsible for notifying other utility owners and providing protection and safeguards to prevent damage or interruption to existing facilities and maintain access to them.
- PCN 7** Trenching, bore pits and/or other excavations shall not be left open or unsafe overnight.

Legal & Right-of-Way

- RW 1** This approval and associated plans and supporting documents shall not be interpreted to allow any design change or change in the intent of the design by the Owner, Design Engineer, or any of their representatives. Any revisions or changes to these approved plans or intent for construction must be obtained in writing from the District Engineer's office or their representative prior to construction or during construction, if an issue arises during construction to warrant changes.
- RW 2** NCDOT does not guarantee the right of way on this road, nor will it be responsible for any claim for damages brought about by any property owner by reason of this installation. It is the responsibility of the Applicant to verify the right of way.
- RW 3** Prior to the approval of any privately maintained facility within NCDOT right of way which the State of North Carolina is not the fee simple owner, written permission that each and every property owner affected by the installation shall be provided to NCDOT by the Applicant. (See corresponding attachment.)
- RW 4** Applicant shall be responsible for obtaining all necessary permanent and/or temporary construction, drainage, utility and/or sight distance easements.
- RW 6** No commercial advertising shall be allowed within NCDOT Right of Way.



Street and Driveway Access Permit General Provisions

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Work Zone Traffic Control

TC 2 WORK ZONE TRAFFIC CONTROL QUALIFICATIONS AND TRAINING PROGRAM

All personnel performing any activity inside the highway right of way are required to be familiar with the NCDOT Maintenance / Utility Traffic Control Guidelines (MUTCG). No specific training course or test is required for qualification in the Maintenance /Utility Traffic Control Guidelines (MUTCG).

All flagging, spotting, or operating Automated Flagger Assist Devices (AFAD) inside the highway right of way requires qualified and trained Work Zone Flaggers. Training for this certification is provided by NCDOT approved training resources and by private entities that have been pre-approved to train themselves.

All personnel involved with the installation of Work Zone Traffic Control devices inside the highway right of way are required to be qualified and trained Work Zone Installers. Training for this certification is provided by NCDOT approved training resources and by private entities that have been pre-approved to train themselves.

All personnel in charge of overseeing work zone Temporary Traffic Control operations and installations inside the highway right of way are required to be qualified and trained Work Zone Supervisors. Training for this certification is provided by NCDOT approved training resources and by private entities that have been pre-approved to train themselves.

For questions and/or additional information regarding this training program please refer to <https://connect.ncdot.gov/projects/WZTC/Pages/Training.aspx> or call the NCDOT Work Zone Traffic Control Section (919) 814-5000.

TC 3 The party of the second part shall employ traffic control measures that are in accordance with the prevailing federal, state, local, and NCDOT policies, standards, and procedures. These policies, standards, and procedures include, but are not limited to the following:

A) Manual on Uniform Traffic Control Devices (MUTCD) – North Carolina has adopted the MUTCD to provide basic principles and guidelines for traffic control device design, application, installation, and maintenance. North Carolina uses the MUTCD as a minimum requirement where higher supplemental standards specific to North Carolina are not established. Use fundamental principles and best practices of MUTCD (Part 6, Temporary Traffic Control).

B) NCDOT Maintenance / Utility Traffic Control Guidelines – This document enhances the fundamental principles and best practices established in MUTCD Part 6, Temporary Traffic Control, incorporating NCDOT-specific standards and details. It also covers important safety knowledge for a wide range of work zone job responsibilities.

TC 4 If the Traffic Control Supervisor determines that portable concrete barrier (PCB) is required to shield a hazard within the clear zone, then PCB shall be designed and sealed by a licensed North Carolina Professional Engineer. PCB plans and design calculations shall be submitted to the District Engineer for review and approval prior to installation.

TC 5 Ingress and egress shall be maintained to all businesses and dwellings affected by the project. Special attention shall be paid to police, EMS and fire stations, fire hydrants, secondary schools, and hospitals.

TC 6 Traffic shall be maintained at all times. All lanes of traffic are to be open during the hours of 7:00 A.M. to 9:00 A.M. and from 4:00 P.M. to 6:00 P.M. Monday through Friday, during any time of inclement weather, or as directed by the District Engineer. Any violation of these hours will result in ceasing any further construction by the Encroaching Party or their contractor.

TC A) The Contractor shall not perform any work on US158 and/or NC12 that would require a lane closure or alter the traffic flow during the following day and time restrictions: May14th from thirty (30) minutes before sunset to thirty (30) minutes after sunrise October 4th or any other time when traffic is unusually heavy.



Street and Driveway Access Permit General Provisions

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- TC 9** Work requiring lane or shoulder closures shall not be performed on both sides of the road simultaneously within the same area.
- TC 10** Any work requiring equipment or personnel within 5 feet of the edge of any travel lane of an undivided facility and within 10 feet of the edge of any travel lane of a divided facility shall require a lane closure with appropriate tapers per current NCDOT Roadway Standard Drawings or MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- TC 13** Any pavement markings that are damaged or obliterated shall be restored by the Applicant at no expense to NCDOT.
- TC 14** Sidewalk closures shall be installed as necessary. Pedestrian traffic shall be detoured around these closures and shall be signed appropriately and in accordance with The American with Disabilities Act Accessibility Guidelines. The Applicant must adhere to the guidelines for accommodating pedestrians in encroachment work zones as described in the NCDOT Pedestrian Work Zone Accommodations Training found at <https://www.youtube.com/watch?v=AOuYa5IW3dg&feature=youtu.be>
- TC 15** Parking and material storage shall not be allowed along the shoulders of any NCDOT roadways, any NCDOT roadways along the route and adjacent to the route.
- TC 16** During periods of construction inactivity, place approved traffic control drums 3' minimum from the existing travel way.
- TC 17** Any violation of the Traffic Control provisions will result in the termination of the permit application and liquidated damages in the amount of \$2,000 per hour or any portion thereof and will be assessed by the District Engineer's office.

Environmental Regulations

- EC 1** The Applicant shall comply with all applicable Federal, State and local environmental regulations and shall obtain all necessary Federal, State and local environmental permits, including but not limited to, those related to sediment control, stormwater, wetland, streams, endangered species and historical sites. Additional information can be obtained by contacting the NCDOT Roadside Environmental Engineer regarding the North Carolina Natural Heritage Program or the United States Fish and Wildlife Services. Contact the Division Roadside Environmental Engineer's Office at (252) 621-6310
- EC 2** When surface area in excess of one acre will be disturbed, the Applicant shall submit a Sediment and Erosion Control Plan which has been approved by the appropriate regulatory agency or authority prior to beginning any work on the Right of Way. Failure to provide this information shall be grounds for suspension of operations. Proper temporary and permanent measures shall be used to control erosion and sedimentation in accordance with the approved sediment and erosion control plan.
- EC 3** The Verification of Compliance with Environmental Regulations (VCER-1) form is required for all non-utility permits or any utility permits when land disturbance within NCDOT right of way exceeds 1 acre. The VCER-1 form must be PE sealed by a NC registered professional engineer who has verified that all appropriate environmental permits (if applicable) have been obtained and all applicable environmental regulations have been followed.
- EC 4** All erosion control devices and measures shall be constructed, installed, maintained, and removed by the Applicant in accordance with all applicable Federal, State, and Local laws, regulations, ordinances, and policies. Permanent vegetation shall be established on all disturbed areas in accordance with the recommendations of the Division Roadside Environmental Engineer. All areas disturbed (shoulders, ditches, removed accesses, etc.) shall be graded and seeded in accordance with the latest NCDOT Standards Specifications for Roads and Structures and within 15 calendar days with an approved NCDOT seed mixture (all lawn type areas shall be maintained and reseeded as such). Seeding rates per acre shall be applied according to the Division Roadside Environmental Engineer. Any plant or vegetation in the NCDOT planted sites that is destroyed or damaged as a result of this permit shall be replaced with plants of like kind or similar shape.
- EC 5** No trees within NCDOT shall be cut without authorization from the Division Roadside Environmental Engineer. An inventory of trees measuring greater than 4 caliper inches (measured 6" above the ground) is required when trees within C/A right of way will be impacted by the encroachment installation. Mitigation is required and will be determined by the Division Roadside Environmental Engineer's Office.



Street and Driveway Access Permit General Provisions

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- EC 6** Prior to installation, the Applicant shall contact the District Engineer to discuss any environmental issues associated with the installation to address concerns related to the root system of trees impacted by boring or non-utility construction of sidewalk, roadway widening, etc.
- EC 7** The applicant is responsible for identifying project impacts to waters of the United States (wetlands, intermittent streams, perennial streams and ponds) located within the NCDOT right-of-way. The discharge of dredged or fill material into waters of the United States requires authorization from the United States Army Corps of Engineers (USACE) and certification from the North Carolina Division of Water Quality (NCDWQ). The applicant is required to obtain pertinent permits or certification from these regulatory agencies if construction of the project impacts waters of the United States within the NCDOT right-of-way. The applicant is responsible for complying with any river or stream Riparian Buffer Rule as regulated by the NCDWQ. The Rule regulates activity within a 50-foot buffer along perennial streams, intermittent streams and ponds. Additional information can be obtained by contacting the NCDWQ or the USACE.
- EC 8** The contractor shall not begin the construction until after the traffic control and erosion control devices have been installed to the satisfaction of the District Engineer or their agent.
- EC 9** The contractor shall perform all monitoring and record keeping and any required maintenance of erosion and sediment control measures to maintain compliance with stormwater regulations.
- EC 10** Vegetative cover shall be established on all disturbed areas in accordance with the recommendations of the Division Roadside Environmental Engineer.

General

- G 1** An executed copy of the Street and Driveway Access Permit, provisions and approved plans shall be present at the construction site at all times. If safety or traffic conditions warrant such an action, NCDOT reserves the right to further limit, restrict or suspend operations within the right of way.
- G 2** The Applicant and/or their Contractor shall comply with all OSHA requirements. If OSHA visits the work area associated with this permit, the District Office shall be notified by the encroaching party immediately if any violations are cited.
- G 3** Any REVISIONS marked in RED on the attached non-PE sealed plans shall be incorporated into and made part of the approved permit.
- G 4** All disturbed areas are to be fully restored to current NCDOT minimum roadway standards or as directed by the District Engineer or their representative. Disturbed areas within NCDOT Right-of-Way include, but not limited to, any excavation areas, pavement removal, drainage or other features.
- G 5** The Applicant shall notify the District Engineer or their representative immediately in the event any drainage structure is blocked, disturbed or damaged. All drainage structures disturbed, damaged or blocked shall be restored to its original condition as directed by the District Engineer or their representative.
- G 8** Unless specified otherwise, during non-working hours, equipment shall be located away from the job site or parked as close to the right of way line as possible and be properly barricaded in order not to have any equipment obstruction within the Clear Recovery Area. Also, during non-working hours, no parking or material storage shall be allowed along the shoulders of any state-maintained roadway.
- G 9** No access to the job site, parking or material storage shall be allowed along or from the Control of Access Roadway.
- G 10** Guardrail removed or damaged during construction shall be replaced or repaired to its original condition, meeting current NCDOT standards or as directed by the District Engineer or their representative.
- G 12** Right of Way monuments disturbed during construction shall be referenced by a registered Land Surveyor and reset after construction.
- G 13** All Traffic signs moved during construction shall be reinstalled as soon as possible to the satisfaction of the District Engineer or their representative.



Street and Driveway Access Permit General Provisions

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- G 16** All driveways disturbed during construction shall be returned to a state comparable with the condition of the driveways prior to construction.
- G 17** Conformance with driveway permit review should be required in conjunction with this encroachment agreement. In the event there is a conflict between the driveway permit and the encroachment agreement, the District Engineer should resolve the conflict and notify the parties involved.
- G 18** If the approved method of construction is unsuccessful and other means are required, prior approval must be obtained through the District Engineer before construction may continue.
- G 22** Strict compliance with the Policy on Street and Driveway Access to North Carolina Highways manual shall be required.
- G 23** The Applicant may delegate the performance of certain provisions of this agreement to contractors or other parties. However, this shall not in any way release the Applicant from its obligations to the terms and provisions of the permit.

Engineering

- E 1** All traffic control, asphalt mixes, structures, construction, workmanship and construction methods, and materials shall be in compliance with the most-recent versions of the following resources: ASTM Standards, Manual on Uniform Traffic Control Devices, NCDOT Utilities Accommodations Manual, NCDOT Standard Specifications for Roads and Structures, NCDOT Roadway Standard Drawings, NCDOT Asphalt Quality Management System manual, and the approved plans.

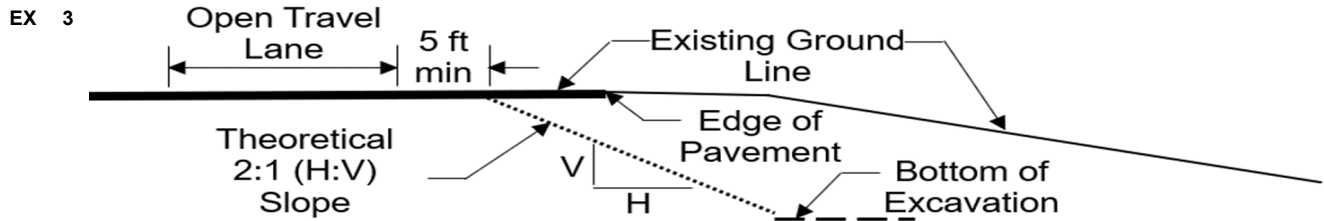
Excavation

- EX 1** Excavation material shall not be placed on pavement.
- EX 2** It is the responsibility of the applicant and their contractor to prevent any mud/dirt from tracking onto the roadway. Any dirt which may collect on the roadway pavement from equipment and/or truck traffic on site shall be immediately removed to avoid any unsafe traffic conditions.
- EX 3** The utility shall be installed within 5 feet of the right of way line and outside the 5-foot minimum from travel lane plus theoretical 2:1 slope from the edge of pavement to the bottom of the nearest excavation wall for temporary shoring. If the 2:1 slope plus 5 feet requirement above is met for traffic, then temporary shoring is typically only necessary to protect roadways from damage when a theoretical 1:1 slope from the edge of pavement intersects the nearest excavation wall. This rule of thumb should be used with caution and does not apply to all subsurface conditions, surcharge loadings and excavation geometries. Situations where this 1:1 slope is not recommended include groundwater depth is above bottom of excavation or excavation is deeper than 10 feet or in Type B or C soils as defined by OSHA Technical Manual. Temporary shoring may be avoided by locating trenches, bore pits, and other excavations far enough away from the open travel lane, edge of pavement and any existing structure, support, utility, property, etc. to be protected. Temporary shoring is required when a theoretical 2:1 slope from the bottom of excavation will intersect the existing ground line less than 5 feet from the outside edge of an open travel lane as shown in the figure below or when a theoretical 2:1 slope from the bottom of excavation will intersect any existing structure, support, utility, property, etc. to be protected.



Street and Driveway Access Permit General Provisions

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EX 4 Temporary shoring shall be designed and constructed in accordance with current NCDOT Standard Temporary Shoring provisions (refer to <https://connect.ncdot.gov/resources/Specifications/Pages/2018-Specifications-and-Special-Provisions.aspx> and see SP11 R002).

A) Temporary excavation shoring, such as sheet piling, shall be installed. The design of the shoring shall include the effects of traffic loads. The shoring system shall be designed and sealed by a licensed North Carolina Professional Engineer. Shoring plans and design calculations shall be submitted to the Division Engineer for review and approval prior to construction. (See NCDOT Utilities Accommodations Manual for more information on requirements for shoring plans and design calculations.) Trench boxes shall not be accepted as temporary shoring and will not be approved for use in instances where shoring is required to protect the highway, drainage structure, and/or supporting pavement or structure foundation.

B) All trench excavation inside the limits of the theoretical one-to-one slope, as defined by the policy, shall be completely backfilled and compacted at the end of each construction day. No portion of the trench shall be left open overnight. Any excavation that is not backfilled by the end of the workday must address any safety and traveling public concerns including accommodations for bicycles, pedestrians and persons with disabilities.

C) At the discretion of the District Engineer, a qualified NCDOT inspector shall be on the site at all times during construction. The applicant shall reimburse NCDOT for the cost of providing the inspector. If NCDOT cannot supply an inspector, the applicant (not the utility contractor) should make arrangements to have a qualified inspector, under the supervision of a licensed North Carolina Professional Engineer, on the site at all times. The Professional Registered Engineer shall certify that the utility was installed in accordance with the permit and that the backfill material meets the Statewide Borrow Criteria.



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- D) The length of parallel excavation shall be limited to the length necessary to install and backfill one joint of pipe at a time, not to exceed twenty-five (25) feet.
- EX 5** The trench backfill material shall meet the Statewide Borrow Criteria. The trench shall be backfilled in accordance with Section 300-7 of the latest NCDOT Standard Specifications for Roads and Structures, which basically requires the backfill material to be placed in layers not to exceed 6 inches loose and compacted to at least 95% of the density obtained by compacting a sample in accordance with AASHTO T99 as modified by DOT.
- EX 6** All material to a depth of 8 inches below the finished surface of the subgrade shall be compacted to a density equal to at least 100% of that obtained by compacting a sample of the material in accordance with AASHTO T99 as modified by the Department. The subgrade shall be compacted at a moisture content which is approximately that required to produce the maximum density indicated by the above test method. The contractor shall dry or add moisture to the subgrade when required to provide a uniformly compacted and acceptable subgrade. The option to backfill any trenches with dirt or either #57 stone or #78 stone with consolidation with a plate tamp and without a conventional density test may be pursued with the written consent of the District Engineer. If this option is exercised, then roadway ABC stone and asphalt repair as required will also be specified by the District Engineer.
- EX 7** All roadway sections, ditch lines and slopes, and shoulders affected by the operations under this encroachment shall be restored to the satisfaction of the District Engineer.

Pavement Repair

- PR 7** Any pavement damaged because of settlement of the pavement or damaged by equipment used to perform the permitted work, shall be re-surfaced to the satisfaction of the District Engineer. This may include the removal of pavement and a 50' mechanical overlay. All pavement work and pavement markings (temporary and final) are the responsibility of the Applicant.

Post-Construction

- I 1** The Applicant shall notify the Roadway Maintenance Supervisor's office within 2 business days after construction is complete. The Roadway Maintenance Supervisor may perform a construction inspection. Any deficiencies may be noted and reported to the Applicant to make immediate repairs or resolve any issues to restore the right-of-way to a similar condition prior to construction, including pavement, signage, traffic signals, pavement markings, drainage, structures/pipes, or other highway design features.

Roadway Maintenance Contact Information by County:

Camden
(252) 621-6420

Currituck
(252) 421-7200

Currituck OBX / Dare
(252) 473-2990

Gates
(252) 401-6050

Pasquotank
(252) 621-6420

Perquimans
(252) 426-4170

APPLICATION IDENTIFICATION		N.C. DEPARTMENT OF TRANSPORTATION STREET AND DRIVEWAY ACCESS PERMIT APPLICATION
Driveway Permit No. D011-027-26-00018	Date of Application May 22, 2026	
County: Currituck		
Development Name: Seaside Meadows		

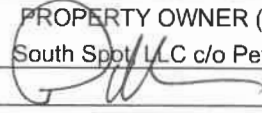
LOCATION OF PROPERTY:	
Route/Road:	U.S. Hwy 158 (Caratoke Hwy)
Exact Distance	1513 <input type="checkbox"/> Miles <input checked="" type="checkbox"/> Feet N S E W <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
From the Intersection of Route No.	SR 1111 (S Spot Rd) and Route No. U.S. Hwy 158 Toward Grandy

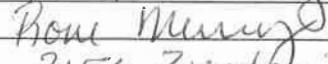
Property Will Be Used For:	<input checked="" type="checkbox"/> Residential /Subdivision <input type="checkbox"/> Commercial <input type="checkbox"/> Educational Facilities <input type="checkbox"/> TND <input type="checkbox"/> Emergency Services <input type="checkbox"/> Other
Property:	<input checked="" type="checkbox"/> is <input type="checkbox"/> is not within Currituck County City Zoning Area.

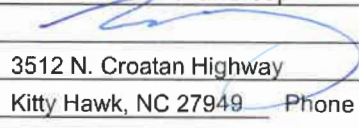
AGREEMENT

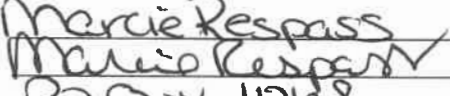
- I, the undersigned property owner, request access and permission to construct driveway(s) or street(s) on public right-of-way at the above location.
- I agree to construct and maintain driveway(s) or street entrance(s) in absolute conformance with the current "Policy on Street and Driveway Access to North Carolina Highways" as adopted by the North Carolina Department of Transportation.
- I agree that no signs or objects will be placed on or over the public right-of-way other than those approved by NCDOT.
- I agree that the driveway(s) or street(s) will be constructed as shown on the attached plans.
- I agree that that driveway(s) or street(s) as used in this agreement include any approach tapers, storage lanes or speed change lanes as deemed necessary.
- I agree that if any future improvements to the roadway become necessary, the portion of driveway(s) or street(s) located on public right-of-way will be considered the property of the North Carolina Department of Transportation, and I will not be entitled to reimbursement or have any claim for present expenditures for driveway or street construction.
- I agree that this permit becomes void if construction of driveway(s) or street(s) is not completed within the time specified by the "Policy on Street and Driveway Access to North Carolina Highways".
- I agree to pay a \$50 construction inspection fee. Make checks payable to NCDOT. This fee will be reimbursed if application is denied.
- I agree to construct and maintain the driveway(s) or street(s) in a safe manner so as not to interfere with or endanger the public travel.
- I agree to provide during and following construction proper signs, signal lights, flaggers and other warning devices for the protection of traffic in conformance with the current "Manual on Uniform Traffic Control Devices for Streets and Highways" and Amendments or Supplements thereto. Information as to the above rules and regulations may be obtained from the District Engineer.
- I agree to indemnify and save harmless the North Carolina Department of Transportation from all damages and claims for damage that may arise by reason of this construction.
- I agree that the North Carolina Department of Transportation will assume no responsibility for any damages that may be caused to such facilities, within the highway right-of-way limits, in carrying out its construction.
- I agree to provide a Performance and Indemnity Bond in the amount specified by the Division of Highways for any construction proposed on the State Highway system.
- The granting of this permit is subject to the regulatory powers of the NC Department of Transportation as provided by law and as set forth in the N.C. Policy on Driveways and shall not be construed as a contract access point.
- I agree that the entire cost of constructing and maintaining an approved private street or driveway access connection and conditions of this permit will be borne by the property owner, the applicant, and their grantees, successors, and assignees.
- **I AGREE TO NOTIFY THE DISTRICT ENGINEER WHEN THE PROPOSED WORK BEGINS AND WHEN IT IS COMPLETED.**

SIGNATURES OF APPLICANT

PROPERTY OWNER (APPLICANT)
COMPANY South Spot LLC c/o Peter Kauffman, Manager
SIGNATURE 
ADDRESS 2522 S. Croatan Hwy Ste 1C
Nags Head, NC 27959 Phone No. 941-552-6834

WITNESS
NAME Roni Murray
SIGNATURE 
ADDRESS 2156 Zuyder Ter
North Port, FL 34286

AUTHORIZED AGENT
COMPANY Bissell Professional Group
SIGNATURE 
ADDRESS 3512 N. Croatan Highway
Kitty Hawk, NC 27949 Phone No. 252-261-3266

WITNESS
NAME Marcie Respass
SIGNATURE 
ADDRESS PO Box 1068
Kitty Hawk, NC 27949

APPROVALS

APPLICATION RECEIVED BY DISTRICT ENGINEER

SIGNATURE DATE

APPLICATION APPROVED BY LOCAL GOVERNMENTAL AUTHORITY (when required)

SIGNATURE TITLE DATE

APPLICATION APPROVED BY NCDOT

 _____
DISTRICT ENGINEER TITLE 05/31/2026 DATE

INSPECTION BY NCDOT

SIGNATURE TITLE DATE

COMMENTS:



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JOSH STEIN
GOVERNOR

DANIEL H. JOHNSON
SECRETARY

May 22, 2026

South Spot, LLC
2522 S. Croatan Hwy Ste 1C
Nags Head, NC 27959

-AND-

Currituck County
153 Courthouse Rd
Currituck, NC 27929

County: Currituck

Subject: Encroachment to allow the installation of an 8" waterline and appurtenances at the proposed entrance of the Seaside Meadows subdivision on US 158

Dear Applicant,

Attached for your records is a copy of the approved encroachment package to allow the installation of an 8" waterline and appurtenances at the proposed entrance to the Seaside Meadows subdivision on US 158 to service said subdivision. **Any and all damages done to State Routes must be properly repaired.** This approval will expire on May 8, 2027, unless construction has started or been completed prior to that date.

Please feel free to contact the District Office at (252) 621-6400 if you have any questions.

Sincerely yours,

DocuSigned by:

A handwritten signature in cursive script that reads "Caitlin A. Spear".

930880FAC40F45A...

Caitlin A. Spear, PE
District Engineer

Attachments

Cc: Division Engineer (W/Attachments)
County Maintenance Engineer (W/Attachments)

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
DIVISION ONE – DISTRICT ONE
1929 NORTH ROAD STREET
ELIZABETH CITY, NC 27909

Telephone: (252) 621-6400
Fax: (252) 621-6410
Customer Service: 1-877-368-4968

Location:
1929 NORTH ROAD STREET
ELIZABETH CITY, NC 27909

Website: www.ncdot.gov

Pre-Construction

Contact Offices & Outside Agency issues / Contacts / Info.

1. Approval may be rescinded upon failure to follow any of the provisions in this permit and may be considered a violation of the encroachment agreement.
2. The Encroaching party or their contractor shall provide the following notices prior to construction activity within the NCDOT Right of Way:
 - a. Three (3) business days advance phone call at telephone (252) 621-6400 or email to caspear@ncdot.gov to the District Engineer's office
 - b. If the construction falls within the limits of an NCDOT managed construction project, five (5) business days advance phone call to the Resident Engineer, Mr. Brandon Tatum at (252) 621-6400 or email to bjtatum@ncdot.gov.

Failure to provide these notifications prior to beginning construction is subject to the Division Engineer's discretion to cease construction activity for this encroachment. NCDOT reserves the right to cease any construction or maintenance work associated with this installation by the encroaching party until the construction or maintenance meets the satisfaction of the Division Engineer or their representative.

3. Prior to beginning work, it is the requirement of the Encroaching Party to contact the appropriate Utility Companies involved and make arrangements to adjust or relocate any utilities that conflict with the proposed work.
4. It shall be the responsibility of the encroaching party to determine the location of utilities within the encroachment area. NCGS § 87-115 through § 87-130 of the Underground Utility Safety and Damage Prevention Act requires underground utilities to be located by calling 811 prior to construction. The encroaching party shall be responsible for notifying other utility owners and providing protection and safeguards to prevent damage or interruption to existing facilities and maintain access to them.
5. The encroaching party shall notify the appropriate municipal office prior to beginning any work within the municipality's limits of jurisdiction.
6. Excavation within 1000 feet of a signalized intersection will require notification by the encroaching party to the Division Traffic Engineer at telephone number (252) 482-1857 no less than one week prior to beginning work. All traffic signal or detection cables must be located prior to excavation. Cost to replace or repair NCDOT signs, signals, pavement markings or associated equipment and facilities shall be the responsibility of the encroaching party.
7. At the option of the District Engineer, a preconstruction meeting including representatives of NCDOT, the encroaching party, contractors and municipality, if applicable, shall be required. A pre-construction conference held between a municipality (or other facility owner) and a contractor without the presence of NCDOT personnel with subsequent construction commencing may be subject to NCDOT personnel ceasing any work on NCDOT right-of-way related to this encroachment until such meeting is held. Contact the District office to schedule.
8. At the discretion of the District Engineer, a NOTIFICATION FOR UTILITY / NON-UTILITY ENCROACHMENT WITHIN NCDOT R/W form (See corresponding attachment) with the scheduled pre-construction meeting and associated construction schedule details must be completed and submitted to the District Engineer's office a minimum of one week prior to construction.

9. At the discretion of the District Engineer, the encroaching party (not the utility contractor) shall make arrangements to have a qualified inspector, under the supervision of a Professional Engineer registered in North Carolina, on site at all times during construction. The registered Professional Engineer shall be required to submit a signed and PE sealed certification that the utility was installed in accordance with the encroachment agreement.

Legal & Right-of-Way Issues

10. This approval and associated plans and supporting documents shall not be interpreted to allow any design change or change in the intent of the design by the Owner, Design Engineer, or any of their representatives. Any revisions or changes to these approved plans or intent for construction must be obtained in writing from the Division Engineer's office or their representative prior to construction or during construction if an issue arises during construction to warrant changes.
11. NCDOT does not guarantee the right of way on this road, nor will it be responsible for any claim for damages brought about by any property owner by reason of this installation. It is the responsibility of the encroaching party to verify the right of way.
12. Encroaching party shall be responsible for obtaining all necessary permanent and/or temporary construction, drainage, utility and/or sight distance easements.
13. All Right of Way and easements necessary for construction and maintenance shall be dedicated to NCDOT with proof of dedication furnished to the District Engineer prior to beginning work.
14. No commercial advertising shall be allowed within NCDOT Right of Way.
15. The encroaching party shall obtain proper approval from all affected pole owners prior to attachment to any pole.
16. This agreement does not authorize installations within nor encroachment onto railroad rights of way. Permits for installations within railroad right of way must be obtained from the railroad and are the responsibility of the encroaching party.

Work Zone Traffic

17. Traffic control shall be coordinated with the District Engineer and the Division Traffic Engineer at telephone (252) 621-6400, prior to construction.
18. WORK ZONE TRAFFIC CONTROL QUALIFICATIONS AND TRAINING PROGRAM

All personnel performing any activity inside the highway right of way are required to be familiar with the NCDOT Maintenance / Utility Traffic Control Guidelines (MUTCG). No specific training course or test is required for qualification in the Maintenance /Utility Traffic Control Guidelines (MUTCG).

All flagging, spotting, or operating Automated Flagger Assist Devices (AFAD) inside the highway right of way requires qualified and trained Work Zone Flaggers. Training for this certification is provided by NCDOT approved training resources and by private entities that have been pre-approved to train themselves.

All personnel involved with the installation of Work Zone Traffic Control devices inside the highway right of way are required to be qualified and trained Work Zone Installers. Training for this

certification is provided by NCDOT approved training resources and by private entities that have been pre-approved to train themselves.

All personnel in charge of overseeing work zone Temporary Traffic Control operations and installations inside the highway right of way are required to be qualified and trained Work Zone Supervisors. Training for this certification is provided by NCDOT approved training resources and by private entities that have been pre-approved to train themselves.

For questions and/or additional information regarding this training program please refer to <https://connect.ncdot.gov/projects/WZTC/Pages/Training.aspx> or call the NCDOT Work Zone Traffic Control Section (919) 814-5000.

19. The party of the second part shall employ traffic control measures that are in accordance with the prevailing federal, state, local, and NCDOT policies, standards, and procedures. These policies, standards, and procedures include, but are not limited to the following:
 - a. Manual on Uniform Traffic Control Devices (MUTCD) – North Carolina has adopted the MUTCD to provide basic principles and guidelines for traffic control device design, application, installation, and maintenance. North Carolina uses the MUTCD as a minimum requirement where higher supplemental standards specific to North Carolina are not established. Use fundamental principles and best practices of MUTCD (Part 6, Temporary Traffic Control).
 - b. NCDOT Maintenance / Utility Traffic Control Guidelines – This document enhances the fundamental principles and best practices established in MUTCD Part 6, Temporary Traffic Control, incorporating NCDOT-specific standards and details. It also covers important safety knowledge for a wide range of work zone job responsibilities.
20. If the Traffic Control Supervisor determines that portable concrete barrier (PCB) is required to shield a hazard within the clear zone, then PCB shall be designed and sealed by a licensed North Carolina Professional Engineer. PCB plans and design calculations shall be submitted to the District Engineer for review and approval prior to installation.
21. Ingress and egress shall be maintained to all businesses and dwellings affected by the project. Special attention shall be paid to police, EMS and fire stations, fire hydrants, secondary schools, and hospitals.
22. Traffic shall be maintained at all times. All lanes of traffic are to be open during the hours of 7:00 A.M. to 9:00 A.M. and from 4:00 P.M. to 6:00 P.M. Monday through Friday, during any time of inclement weather, **or as directed by the District Engineer**. If the location of work calls for a rolling roadblock on a divided highway for US routes, the restriction is to work only on Sunday from 1:00 A.M. to 10:00 A.M, **or as Directed by the District Engineer**. Any violation of these hours will result in ceasing any further construction by the Encroaching Party or their contractor.
23. Nighttime and weekend operations will NOT be allowed unless written approval is received from the District Engineer. If nighttime or weekend work is allowed or required, all signs must be retro-reflective, and a work zone lighting plan must be submitted for approval prior to construction.
24. Two-way traffic shall be maintained at all times unless designated by the District Engineer. Traffic shall not be rerouted or detoured without the prior written approval from the District Engineer. No utility work will be allowed on state holidays from 7:00 PM the night before through 9:00 AM the day prior to, following or during local events without prior approval from the District Engineer. If the construction is within 1000 feet of a school location or on a designated bus route, the construction shall be coordinated with the school start and end times to avoid traffic delays.

25. Work requiring lane or shoulder closures shall not be performed on both sides of the road simultaneously within the same area.
26. Any work requiring equipment or personnel within 5 feet of the edge of any travel lane of an undivided facility and within 10 feet of the edge of any travel lane of a divided facility shall require a lane closure with appropriate tapers per current *NCDOT Roadway Standard Drawings or MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES*.
27. At the discretion of the District Engineer, a traffic control plan shall be developed and submitted under the seal and signature of a Licensed North Carolina Professional Engineer prior to construction. The plan shall be specific to the site and adequately detailed. Issues such as the close proximity to intersections shall be addressed.
28. Temporary and final pavement markings are the responsibility of the encroaching party. Final pavement markings and sign plans shall be submitted with the encroachment request to the Division Traffic Engineer prior to construction. Final pavement markings shall be thermoplastic unless otherwise directed by the Division Traffic Engineer or District Engineer.
29. Any pavement markings that are damaged or obliterated shall be restored by the encroaching party at no expense to NCDOT.
30. Sidewalk closures shall be installed as necessary. Pedestrian traffic shall be detoured around these closures and shall be signed appropriately and in accordance with The American with Disabilities Act Accessibility Guidelines. The encroaching party must adhere to the guidelines for accommodating pedestrians in encroachment work zones as described in the NCDOT Pedestrian Work Zone Accommodations Training found at <https://www.youtube.com/watch?v=AOuYa5IW3dg&feature=youtu.be>

Roadside Environmental

31. The encroaching party shall comply with all applicable Federal, State and local environmental regulations and shall obtain all necessary Federal, State and local environmental permits, including but not limited to, those related to sediment control, stormwater, wetland, streams, endangered species and historical sites. Additional information can be obtained by contacting the NCDOT Roadside Environmental Engineer regarding the North Carolina Natural Heritage Program or the United States Fish and Wildlife Services. Contact the Division Roadside Environmental Engineer's Office at (252) 621-6310.
32. When surface area in excess of one acre will be disturbed, the Encroacher shall submit a Sediment and Erosion Control Plan which has been approved by the appropriate regulatory agency or authority prior to beginning any work on the Right of Way. Failure to provide this information shall be grounds for suspension of operations. Proper temporary and permanent measures shall be used to control erosion and sedimentation in accordance with the approved sediment and erosion control plan.
33. The Verification of Compliance with Environmental Regulations (VCER-1) form is required for all non-utility encroachment agreements or any utility encroachments when land disturbance within NCDOT right of way exceeds 1 acre. When required, the VCER-1 form must be PE sealed by a NC registered professional engineer who has verified that all appropriate environmental permits (if applicable) have been obtained and all applicable environmental regulations have been followed.

34. All erosion control devices and measures shall be constructed, installed, maintained, and removed by the Encroacher in accordance with all applicable Federal, State, and Local laws, regulations, ordinances, and policies. Permanent vegetation shall be established on all disturbed areas in accordance with the recommendations of the Division Roadside Environmental Engineer. All areas disturbed (shoulders, ditches, removed accesses, etc.) shall be graded and seeded in accordance with the latest *NCDOT Standards Specifications for Roads and Structures* and within 15 calendar days with an approved NCDOT seed mixture (all lawn type areas shall be maintained and reseeded as such). Seeding rates per acre shall be applied according to the Division Roadside Environmental Engineer. Any plant or vegetation in the NCDOT planted sites that is destroyed or damaged as a result of this encroachment shall be replaced with plants of like kind or similar shape.
35. No trees within NCDOT right of way shall be cut without authorization from the Division Roadside Environmental Engineer. An inventory of trees measuring greater than 4 caliper inches (measured 6" above the ground) is required when trees within C/A right of way will be impacted by the encroachment installation. Mitigation is required and will be determined by the Division Roadside Environmental Engineer's Office.
36. Prior to installation, the Encroaching Party shall contact the District Engineer to discuss any environmental issues associated with the installation to address concerns related to the root system of trees impacted by boring or non-utility construction of sidewalk, roadway widening, etc.
37. The applicant is responsible for identifying project impacts to waters of the United States (wetlands, intermittent streams, perennial streams and ponds) located within the NCDOT right-of-way. The discharge of dredged or fill material into waters of the United States requires authorization from the United States Army Corps of Engineers (USACE) and certification from the North Carolina Division of Water Quality (NCDWQ). The applicant is required to obtain pertinent permits or certification from these regulatory agencies if construction of the project impacts waters of the United States within the NCDOT right-of-way. The applicant is responsible for complying with any river or stream Riparian Buffer Rule as regulated by the NCDWQ. The Rule regulates activity within a 50-foot buffer along perennial streams, intermittent streams and ponds. Additional information can be obtained by contacting the NCDWQ or the USACE.
38. The contractor shall not begin the construction until after the traffic control and erosion control devices have been installed to the satisfaction of the Division Engineer or their agent.
39. The contractor shall perform all monitoring and record keeping and any required maintenance of erosion and sediment control measures to maintain compliance with stormwater regulations.

Bonds

40. A Performance and Indemnity Bond in the amount of \$0 shall be posted with the District Engineer's Office by the Party of the Second Part prior to beginning any work within the NCDOT Right of Way. The bond shall be held for a minimum of one year after a satisfactory final inspection of the installation by NCDOT. The bond may be held for a period longer than one year after completion if, in the opinion of NCDOT, the size or complexity of the installation warrants a longer period.
41. The release of the bond is subject to a final inspection by NCDOT. Contact the District office to schedule a Final Inspection and to request release of the bond.
42. When a Continuing Indemnity bond is on file with the central Raleigh office, the cashing of that bond may be used to fund any necessary repairs by NCDOT forces for unaddressed defects in workmanship by the encroaching party and/or by their contractor.

Control of Access

43. No access to the job site, parking or material storage shall be allowed along or from the **Control of Access Roadway**.
44. The installation within the Control of Access fence shall not adversely affect the design, construction, maintenance, stability, traffic safety or operation of the controlled access highway, and the utility must be serviced without access from the through-traffic roadways or ramps.
45. The resetting of the Control of Access fence shall be in accordance with the applicable NCDOT standard and as directed by the Division Engineer or their representative.

STIP (or Division Managed) Projects

46. State Transportation Improvement Project (STIP) X-XXXX is scheduled for future construction. Any encroachment determined to be in conflict with the construction of this NCDOT project shall be removed and/or relocated at the encroaching party's expense.

Construction

General

47. An executed copy of the encroachment agreement, provisions and approved plans shall be present at the construction site at all times. If safety or traffic conditions warrant such an action, NCDOT reserves the right to further limit, restrict or suspend operations within the right of way.
48. If the approved method of construction is unsuccessful and other means are required, prior approval must be obtained through the District Engineer before construction may continue.
49. Any REVISIONS marked in RED on the attached non-PE sealed plans shall be incorporated into and made part of the approved encroachment agreement.
50. All disturbed areas are to be fully restored to current NCDOT minimum roadway standards or as directed by the Division Engineer or their representative. Disturbed areas within NCDOT Right-of-Way include, but not limited to, any excavation areas, pavement removal, drainage or other features.
51. The encroaching party shall notify the Division Engineer or their representative immediately in the event any drainage structure is blocked, disturbed or damaged. All drainage structures disturbed, damaged or blocked shall be restored to its original condition as directed by the Division Engineer or their representative.
52. A minimum of five-foot clearance is required for utility installations beneath or near drainage pipes, headwalls, and a minimum of two-foot clearance below the flowline of streams. If directional drilling, a minimum of ten-foot clearance distance is required from drainage structures and a minimum of five feet below flowline of streams.
53. At points where the utility is placed under existing storm drainage, the trench will be backfilled with excavatable flowable fill up to the outside diameter of the existing pipe.

54. Unless specified otherwise, during non-working hours, equipment shall be located away from the job site or parked as close to the right of way line as possible and be properly barricaded in order not to have any equipment obstruction within the Clear Zone. Also, during non-working hours, no parking or material storage shall be allowed along the shoulders of any state-maintained roadway.
55. The Encroaching Party and/or their Contractor shall comply with all OSHA requirements. If OSHA visits the work area associated with this encroachment, the District Office shall be notified by the encroaching party immediately if any violations are cited.
56. Any guardrail removed or damaged during construction shall be replaced or repaired to its original condition, meeting current NCDOT standards or as directed by the Division Engineer or their representative.
57. Right of Way monuments disturbed during construction shall be referenced by a registered Land Surveyor and reset after construction.
58. All Traffic signs moved during construction shall be reinstalled as soon as possible to the satisfaction of the Division Engineer or their representative.
59. Detection tape, where required by NCGS § 87-115 through § 87-130 of the Underground Utility Safety and Damage Prevention Act, shall be buried in the trench approximately 1 foot above the installed facility. Where conduit is installed in the right of way and is not of ferrous material, locating tape or detection wire shall be installed with the conduit.
60. All driveways disturbed during construction shall be returned to a state comparable with the condition of the driveways prior to construction.
61. Conformance with driveway permit review should be required in conjunction with this encroachment agreement. In the event there is a conflict between the driveway permit and the encroachment agreement, the District Engineer should resolve the conflict and notify the parties involved.

Engineering

62. All traffic control, asphalt mixes, structures, construction, workmanship and construction methods, and materials shall be in compliance with the most-recent versions of the following resources: *ASTM Standards*, *Manual on Uniform Traffic Control Devices*, *NCDOT Utilities Accommodations Manual*, *NCDOT Standard Specifications for Roads and Structures*, *NCDOT Roadway Standard Drawings*, *NCDOT Asphalt Quality Management System manual*, **and the approved plans.**
63. Regulator stations, metering stations, cathodic test stations, and anode beds are not permitted within NCDOT right of way. Header wires are permitted.
64. Non-Utility Communication and Data Transmission installations (ground mounted type or Small Cell pole-mounted type) must adhere to guidelines in the Utilities Accommodations Manual and, when located within municipal jurisdictions, are subject to review and approval by municipal ordinances and any additional municipal approval for proximity to historic districts and landmarks. All wiring and related telecommunications work shall conform to the latest regulations by the Federal Communications Commission.
65. All wiring and related electrical work shall conform to the latest edition of the National Electrical Safety Code.

66. Prior approval for any blasting must be obtained from the Division Engineer or their representative.

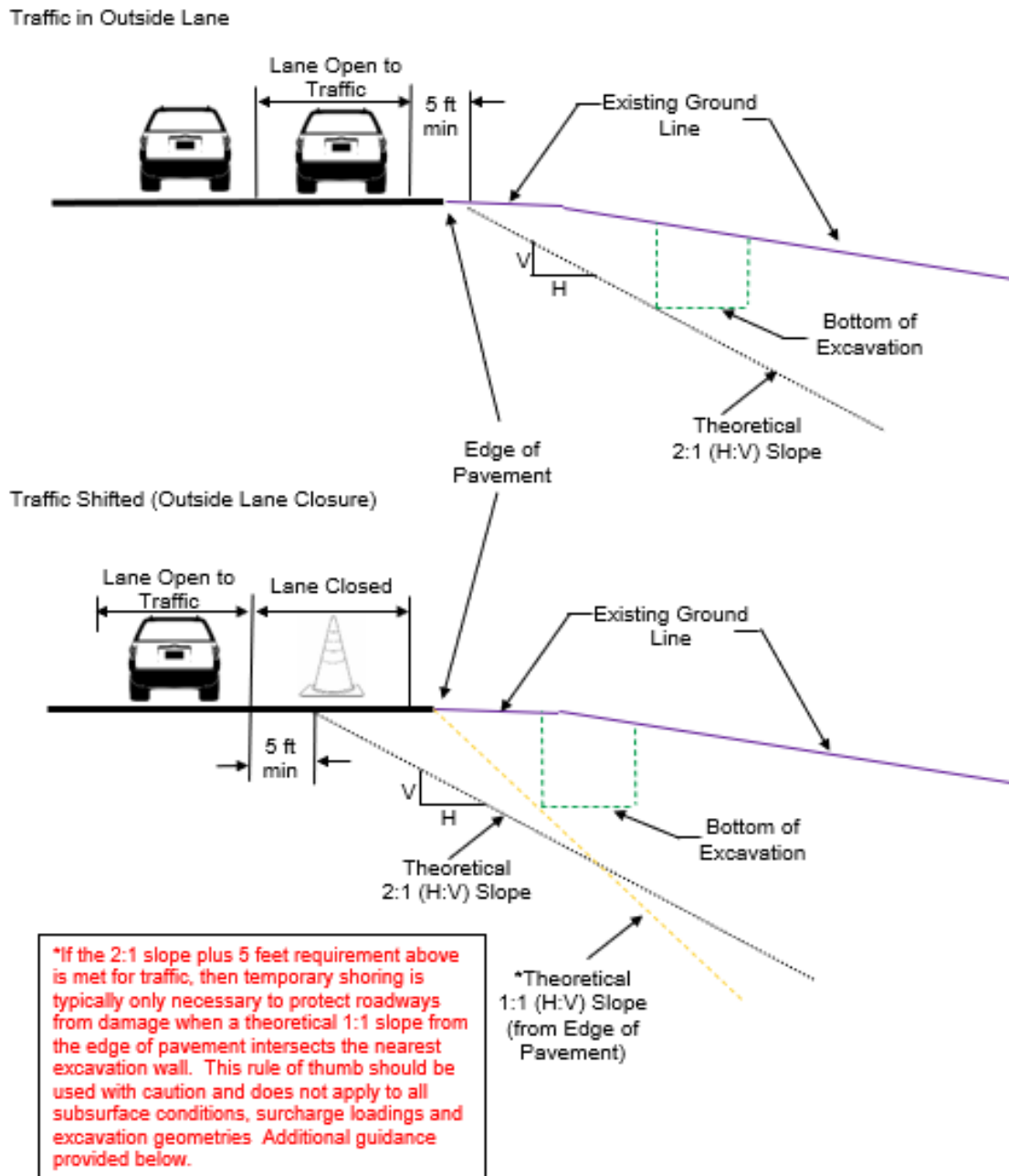
Location within R/W

67. All utility access points, such as manholes, vaults, handholes, splice boxes and junction boxes shall be located as close to the right of way line as possible and shall not be placed in the ditch line, side slopes of the ditches or in the pavement. All manholes, handholes, splice boxes, junction boxes and vaults and covers shall be flush with the ground when located within the vehicle clear zone. Slack loops for telecommunications in industry standard housing units shall be buried a minimum of 18 inches when buried or meet minimum NCDOT vertical and horizontal clearances when installed aerially.
68. Any utility markers, cabinets, pedestals, meter bases and services for meter reading required shall be as close to the Right of Way line as possible. If it is not feasible to install at or near Right of Way line, then written approval shall be obtained from NCDOT prior to installation.
69. Fire Hydrants shall be of the breakaway type. Hydrants shall be placed near the right of way line. In curb and gutter sections with written approval from the District, the hydrants may be placed at 6' behind the back of the curb or minimum 2' back of sidewalk.
70. Hot box (aka ASSE 1060) or Safe-T-Cover type enclosures covering utility main pipe joints, backflow preventers, valves, vent pipes, cross connections, pumps, grinders, irrigation assemblies, transformers, generators, and other similar large appurtenances shall be located outside sight distance triangles and off of the NCDOT Right-of-Way.
71. Sprinkler heads shall be located a minimum of 10 feet from the edge of pavement, edge of shoulder, or back of curb whichever is greater and shall be directed so that water does not spray or drain on the roadway surface, sidewalk, or passing vehicles at any time. Upon completion of the installation and prior to activation of the system, the Encroacher shall contact the District Engineer to schedule a test of the system to verify the spray pattern. Sprinkler systems shall not be operated during periods of high wind or freezing weather, or to the extent that the subgrade adjacent to the pavement structure becomes saturated. NCDOT reserves the right to require immediate termination and removal of any sprinkler system which in its judgement and opinion adversely affects safety, maintenance, or operation of the roadway.
72. Luminaire and/or utility poles and guy wires shall be set as close to the Right of Way line as practical and outside the Clear Zone in accordance with the latest version of the AASHTO Roadside Design Guide (See corresponding attachment) or made breakaway in accordance with the requirements of NCHRP Report 350. Any relocation of the utility poles from the original design due to Clear Zone requirements shall require a re-submittal for the utility design.
73. Luminaire and/or utility poles shall be set a minimum of 5'-6" behind face of any guardrail or otherwise sufficiently protected. However, standard placement may be reduced to 3'-6" behind face of guardrail when posts are spaced 3'-1 1/2", or where speed limit is less than 55 MPH.

Excavation

74. Excavation material shall not be placed on pavement.
75. It is the responsibility of the encroaching party or their contractor to prevent any mud/dirt from tracking onto the roadway. Any dirt which may collect on the roadway pavement from equipment and/or truck traffic on site shall be immediately removed to avoid any unsafe traffic conditions.

76. The utility shall be installed within 5 feet of the right of way line and outside the 5-foot minimum from travel lane plus theoretical 2:1 slope from the edge of pavement to the bottom of the nearest excavation wall for temporary shoring. Temporary shoring is required when a theoretical 2:1 slope from the bottom of excavation will intersect the existing ground line less than 5 feet from the outside edge of an open travel lane as shown in the figure below or when a theoretical 2:1 slope from the bottom of excavation will intersect any existing structure, support, utility, property, etc. to be protected.



If the 2:1 slope plus 5 feet requirement above is met for traffic, then temporary shoring is typically only necessary to protect roadways from damage when a theoretical 1:1 slope from the edge of pavement intersects the nearest excavation wall. This rule of thumb should be used with caution and does not apply to all subsurface conditions, surcharge loadings and excavation geometries.

Situations where this 1:1 slope is not recommended include groundwater depth is above bottom of excavation or excavation is deeper than 10 feet or in [Type B or C soils as defined by OSHA Technical Manual](#). Temporary shoring may be avoided by locating trenches, bore pits, and other excavations far enough away from the open travel lane, edge of pavement and any existing structure, support, utility, property, etc. to be protected.

Temporary shoring shall be designed and constructed in accordance with current NCDOT Standard Temporary Shoring provisions (refer to <https://connect.ncdot.gov/resources/Specifications/Pages/2018-Specifications-and-Special-Provisions.aspx> and see SP11 R002

- a. Temporary excavation shoring, such as sheet piling, shall be installed. The design of the shoring shall include the effects of traffic loads. The shoring system shall be designed and sealed by a licensed North Carolina Professional Engineer. Shoring plans and design calculations shall be submitted to the Division Engineer for review and approval prior to construction. (See NCDOT *Utilities Accommodations Manual* for more information on requirements for shoring plans, design calculations, and subsurface investigation report.) **Trench boxes shall not be accepted as temporary shoring and will not be approved for use in instances where shoring is required to protect the highway, drainage structure, and/or supporting pavement or structure foundation.**
 - b. All trench excavation inside the limits of the theoretical two-to-one slope plus 5 feet requirement, as defined by the policy, shall be completely backfilled and compacted at the end of each construction day. No portion of the trench shall be left open overnight. Any excavation that is not backfilled by the end of the workday must address any safety and traveling public concerns including accommodations for bicycles, pedestrians and persons with disabilities.
 - c. The trench backfill material shall meet the Statewide Borrow Criteria. The trench shall be backfilled in accordance with Section 300-7 of the latest *NCDOT Standard Specifications for Roads and Structures*, which basically requires the backfill material to be placed in layers not to exceed 6 inches loose and compacted to at least 95% of the density obtained by compacting a sample in accordance with AASHTO T99 as modified by DOT.
 - d. At the discretion of the Division Engineer, a qualified NCDOT inspector shall be on the site at all times during construction. The encroaching party shall reimburse NCDOT for the cost of providing the inspector. If NCDOT cannot supply an inspector, the encroaching party (not the utility contractor) should make arrangements to have a qualified inspector, under the supervision of a licensed North Carolina Professional Engineer, on the site at all times. The Professional Registered Engineer shall certify that the utility was installed in accordance with the encroachment agreement and that the backfill material meets the Statewide Borrow Criteria.
 - e. The length of parallel excavation shall be limited to the length necessary to install and backfill one joint of pipe at a time, not to exceed twenty-five (25) feet.
77. All material to a depth of 8 inches below the finished surface of the subgrade shall be compacted to a density equal to at least 100% of that obtained by compacting a sample of the material in accordance with AASHTO T99 as modified by the Department. The subgrade shall be compacted at a moisture content which is approximately that required to produce the maximum density indicated by the above test method. The contractor shall dry or add moisture to the subgrade when required to provide a uniformly compacted and acceptable subgrade. The option to backfill any trenches with dirt or either #57 stone or #78 stone with consolidation with a plate tamp and without a conventional density test may be pursued with the written consent of the District Engineer. If this option is exercised, then roadway ABC stone and asphalt repair as required will also be specified by the District Engineer.

Boring

78. Boring equipment will be provided of a type and size to facilitate boring in the local geologic conditions and shall be able to facilitate the encroachment work.

79. When Horizontal Directional Drilling (HDD) is used, the following stipulations apply:

- a. Use drilling fluids as appropriate for the type soils but use of water alone is prohibited. Pump drilling fluids only while drilling or reaming. Directional boring using jetting with a Bentonite (or equivalent material) slurry is recommended. Monitor flow rates to match the amount leaving the bore hole and do not increase pressure or flow to free stuck drill heads, reamers or piping. Open cutting to retrieve stuck drill heads is not allowed without prior permission from the District Engineer.
- b. The minimum depth shall adhere to the table below for transverse (under non-controlled access, partial controlled access, or limited controlled access roadway) installations and refers to maximum diameter of hole drilled and not the dimension of the carrier or encasement pipe.

<u>Diameter of Drilled Hole (Backream)</u>	<u>Minimum Depth of Cover</u>
2" to 6"	5 feet
>6" to 15"	12 times hole diameter (e.g. 6-inch hole means 6 feet minimum depth)
>15" to 36"	15 feet or greater

- c. Under fully controlled access roadway installations, the minimum depth for transverse crossings shall be 15 feet under any pavement (ramps or thru lanes)
- d. An overbore (backream diameter) shall not be more than 1.5 times the outside diameter of the pipe or encasement under any highway for pipes 12 inches in diameter or less. For pipes with outer diameter larger than 12 inches, the overbore may be no larger than outer diameter of pipe plus 6 inches. An overbore exceeding 1.5 times greater than the outside diameter of the pipe or encasement may be considered if the encroachment agreement includes a statement signed and sealed by a licensed North Carolina Professional Engineer indicating that an overbore in excess of 1.5 times the outside diameter of the pipe or encasement will appropriately arch and no damage will be done to the pavement or sub-grade.
- e. Directional boring is allowed beneath embankment material in naturally occurring soil.
- f. Any parallel installation utilizing the directional boring method shall be made at a minimum depth of three (3') feet (cover) below the ground surface and outside the theoretical 1:1 slope from the existing edge of pavement except where the parallel installation crosses a paved roadway.
- g. All directional bores shall maintain ten (10) feet minimum (clear) distance from the nearest part of any structure, including but not limited to bridges, footings, pipe culverts or box culverts. Directional bores are not allowed beneath bridge footings, culvert wingwall footings, slope protection or retaining walls.
- h. The tip of the drill string shall have a cutter head.
- i. Detection wire shall be installed with non-ferrous material.
- j. HDPE pipe installed by directional boring shall not be connected to existing pipe or fittings for one (1) week from the time of installation to allow tensional stresses to relax.

Aerial clearances

80. Vertical clearance of overhead power and communication lines shall meet the National Electrical Safety Code requirements except the minimum vertical clearance shall be 18' for crossings over NCDOT roadways (24' over Fully Controlled Access roadways) and 16' for parallel installations.
81. When applicable for aerial installations, in relation to the bridge, the utility line shall be located with minimum clearances as indicated in Figure 3-3 in the Utilities Accommodations Manual for NCDOT **Required Clearances for Aerial Installations by Encroachment Near Bridge Structures.**

Pavement Detail and Repair

82. The paving of this roadway shall be in accordance with the latest version of NCDOT Standard Specifications, Sections 610, 1012 and 1020. The Contractor shall follow all procedures of the latest Quality Management System (QMS) Asphalt Manual for asphalt pavement - Maintenance Version (see <https://connect.ncdot.gov/resources/Materials/MaterialsResources/Forms/Default.aspx>) to find the most recent version. The Contractor must adhere to all testing requirements and quality control requirements specified. The Contractor shall contact the NCDOT Division QA Supervisor prior to producing plant mix and make the Supervisor aware that the mix is being produced for a future NCDOT road. Contact the District Engineer to determine the NCDOT Division QA Supervisor. Only NCDOT approved mix designs will be acceptable. A Quality Control Plan shall be submitted (as Directed by the District Engineer) to the District Engineer's Office prior to asphalt production utilizing form QMS-MV1. Failing mixes and/or densities are subject to penalties including monetary payments or removal and replacement. To minimize traffic queuing in construction areas, the possibility of traffic detours may be considered when working on high traffic routes even if traffic control is used. The District Engineer may require traffic detours.
83. When paving beyond utility installation is involved, a Roadway certification report sealed by a Professional Engineer shall be submitted to the District Engineer's office indicating the following:
 - Pavement thickness by type
 - Pavement density, core and/or test locations
 - Base thickness
 - Base density
 - Subgrade densityTest frequency and method shall be in conformance with the NCDOT *Materials and Tests Manual*. Test must be performed by a Certified Technician including name and Certification number on report.
84. "Potholing" (or "daylighting") pavement cores to expose existing utilities shall be made with a circular minimum 6" to maximum 18" diameter "test" hole to a maximum depth of 12 inches. Pavement core locations shall not be placed in the wheel path whenever possible. Vacuum excavation shall be utilized to expose underground utilities below pavement subgrade. Displaced dirt and rock debris must be suctioned away from the excavation area through a large hose to a vacuum truck and disposed by the encroaching party. Avoid using mechanized equipment in the proximity of all exposed underground utility lines. Pavement cores shall be repaired within the same working day. The pavement core shall be retained and evaluated for reuse to fill the core hole.

The excavation shall be backfilled and compacted with select material to the bottom of the existing pavement structure or as indicated by the District Engineer. If in good condition, the retained core shall be placed in the hole and secured with a waterproof, mechanical joint. If the pavement core is damaged and cannot be re-used, the core may be replaced with the surface mix, S9.5B. The asphalt patch shall match the thickness of the existing asphalt or four inches, whichever is greater and the use

of NCDOT approved sealant applied to the cracks to fill the voids. All materials must be listed on the NCDOT Approved Products List (APL) found at: <https://apps.ncdot.gov/vendor/approvedproducts/>.

85. The minimum pavement design for pavement repair shall be according to the most recent version of NCDOT Standard Drawing 654.01 (<https://connect.ncdot.gov/resources/Specifications/Pages/default.aspx>). The version valid in 2024 through 2030 is located at <https://connect.ncdot.gov/resources/Specifications/2024StandardRdwyDrawings/Div%206%20Combi ned.pdf>. The pavement design shall include a mechanical overlay extent to be a minimum of 25 feet each side of the pavement repair area OR as directed by the District Engineer.
86. Pavement cuts shall be repaired the same day the cuts are made unless an asphalt patch cannot be accomplished the same day due to material availability or time restrictions. When the asphalt patch is not feasible, the following apply:
 - a. The pavement cut shall be filled to the surface with ABC stone or Flowable Fill per NCDOT's Standards and Specifications.
 - b. Once the cut is filled, a minimum ¾-inch steel plate shall be placed and pinned to prevent moving. Plates shall be designed large enough to span a minimum of 1-foot on all sides on the pavement cut.
 - c. When flowable fill is used, it shall cure for 24 hours prior to any asphalt material placement. Flowable fill bleed water shall not be present during paving operations. Paving shall not cause damage (shoving, distortion, pumping, etc.) to the flowable fill.
 - d. Install and leave "BUMP" signs according to MUTCD until the steel plate has been removed. Once the flowable fill has cured, remove the steel plate, and mill/fill according to the directions of the District Engineer.
 - e. All pavement cuts must be sealed with NCDOT approved sealant to prevent future pavement separation or cracking.
87. Any pavement damaged because of settlement of the pavement or damaged by equipment used to perform encroachment work, shall be re-surfaced to the satisfaction of the District Engineer. This may include the removal of pavement and a 50' mechanical overlay. All pavement work and pavement markings (temporary and final) are the responsibility of the Encroaching Party.

Post Construction

Close out/ Inspection

88. The Encroaching party shall notify the District Engineer's office within 2 business days after construction is complete. The District Engineer may perform a construction inspection. Any deficiencies may be noted and reported to the encroaching party to make immediate repairs or resolve any issues to restore the right-of-way to a similar condition prior to construction, including pavement, signage, traffic signals, pavement markings, drainage, structures/pipes, or other highway design features.
89. At the discretion of the District Engineer, a final inspection report may be provided to the encroaching party upon satisfactory completion of the work.
90. When a performance bond is required, a written acknowledgement of the completed work by the District Engineer's office begins the one-year warranty period associated with the performance bond.

91. If the actual construction differs from the approved plans associated with this encroachment, a copy of “as-built” plans shall be submitted to the District Engineer’s office in a PDF format and in a current ESRI GIS format within 4 weeks of construction.
92. The encroaching party shall provide the North Carolina Turnpike Authority (NCTA) with an electronic copy of coordinate correct as-built plans within two weeks of installation completion. Failure to provide the as-built plans may jeopardize future approvals within NCTA right of way.
93. A copy (in PDF format) of the completed ground water analysis shall be given to the District Engineer, including detailed drawings of the “as-built” wells showing location, depth and water level in well.

ATTACHMENT FORM

NOTIFICATION FOR UTILITY / NON-UTILITY ENCROACHMENT WITHIN NCDOT R/W

Instructions for use:

This form must be completed in its entirety and submitted directly to the designated personnel in the District Engineer's office via email, fax or hand delivery a minimum of one week prior to construction for the encroachment. If the designated NCDOT personnel names are unknown by the person completing this form, please contact the District Engineer's office to determine that contact info.

Date: _____ Submitted by Name: _____

To: District Personnel Name: Caitlin Spear
District Personnel Email: caspear@ncdot.gov
District Fax No.: (252) 621-6410

This notification is to inform you that we (encroaching party or their contractor) will begin construction work on the following project in a minimum of one week.

Encroachment number

(assigned by NCDOT) for the project: _____

Construction start date: _____

Approximate ending date: _____

Contact NCDOT inspector a minimum of 72 hrs. in advance to set-up Preconstruction meeting in the District Engineer's office or other location as directed by the District Engineer

Preconstruction meeting date & time: _____

Preconstruction meeting address: _____

Type of project: _____
[Examples: power, telecommunication, water, sewer, gas, petroleum, other (describe)]

Contact Info for this project:

Contractor Company Name: _____

Contractor Contact Name: _____

Contractor Phone Number: _____

Contractor Email: _____

NCDOT Utility Inspector Name: _____

NCDOT Utility Inspector Phone: _____

NCDOT Utility Inspector Email: _____

NCDOT Utility Project Manager Name: _____

NCDOT Utility Project Manager Phone: _____

NCDOT Utility Project Manager Email: _____

Clear - Zone Table

TABLE 3.1 (Cont'd)

[U.S. Customary Units]

DESIGN SPEED	DESIGN ADT	FORESLOPES			BACKSLOPES		
		1V:6H or flatter	1V:5H TO 1V:4H	1V:3H	1V:3H	1V:5H TO 1V:4H	1V:6H or flatter
40 mph or less	UNDER 750	7 - 10	7 - 10	**	7 - 10	7 - 10	7 - 10
	750 - 1500	10 - 12	12 - 14	**	10 - 12	10 - 12	10 - 12
	1500 - 6000	12 - 14	14 - 16	**	12 - 14	12 - 14	12 - 14
	OVER 6000	14 - 16	16 - 18	**	14 - 16	14 - 16	14 - 16
45-50 mph	UNDER 750	10 - 12	12 - 14	**	8 - 10	8 - 10	10 - 12
	750 - 1500	14 - 16	16 - 20	**	10 - 12	12 - 14	14 - 16
	1500 - 6000	16 - 18	20 - 26	**	12 - 14	14 - 16	16 - 18
	OVER 6000	20 - 22	24 - 28	**	14 - 16	18 - 20	20 - 22
55 mph	UNDER 750	12 - 14	14 - 18	**	8 - 10	10 - 12	10 - 12
	750 - 1500	16 - 18	20 - 24	**	10 - 12	14 - 16	16 - 18
	1500 - 6000	20 - 22	24 - 30	**	14 - 16	16 - 18	20 - 22
	OVER 6000	22 - 24	26 - 32 *	**	16 - 18	20 - 22	22 - 24
60 mph	UNDER 750	16 - 18	20 - 24	**	10 - 12	12 - 14	14 - 16
	750 - 1500	20 - 24	26 - 32 *	**	12 - 14	16 - 18	20 - 22
	1500 - 6000	26 - 30	32 - 40 *	**	14 - 18	18 - 22	24 - 26
	OVER 6000	30 - 32 *	36 - 44 *	**	20 - 22	24 - 26	26 - 28
65-70 mph	UNDER 750	18 - 20	20 - 26	**	10 - 12	14 - 16	14 - 16
	750 - 1500	24 - 26	28 - 36 *	**	12 - 16	18 - 20	20 - 22
	1500 - 6000	28 - 32 *	34 - 42 *	**	16 - 20	22 - 24	26 - 28
	OVER 6000	30 - 34 *	38 - 46 *	**	22 - 24	26 - 30	28 - 30

* Where a site specific investigation indicates a high probability of continuing crashes, or such occurrences are indicated by crash history, the designer may provide clear-zone distances greater than the clear-zone shown in Table 3.1. Clear zones may be limited to 30 ft for practicality and to provide a consistent roadway template if previous experience with similar projects or designs indicates satisfactory performance.

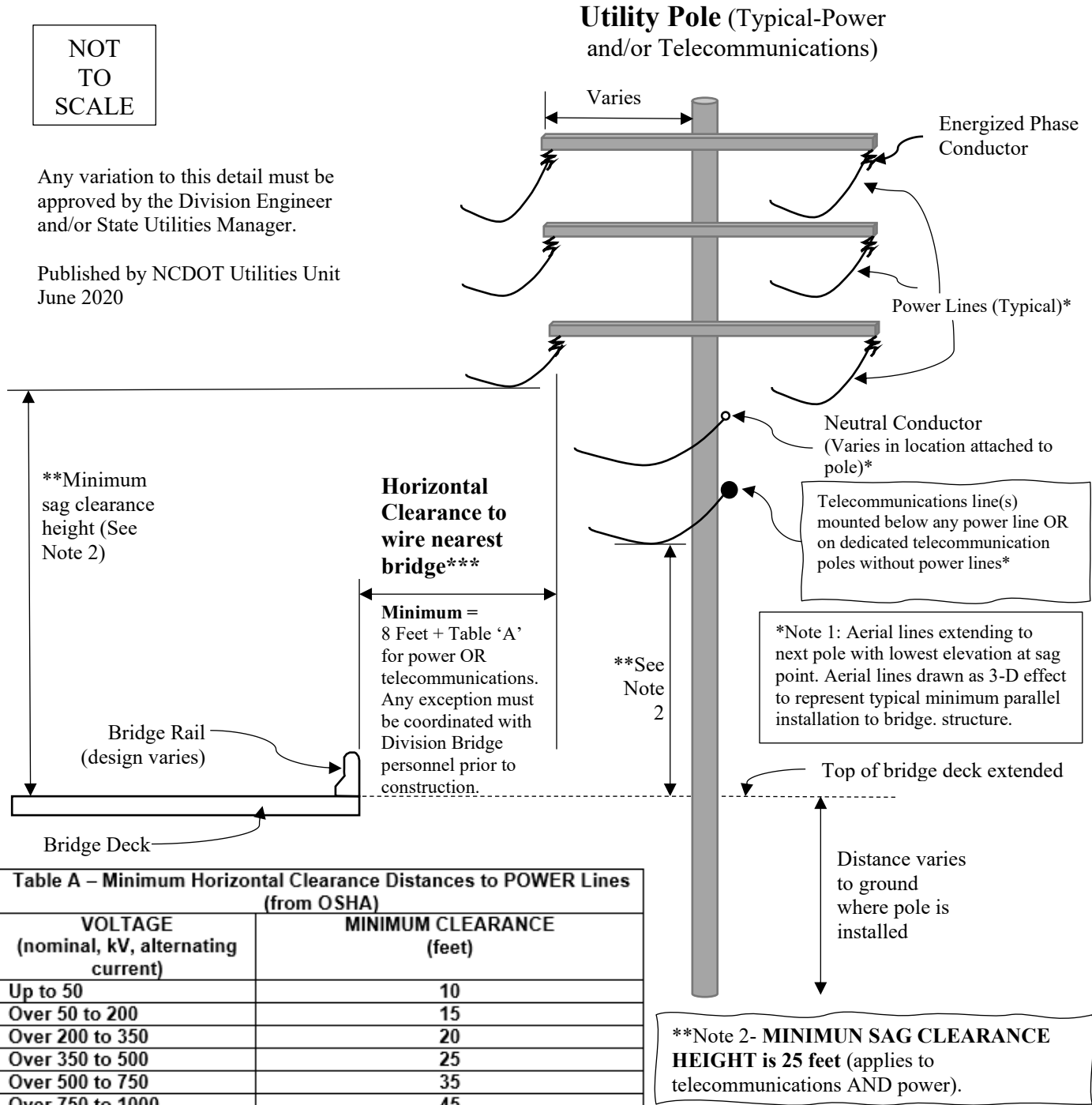
** Since recovery is less likely on the unshielded, traversable 1V:3H slopes, fixed objects should not be present in the vicinity of the toe of these slopes. Recovery of high-speed vehicles that encroach beyond the edge of the shoulder may be expected to occur beyond the toe of slope. Determination of the width of the recovery area at the toe of slope should take into consideration right-of-way availability, environmental concerns, economic factors, safety needs, and crash histories. Also, the distance between the edge of the through traveled lane and the beginning of the 1V:3H slope should influence the recovery area provided at the toe of slope. While the application may be limited by several factors, the foreslope parameters which may enter into determining a maximum desirable recovery area are illustrated in Figure 3.2.

NCDOT Required Clearances for Aerial Installations Near Bridge Structures

NOT
TO
SCALE

Any variation to this detail must be approved by the Division Engineer and/or State Utilities Manager.

Published by NCDOT Utilities Unit
June 2020



VOLTAGE (nominal, kV, alternating current)	MINIMUM CLEARANCE (feet)
Up to 50	10
Over 50 to 200	15
Over 200 to 350	20
Over 350 to 500	25
Over 500 to 750	35
Over 750 to 1000	45
Over 1000	As established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution

***Note 3: HORIZONTAL CLEARANCE EXCEPTION. If vertical sag clearance height for power above bridge deck is \geq 45 feet AND voltage is \leq 350kV, then Minimum Horizontal Clearance may be reduced to 3 feet. Any telecommunications attachment to power pole allowed in this exception must have a minimum 25 feet sag clearance height above bridge deck.

DEPARTMENT OF TRANSPORTATION

THREE PARTY RIGHT OF WAY
ENCROACHMENT AGREEMENT ON
PRIMARY AND SECONDARY SYSTEM

-AND-

South Spot, LLC
2522 S. Croatan Hwy. Ste 1C, Nags Head, NC 27959

-AND-

County of Currituck, North Carolina
153 Courthouse Rd., Currituck, NC 27929

E011-027-26-00219

THIS AGREEMENT, made and entered into this the 22nd day of May, 2026, by and between the Department of Transportation, party of the first part; and South Spot, LLC party of the second part; and County of Currituck, North Carolina party of the third part,

WITNESSETH

THAT WHEREAS, the party of the second part desires to encroach on the right of way of the public road designated as Route(s) US Hwy 158 (Caratoke Hwy.), located Approx. 1,480 feet North from the intersection with SR 1111 (S. Spot Road) towards Grandy.

with the construction and/or erection of: Installation of water main tap and extension to serve a proposed subdivision.

WHEREAS, it is to the material advantage of the party of the second part to effect this encroachment, and the party of the first part in the exercise of authority conferred upon it by statute, is willing to permit the encroachment within the limits of the right of way as indicated, subject to the conditions of this agreement;

NOW, THEREFORE, IT IS AGREED that the party of the first part hereby grants to the party of the second part the right and privilege to make this encroachment as shown on attached plan sheet(s), specifications and special provisions which are made a part hereof upon the following conditions, to wit:

That the installation, operation, and maintenance of the above described facility will be accomplished in accordance with the party of the first part's latest UTILITIES ACCOMMODATIONS MANUAL, and such revisions and amendments thereto as may be in effect at the date of this agreement. Information as to these policies and procedures may be obtained from the Division Engineer or State Utilities Manager of the party of the first part.

That the said party of the second part binds and obligates himself to install and maintain the encroaching facility in such safe and proper condition that it will not interfere with or endanger travel upon said highway, nor obstruct nor interfere with the proper maintenance thereof, to reimburse the party of the first part for the cost incurred for any repairs or maintenance to its roadways and structures necessary due to installation and existence of the facilities of the party of the second part, and if at any time the party of the first part shall require the removal of or changes in the location of the said facilities, that the said party of the second part binds himself, his successors and assigns, to promptly remove or alter the said facilities, in order to conform to the said requirement, without any cost to the party of the first part.

That the party of the second part agrees to provide during construction and any subsequent maintenance proper signs, signal lights, flagmen and other warning devices for the protection of traffic in conformance with the latest Manual on Uniform Traffic Control Devices for Streets and Highways and Amendments or Supplements thereto. Information as to the above rules and regulations may be obtained from the Division Engineer of the party of the first.

That the party of the second part hereby agrees to indemnify and save harmless the party of the first part from all damages and claims for damage that may arise by reason of the installation and maintenance of this encroachment.

That the party of the second part agrees to restore all areas disturbed during installation and maintenance to the satisfaction of the Division Engineer of the party of the first part. The party of the second part agrees to exercise every reasonable precaution during construction and maintenance to prevent eroding of soil; silting or pollution of rivers, streams, lakes, reservoirs, other water impoundments, ground surfaces or other property; or pollution of the air. There shall be compliance with applicable rules and regulations of the North Carolina Division of Environmental Management, North Carolina Sedimentation Control Commission, and with ordinances and regulations of various counties, municipalities and other official agencies relating to pollution prevention and control. When any installation or maintenance operation disturbs the ground surface and existing ground cover, the party of the second part agrees to remove and replace the sod or otherwise reestablish the grass cover to meet the satisfaction of the Division Engineer of the party of the first part.

That the party of the second part agrees to assume the actual cost of any inspection of the work considered to be necessary by the Division Engineer of the party of the first part.

That the party of the second part agrees to have available at the construction site, at all times during construction, a copy of this agreement showing evidence of approval by the party of the first part. The party of the first part reserves the right to stop all work unless evidence of approval can be shown.

Provided the work contained in this agreement is being performed on a completed highway open to traffic; the party of the second part agrees to give written notice to the Division Engineer of the party of the first part when all work contained herein has been completed. Unless specifically requested by the party of the first part, written notice of completion of work on highway projects under construction will not be required.

That in the case of noncompliance with the terms of this agreement by the party of the second part, the party of the first part reserves the right to stop all work until the facility has been brought into compliance or removed from the right of way at no cost to the party of the first part.

That it is agreed by both parties that this agreement shall become void if actual construction of the work contemplated herein is not begun within one (1) year from the date of authorization by the party of the first part unless written waiver is secured by the party of the second part from the party of the first part.

During the performance of this contract, the second party, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor"), agrees as follows:

- a. **Compliance with Regulations:** The contractor shall comply with the Regulations relative to nondiscrimination in Federally-assisted programs of the U. S. Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.
- b. **Nondiscrimination:** The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.
- c. **Solicitations for Subcontracts, including Procurements of Materials and Equipment:** In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.
- d. **Information and Reports:** The contractor shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Department of Transportation or the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the Department of Transportation, or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain the information.
- e. **Sanctions for Noncompliance:** In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the Department of Transportation shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to,
 - (1) withholding of payments to the contractor under the contract until the contractor complies, and/or
 - (2) cancellation, termination or suspension of the contract, in whole or in part.
- f. **Incorporation of Provisions:** The contractor shall include the provisions of paragraphs "a" through "F" in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the Department of Transportation or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the Department of Transportation to enter into such litigation to protect the interests of the State, and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

That when title to the subject that constitutes the aforesaid encroachment passes from the party of the second part and vests in the party of the third part, the party of the third part agrees to assume all responsibilities and rights and to perform all obligations as agreed to herein by the party of the second part.

R/W (166) : Party of the Second Part certifies that this agreement is true and accurate copy of the form R/W (166) incorporating all revisions to date.

IN WITNESS WHEREOF, each of the parties to this agreement has caused the same to be executed the day and year first above written.

WITNESS:

David Kaufman

WITNESS:

Jessica Timmons

Jessica Timmons
Currituck County

DEPARTMENT OF TRANSPORTATION

DocuSigned by:

BY:

Caitlin A. Spear

DISTRICT ENGINEER

930880FAC40F45A...

South Spot, LLC

Peter Kauffman

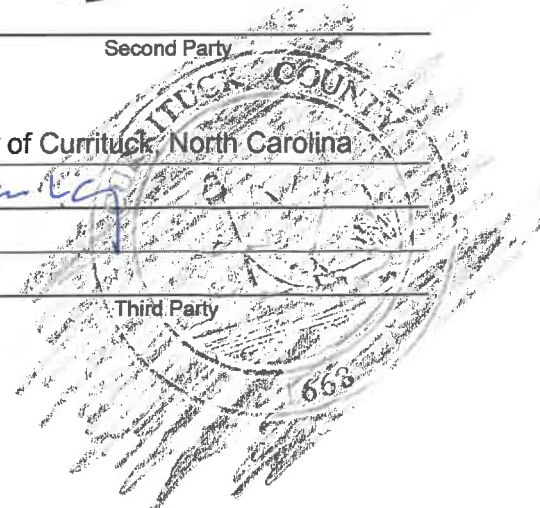
Peter Kauffman, Manager

Second Party

County of Currituck, North Carolina

Felicia C. C.

Third Party



June 2, 2026

Currituck County Planning
Currituck Historic Courthouse
153 Courthouse Road, Suite 302
Currituck, North Carolina 27929

Re: Stormwater Management Design Submittal
Major Stormwater Plan
Seaside Meadows Subdivision
Poplar Branch, Currituck County, NC

On behalf of South Spot, LLC, we hereby submit for your review a Major Stormwater Plan application package for the stormwater management system design for the Seaside Meadows Subdivision.

This is an electronic submission (via combined .pdf document). The following items are included in this .pdf and shall be considered part of this submittal package:

1. Major Stormwater Plan Form SW-002
2. Stormwater Management Plan Narrative
3. EPA SWMM Model Report (Presented in Appendix D of the SWM Narrative)
4. 24" x 36" EPA SWMM Model Existing Conditions Schematic Plan (Electronic Copy only)
5. 24" x 36" EPA SWMM Model Proposed Conditions Schematic Plan
6. NCDEQ SWM Permit Application Package (incl. Wet Basin Supplement & Wet Basin O&M Agreement)

This package is being submitted with a matching Construction Plans TRC Submittal, and so additional Construction Plans are not included under this transmittal (you will receive your plans under the TRC submittal).

At your earliest convenience, please review the attached information for compliance. If you have any questions, or if you require any additional information, please do not hesitate to contact me at (252) 202-3803.

Sincerely,


David A. Deel, P.E.

Encl: as stated



Major Stormwater Plan Form SW-002

OFFICIAL USE ONLY:
Permit Number: _____
Date Filed: _____
Date Approved: _____

Contact Information

APPLICANT:	PROPERTY OWNER:
Name: <u>South Spot, LLC</u>	Name: <u>South Spot, LLC & MA Shoes, LLC</u>
Address: <u>PO Box 633</u>	Address: <u>PO Box 633</u>
<u>Nags Head, NC 27959</u>	<u>Nags Head, NC 27959</u>
Telephone: <u>(941) 552-6834</u>	Telephone: <u>(941) 552-6834</u>
E-Mail Address: <u>pkauffman@ospavpartners.com</u>	E-Mail Address: <u>pkauffman@ospavpartners.com</u>

Property Information

Physical Street Address: South Spot Road

Parcel Identification Number(s): 0124-000-036A-0000, 0124-000-036B-0000, 0124-000-0028-0000, 0124-000-0037-0000

FEMA Flood Zone Designation: X Zone

Request

Project Description: 56 Lot Residential Subdivision

Total land disturbance activity: 61.5 Ac. sf Calculated volume of BMPs: 559,661 sf

Maximum lot coverage: 641,242 sf Proposed lot coverage: 641,242 sf

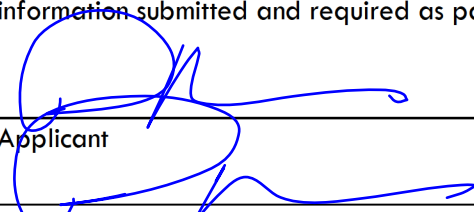
TYPE OF REQUEST

- Major subdivision (10-year, 24-hour rate)
- Major site plan (5-year, 24-hour rate)

METHOD USED TO CALCULATE PEAK DISCHARGE

- Rational Method
- NRCS Method (TR-55 and TR-20)
- Simple volume calculation for small sites (less than 10 acres)
- Alternative stormwater runoff storage analysis
- Downstream drainage capacity analysis
- EPA SWMM

I hereby authorize county officials to enter my property for the purpose of determining compliance. All information submitted and required as part of this process shall become public record.



 Applicant

 Property Owner(s)

6/2/26

 Date

6/2/26

 Date

***NOTE:** Form must be signed by the owner(s) of record, contract purchaser(s), or other person(s) having a recognized property interest. If there are multiple property owners/applicants a signature is required for each.

Stormwater Management Plan Narrative

Meadows Subdivision
Residential Subdivision
Powells Point
Currituck County Submittal
February 14, 2026



General

The Meadows Subdivision project is a proposed Residential Subdivision to be located on an area of (+/-) 66.75 acres across four parcels located to the east of US 158 and to the north of South Spot Road in Powells Point, Currituck County, NC. The western portion of the property (entrance road) and all areas west of Tig-Ma-Tar Ditch will be permitted under a NCDEQ Low Density Stormwater Permit. Additionally, the rest of the subdivision BUA (entire developed area east of the entrance road) will be permitted under a NCDEQ High Density Stormwater Permit. The total proposed impervious coverage will be 22.12% for the project.

The following narrative will detail the proposed Stormwater Management design for the Meadows Subdivision development and demonstrate compliance with the Currituck County Peak Flow Mitigation requirements.

Summary of Existing Conditions

The project site consists of an area of 65.99 acres located to the east of US 158 and to the north of South Spot Road in Powells Point, Currituck County, NC. The project area currently consists of a wooded area surrounded by mostly open land with an existing golf course to the south and a mix of residential and manufacturing development to the north. Runoff from the project site and the surrounding area is drained via overland flow into the Tig-Ma-Tar-Ditch which runs primarily north to south. Soil across the site consists primarily of loamy sand.

Summary of Proposed Conditions

The Meadows Subdivision proposes to construct 55 single family residential lots with associated subdivision road and infrastructure improvements. Runoff from the proposed subdivision roads, lots, and open space will be collected via a storm sewer system as well as grassed swales running through and around the project site all conveying to a wet pond in the southwest corner of the developed area.

For the outfall, modeled post-construction runoff resulting from a 10-yr, 24 hr storm event will be retained and released at a peak flow rate which does not exceed the modeled 2-yr, 24 hr peak runoff rate for the site in a theoretical wooded pre-development condition. Post-construction runoff resulting from a modeled 100-yr, 24 hr storm event will be retained and released at a peak flow rate which does not exceed the modeled pre-construction 100-yr, 24 hr peak runoff rate for the site for the actual existing conditions.

Stormwater Collection, Treatment, Storage and Disposal

Collection

The stormwater runoff will be collected and directed to the wet pond via a combination of site grading, curb & gutter, storm piping, and conveyance swales.

Treatment

Runoff from the drainage area will enter the basin primarily via the proposed storm sewer and proposed swales. Pre-treatment for the storm sewer is provided via drop inlet grates, where large particulates and debris will gather. Pre-treatment for the swales is provided via filtration from swale vegetation. A small portion of the runoff will enter the basin via overland flow. Pre-treatment for these areas is provided via filtration through the overland vegetation.

Initial treatment will be provided within the Pond forebays, where particulates will settle out and filtration will occur as water passes over the vegetated forebay weir.

Primary and secondary treatment will be provided in the Wet Pond main pool, via settling of particulates, filtration within the vegetated shelf and grassed side-slopes, biological uptake of nutrients by the vegetated shelf and grassed side-slopes, and infiltration into the pond subsurface.

Storage

Currituck County's Stormwater Ordinance requires that the runoff rate from the 10-yr, 24-hr storm in the post-construction condition not exceed the runoff rate from the 2-yr, 24-hr storm in the pre-construction, theoretical fully wooded condition. In order to demonstrate compliance and to adequately account for off-site, downstream factors, an EPA SWMM Model was constructed of the entire drainage shed. This model & peak mitigation design are discussed below.

Disposal

A small amount of the runoff will be infiltrated or be disposed of via infiltration and evapotranspiration. The primary source of disposal, however, will be via discharge to the outfall via the Outlet Control Structure.

Peak Flow Mitigation

Currituck County's Stormwater Ordinance requires that the runoff rate from the 10-yr, 24-hr storm in the post-construction condition not exceed the runoff rate from the 2-yr, 24-hr storm in the pre-construction, theoretical fully wooded condition. In order to demonstrate compliance and to adequately account for off-site, downstream factors and interconnection of outfalls via internal farm ditches, an EPA SWMM Model was constructed of the entire drainage shed.

Pre-development peak flow was calculated utilizing the NRCS (SCS) Method within EPA SWMM as per the Currituck Stormwater Ordinance. Due to the large number of drainage areas which were individually analyzed, the results are presented in excel spreadsheet format in the Appendix to this narrative rather than on the County's forms. Pre-development & post-development peak flows calculated for the link of interest are as follows:

E017-E016 Culvert link immediately downstream of the wet pond's control outlet structure and all ancillary uncontrolled flows from the site.

2yr-10yr Analysis (Currituck County Req'mt):

	2yr-10yr Pre* (cfs)	10yr Post (cfs)
E017-E016	2.68	2.52

100yr Analysis (Additional Flow Check):

	100yr Pre (cfs)	100yr Post (cfs)
E017-E016	13.97	11.6

* "2-yr / 10yr Pre" results reported represent results from the model with the 10-yr rainfall event applied to all off-site drainage areas and the 2-yr rainfall event applied to the Project Site

Soils

Information collected on site indicates that the soils found throughout this site are composed primarily of sandy loam. These soil types will have moderately high to high permeability. These findings generally correlate with the description mapped and discussed in the United States Department of Agriculture, Soil Conservation Service, Soil Survey of Currituck County, North Carolina, which map the soil for this site as follows:

BoA – Bojac loamy sand, Permeability is high

Bp – Borrow pit, Permeability is high to very high

Cb – Conaby muck, Permeability is moderately high to high

CnA – Conetoe loamy sand, Permeability is moderately high to high

Ds – Dragston loamy fine sand, Permeability is high

Mu – Munden loamy sand, moderately high to high

Pt – Portsmouth fine sandy loam, Permeability is moderately high to high

A soils report has been included in the appendix of this narrative.

Calculations

A set of Drainage Area Tabulations & EPA SWMM Model Report can be found within appendix portion of this narrative.

Conclusions

The proposed stormwater management plan for this site will handle the difference in runoff between the pre-development 2-yr, 24hr and the post-development 10-yr, 24 hr storm events, as prescribed by the Currituck County Stormwater Management Ordinance. Additionally, the design mitigates peak flows from the 100-yr, 24 hr storm events.

This proposed design will more than adequately serve the stormwater management requirements of this site.

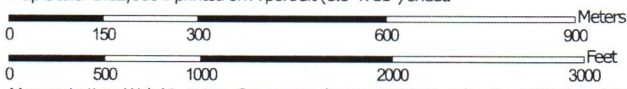
APPENDIX A
Aerial GIS Imagery

APPENDIX B
Protocol Sampling Soils Report

Custom Soil Resource Report Soil Map



Map Scale: 1:12,000 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge ticks: UTM Zone 18N WGS84



United States
Department of
Agriculture

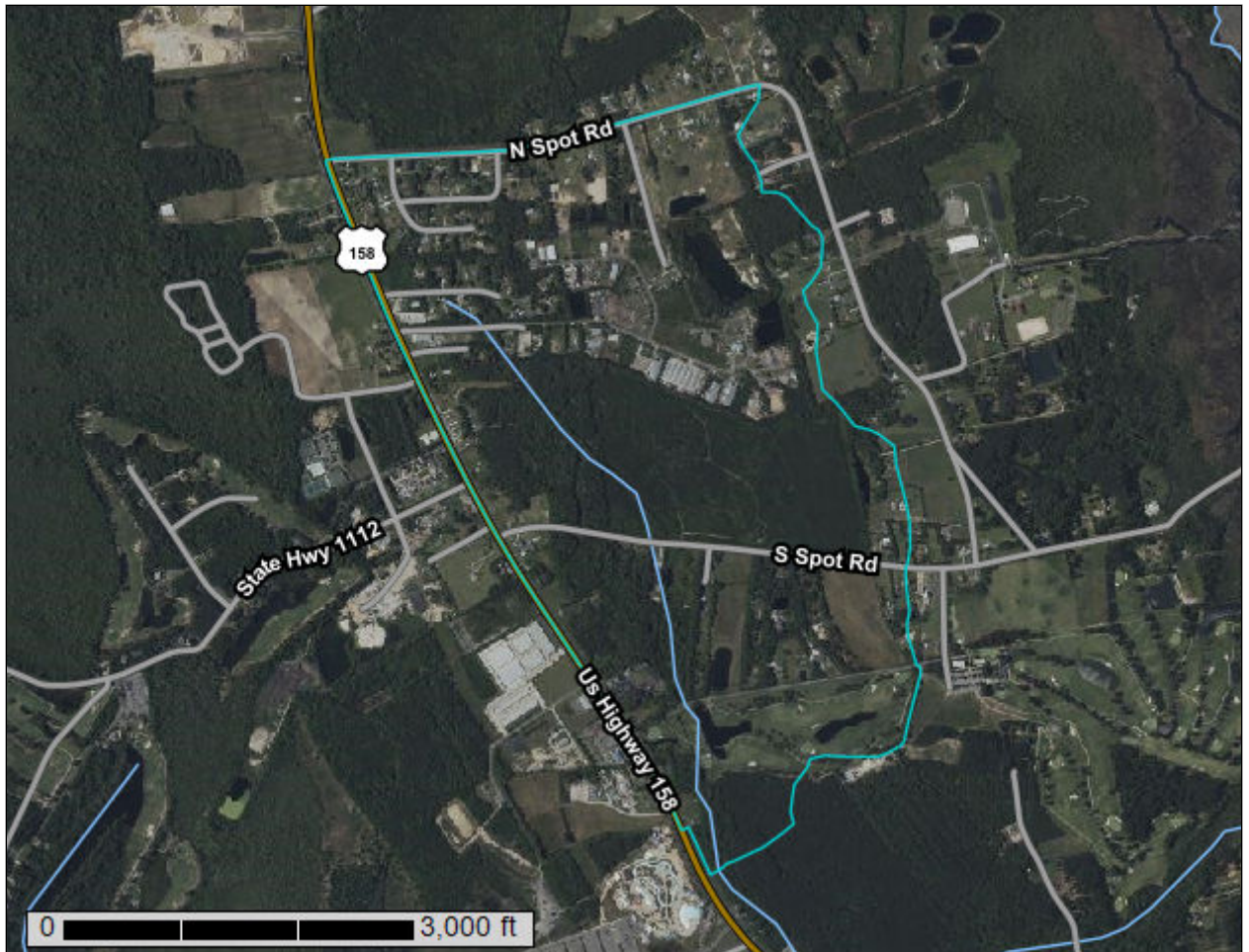
NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Currituck County, North Carolina

The Meadows Subdivision



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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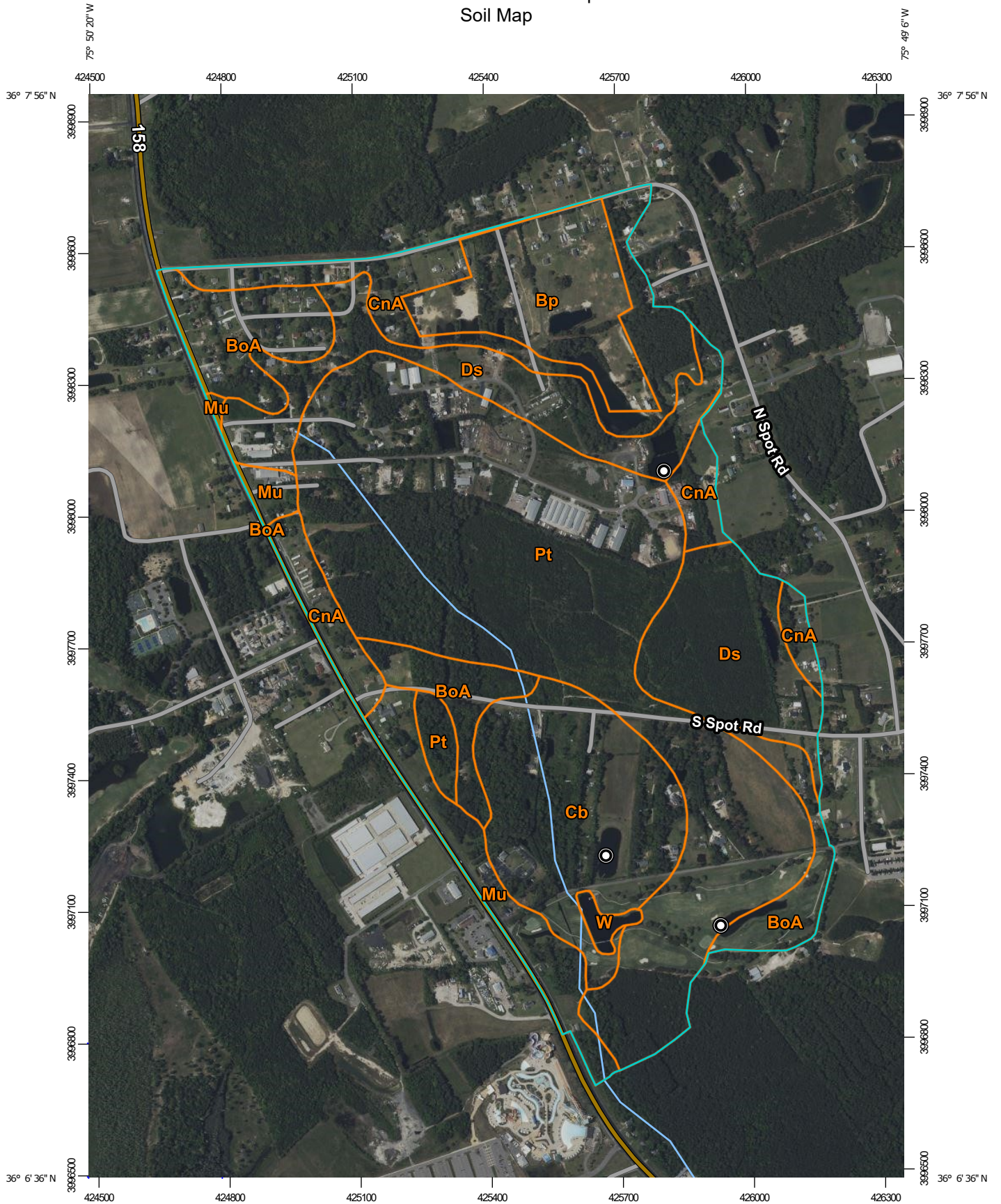
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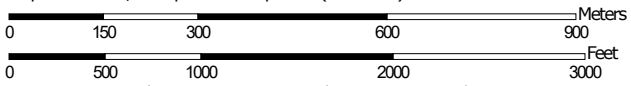
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Map Scale: 1:12,000 if printed on A portrait (8.5" x 11") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)




















Soils







 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Currituck County, North Carolina
 Survey Area Data: Version 25, Sep 2, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 18, 2022—May 31, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BoA	Bojac loamy sand, 0 to 3 percent slopes	41.7	9.6%
Bp	Borrow pit	33.8	7.8%
Cb	Conaby muck	52.2	11.9%
CnA	Conetoe loamy sand, 0 to 3 percent slopes	47.8	10.9%
Ds	Dragston loamy fine sand	65.8	15.1%
Mu	Munden loamy sand	23.5	5.4%
Pt	Portsmouth fine sandy loam	169.5	38.8%
W	Water	2.2	0.5%
Totals for Area of Interest		436.5	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

Custom Soil Resource Report

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Currituck County, North Carolina

BoA—Bojac loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 3rnb
Landscape: Coastal plains
Elevation: 0 to 30 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Bojac and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bojac

Setting

Landscape: Coastal plains
Landform: Low ridges on marine terraces
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy and sandy fluviomarine deposits

Typical profile

Ap - 0 to 8 inches: loamy fine sand
Bt - 8 to 47 inches: fine sandy loam
C - 47 to 85 inches: loamy fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F153BY030NC - Dry Loamy Rises and Flats
Hydric soil rating: No

Minor Components

Conetoe

Percent of map unit: 4 percent
Landscape: Coastal plains

Custom Soil Resource Report

Landform: Low ridges on stream terraces, Low ridges on marine terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F153BY030NC - Dry Loamy Rises and Flats
Hydric soil rating: No

Seabrook

Percent of map unit: 3 percent
Landscape: Coastal plains
Landform: Depressions on marine terraces
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F153BY020NC - Moist Sands
Hydric soil rating: No

Munden

Percent of map unit: 3 percent
Landscape: Coastal plains
Landform: Marine terraces
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F153BY040NC - Moist Loamy Rises and Flats
Hydric soil rating: No

Bp—Borrow pit

Map Unit Setting

National map unit symbol: 21ydy
Landscape: Coastal plains
Elevation: 0 to 20 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Not prime farmland

Map Unit Composition

Pits, sand: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pits, Sand

Setting

Landscape: Coastal plains
Anthropogenic Feature: Sand pits
Parent material: Sandy fluviomarine deposits

Typical profile

C1 - 0 to 10 inches: sand
C2 - 10 to 80 inches: sand

Custom Soil Resource Report

Properties and qualities

Slope: 0 to 3 percent

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 39.96 in/hr)

Depth to water table: About 0 to 6 inches

Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s

Hydric soil rating: No

Cb—Conaby muck

Map Unit Setting

National map unit symbol: 3rnd

Landscape: Coastal plains

Elevation: 0 to 20 feet

Mean annual precipitation: 42 to 58 inches

Mean annual air temperature: 61 to 64 degrees F

Frost-free period: 190 to 270 days

Farmland classification: Prime farmland if drained

Map Unit Composition

Conaby, drained, and similar soils: 80 percent

Conaby, undrained, and similar soils: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Conaby, Drained

Setting

Landscape: Coastal plains

Landform: Depressions, Pocosins

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Woody and herbaceous organic material over sandy and loamy fluviomarine deposits

Typical profile

Oa - 0 to 13 inches: muck

A - 13 to 21 inches: sand

Bg - 21 to 33 inches: sandy loam

Cg - 33 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)

Custom Soil Resource Report

Depth to water table: About 0 to 12 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions
Hydric soil rating: Yes

Description of Conaby, Undrained

Setting

Landscape: Coastal plains
Landform: Depressions, Pocosins
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Woody and herbaceous organic material over sandy and loamy fluviomarine deposits

Typical profile

Oa - 0 to 13 inches: muck
A - 13 to 21 inches: sand
Bg - 21 to 33 inches: sandy loam
Cg - 33 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B/D
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions
Hydric soil rating: Yes

CnA—Conetoe loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 3rnf

Custom Soil Resource Report

Landscape: Coastal plains
Elevation: 0 to 20 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Conetoe and similar soils: 85 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Conetoe

Setting

Landscape: Coastal plains
Landform: Low ridges on stream terraces, Low ridges on marine terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

Ap - 0 to 8 inches: loamy sand
E - 8 to 22 inches: loamy sand
Bt - 22 to 40 inches: sandy loam
BC - 40 to 46 inches: loamy sand
C - 46 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F153AY030NC - Dry Loamy Rises and Flats, F153BY030NC - Dry Loamy Rises and Flats
Hydric soil rating: No

Minor Components

Leon

Percent of map unit: 5 percent
Landscape: Coastal plains
Landform: Flats on marine terraces
Down-slope shape: Linear

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Across-slope shape: Concave
Ecological site: F153AY070NC - Wet Spodosol Flats and Depressions,
F153BY070NC - Wet Spodosol Flats and Depressions
Hydric soil rating: Yes

Ds—Dragston loamy fine sand

Map Unit Setting

National map unit symbol: 3nm
Landscape: Coastal plains
Elevation: 0 to 20 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Dragston, drained, and similar soils: 45 percent
Dragston, undrained, and similar soils: 40 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dragston, Drained

Setting

Landscape: Coastal plains
Landform: Marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

A - 0 to 6 inches: loamy fine sand
E - 6 to 10 inches: loamy fine sand
Bt - 10 to 42 inches: sandy loam
2Cg - 42 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 12 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Custom Soil Resource Report

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: A/D

Ecological site: F153AY040NC - Moist Loamy Rises and Flats, F153BY040NC - Moist Loamy Rises and Flats, F133AY410NC - Summits, Loamy and Clayey, Seasonally Wet

Hydric soil rating: No

Description of Dragston, Undrained

Setting

Landscape: Coastal plains

Landform: Marine terraces

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

A - 0 to 6 inches: loamy fine sand

E - 6 to 10 inches: loamy fine sand

Bt - 10 to 42 inches: sandy loam

2Cg - 42 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: About 12 to 30 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: A/D

Ecological site: F153AY040NC - Moist Loamy Rises and Flats, F153BY040NC - Moist Loamy Rises and Flats, F133AY410NC - Summits, Loamy and Clayey, Seasonally Wet

Hydric soil rating: No

Minor Components

Portsmouth, undrained

Percent of map unit: 3 percent

Landscape: Coastal plains

Landform: Depressions on marine terraces, Flats on marine terraces

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: F153AY060NC - Wet Loamy Flats and Depressions, F153BY060NC - Wet Loamy Flats and Depressions, F133AY320NC - Upland Depressions, Flats, and Carolina Bays

Hydric soil rating: Yes

Nimmo, undrained

Percent of map unit: 2 percent

Landscape: Coastal plains

Landform: Flats on marine terraces, Depressions on marine terraces

Down-slope shape: Concave

Across-slope shape: Linear

Ecological site: F153AY060NC - Wet Loamy Flats and Depressions,
F153BY060NC - Wet Loamy Flats and Depressions, F133AY320NC - Upland
Depressions, Flats, and Carolina Bays

Hydric soil rating: Yes

Mu—Munden loamy sand

Map Unit Setting

National map unit symbol: 3mr

Landscape: Coastal plains

Elevation: 0 to 20 feet

Mean annual precipitation: 42 to 58 inches

Mean annual air temperature: 61 to 64 degrees F

Frost-free period: 190 to 270 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Munden and similar soils: 85 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Munden

Setting

Landscape: Coastal plains

Landform: Low ridges on marine terraces

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

A - 0 to 9 inches: loamy sand

Bt - 9 to 37 inches: fine sandy loam

C - 37 to 72 inches: loamy fine sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to
high (0.57 to 5.95 in/hr)

Depth to water table: About 18 to 30 inches

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Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F153BY040NC - Moist Loamy Rises and Flats
Hydric soil rating: No

Minor Components

Nimmo, undrained

Percent of map unit: 5 percent
Landscape: Coastal plains
Landform: Flats on marine terraces, Depressions on marine terraces
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions
Hydric soil rating: Yes

Pt—Portsmouth fine sandy loam

Map Unit Setting

National map unit symbol: 3rp0
Landscape: Coastal plains
Elevation: 0 to 30 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Portsmouth, drained, and similar soils: 75 percent
Portsmouth, undrained, and similar soils: 10 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Portsmouth, Drained

Setting

Landscape: Coastal plains
Landform: Flats on marine terraces, Depressions on marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy fluviomarine deposits over sandy fluviomarine deposits

Typical profile

Ap - 0 to 12 inches: fine sandy loam
Eg - 12 to 19 inches: fine sandy loam

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Btg - 19 to 35 inches: sandy clay loam
BCg - 35 to 38 inches: sandy loam
2Cg - 38 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions
Hydric soil rating: Yes

Description of Portsmouth, Undrained

Setting

Landscape: Coastal plains
Landform: Depressions on marine terraces, Flats on marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy fluviomarine deposits over sandy fluviomarine deposits

Typical profile

A - 0 to 12 inches: fine sandy loam
Eg - 12 to 19 inches: fine sandy loam
Btg - 19 to 35 inches: sandy clay loam
BCg - 35 to 38 inches: sandy loam
2Cg - 38 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B/D

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Ecological site: F153BY060NC - Wet Loamy Flats and Depressions
Hydric soil rating: Yes

Minor Components

Cape lookout, undrained

Percent of map unit: 4 percent

Landscape: Coastal plains

Landform: Flats, Depressions, Pocosins

Down-slope shape: Linear

Across-slope shape: Concave

Ecological site: F153BY065NC - Wet Clay Flats and Depressions

Hydric soil rating: Yes

Portsmouth, undrained

Percent of map unit: 3 percent

Landscape: Coastal plains

Landform: Depressions on marine terraces, Flats on marine terraces

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: F153BY060NC - Wet Loamy Flats and Depressions

Hydric soil rating: Yes

W—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydric soil rating: No

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APPENDIX C
Drainage Area Tabulations

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E002

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.00	0	Pervious Comp CN = 55
Wooded - Good Cond B Soils	55	2.91	126609	
Open Space - Good A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	0.00	0		Area Ac. Area SF
CN SubTotal		2.91	126609	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.00	0
% of DA:	0%	
% Routed to Perv:	#DIV/0!	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		2.91	126609 126609

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = l	400	S=	8.2	Ia=	1.64	Width:
Elev Up	9	Lag =	0.3 Hours			316.52
Elev Dn (Inv)	6	Tc =	0.6 Hours			
Slope % = Y	0.75	Tc =	34.6 Minutes			
CN =	55					

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E003

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.00	0	Pervious Comp CN = 55
Wooded - Good Cond B Soils	55	5.36	233387	
Open Space - Good A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	0.04	1682		Area Ac. Area SF
CN SubTotal		5.40	235069	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.01	306

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.01	306
% of DA:	0%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		5.40	235375 235375

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = l	450	S=	8.2	Ia=	1.63	Width:
Elev Up	9	Lag =	0.4 Hours			523.06
Elev Dn (Inv)	6	Tc =	0.7 Hours			
Slope % = Y	0.67	Tc =	40.3 Minutes			
CN =	55					

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E004

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.00	0	Pervious Comp CN = 56
Wooded - Good Cond B Soils	55	1.58	68994	
Open Space - Good A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	0.51	22324		Area Ac. Area SF
CN SubTotal		2.10	91318	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.07	2979

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.07	2979
% of DA:	3%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		2.16	94297 94297

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = l	200	S=	7.7	Ia=	1.54	Width:
Elev Up	8	Lag =	0.2 Hours			471.49
Elev Dn (Inv)	6	Tc =	0.3 Hours			
Slope % = Y	1.00	Tc =	16.6 Minutes			
CN =	56					

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E005

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.00	0	Pervious Comp CN = 56
Wooded - Good Cond B Soils	55	0.83	36287	
Open Space - Good A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	0.23	10163		Area Ac. Area SF
CN SubTotal		1.07	46450	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.00	0
% of DA:	0%	
% Routed to Perv:	#DIV/0!	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		1.07	46450 46450

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = l	200	S=	7.8	Ia=	1.55	Width:
Elev Up	8	Lag =	0.2 Hours			232.25
Elev Dn (Inv)	6	Tc =	0.3 Hours			
Slope % = Y	1.00	Tc =	16.7 Minutes			
CN =	56					

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E006

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.00	0	Pervious Comp CN = 58
Wooded - Good Cond B Soils	55	4.23	184359	
Open Space - Good A Soils	39	0.01	393	
Open Space - Good B Soils	61	4.40	191477	
CN SubTotal		8.64	376229	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured: 0.00	0

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured: 0.81	35156

Impervious Tabulations

Area Ac.	Area SF
Coverage Total: 0.81	35156
% of DA: 9%	
% Routed to Perv: 100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		9.44	411385
			411391

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = 1	500	S=	7.2	Ia=	1.45	Width:	822.77
Elev Up	9	Lag =	0.4 Hours				
Elev Dn (Inv)	6	Tc =	0.7 Hours				
Slope % = Y	0.60	Tc =	42.9 Minutes				
CN =	58						

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E007

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.90	39146	Pervious Comp CN = 54
Wooded - Good Cond B Soils	55	1.05	45859	
Open Space - Good A Soils	39	6.42	279864	
Open Space - Good B Soils	61	17.72	771770	
CN SubTotal		26.09	1136639	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured: 0.00	0

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured: 1.30	56701

Impervious Tabulations

Area Ac.	Area SF
Coverage Total: 1.30	56701
% of DA: 5%	
% Routed to Perv: 100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		27.40	1193340
			1193340

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = 1	600	S=	8.4	Ia=	1.69	Width:	1988.90
Elev Up	8	Lag =	0.8 Hours				
Elev Dn (Inv)	6.5	Tc =	1.4 Hours				
Slope % = Y	0.25	Tc =	84.5 Minutes				
CN =	54						

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E008

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.00	0	Pervious Comp CN = 61
Wooded - Good Cond B Soils	55	0.00	0	
Open Space - Good A Soils	39	0.00	0	
Open Space - Good B Soils	61	0.32	14006	
CN SubTotal		0.32	14006	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.03	1252

Impervious Tabulations

	Area Ac.	Area SF
Coverage Total:	0.03	1252
% of DA:	8%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		0.35	15258

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

	Length = 1	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Tc =	Ia=	Width:
	50	9	6.1	5.80	61	6.4	0.0 Hours	0.0 Hours	2.0 Minutes	1.28	305.16

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E009

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.00	0	Pervious Comp CN = 61
Wooded - Good Cond B Soils	55	0.00	0	
Open Space - Good A Soils	39	0.00	0	
Open Space - Good B Soils	61	1.83	79707	
CN SubTotal		1.83	79707	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.19	8346

Impervious Tabulations

	Area Ac.	Area SF
Coverage Total:	0.19	8346
% of DA:	9%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		2.02	88053

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

	Length = 1	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Tc =	Ia=	Width:
	150	9	6	2.00	61	6.4	0.1 Hours	0.1 Hours	8.3 Minutes	1.28	587.02

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E012

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.00	0	Pervious Comp CN = 58
Wooded - Good Cond B Soils	55	1.74	75908	
Open Space - Good A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	1.28	55970		Area Ac. Area SF
CN SubTotal		3.03	131878	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	1.52	66098

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	1.52	66098
% of DA:	33%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		4.54	197976 197976

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

	Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Tc =	Ia=	Width:
	600	10	4.4	0.93	58	7.4	0.4 Hours	0.7 Hours	40.3 Minutes	1.48	329.96

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E013

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.00	0	Pervious Comp CN = 59
Wooded - Good Cond B Soils	55	0.28	12066	
Open Space - Good A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	0.41	17799		Area Ac. Area SF
CN SubTotal		0.69	29865	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.13	5814

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.13	5814
% of DA:	16%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		0.82	35679 35679

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

	Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Tc =	Ia=	Width:
	240	9	4.4	1.92	59	7.1	0.1 Hours	0.2 Hours	13.2 Minutes	1.41	148.66

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E014

Pervious CN Calc	CN	Area Ac.	Area SF		
Wooded - Good Cond A Soils	30	3.14	136835	Pervious Comp CN =	54
Wooded - Good Cond B Soils	55	12.37	539001		
Open Space - Good A Soils	39	0.61	26494	<u>Connected Impervious Tabulation:</u>	
Open Space - Good B Soils	61	8.87	386285	Area Ac.	Area SF
CN SubTotal		24.99	1088615	Measured:	0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	2.18	94773

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	2.18	94773
% of DA:	8%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		27.17	1183388 1183388

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = 1	1450	S=	8.7	Ia=	1.73	Width:
Elev Up	12.4	Lag =	1.4 Hours			816.13
Elev Dn (Inv)	7	Tc =	2.4 Hours			
Slope % = Y	0.37	Tc =	142.6 Minutes			
CN =	54					

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E015

Pervious CN Calc	CN	Area Ac.	Area SF		
Wooded - Good Cond A Soils	30	0.33	14486	Pervious Comp CN =	56
Wooded - Good Cond B Soils	55	2.52	109648		
Open Space - Good A Soils	39	0.08	3643	<u>Connected Impervious Tabulation:</u>	
Open Space - Good B Soils	61	3.09	134550	Area Ac.	Area SF
CN SubTotal		6.02	262327	Measured:	0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.90	39261

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.90	39261
% of DA:	13%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		6.92	301588 301588

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = 1	400	S=	7.7	Ia=	1.54	Width:
Elev Up	11	Lag =	0.3 Hours			753.97
Elev Dn (Inv)	6.5	Tc =	0.5 Hours			
Slope % = Y	1.13	Tc =	27.2 Minutes			
CN =	56					

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E017

Pervious CN Calc		CN	Area Ac.	Area SF	
Wooded - Good Cond	A Soils	30	0.63	27607	Pervious Comp CN = 38
Wooded - Good Cond	B Soils	55	0.25	10806	
Open Space - Good	A Soils	39	0.29	12818	
Open Space - Good	B Soils	61	0.01	351	
CN SubTotal			1.18	51582	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.27 11791

Impervious Tabulations

	Area Ac.	Area SF
Coverage Total:	0.27	11791
% of DA:	19%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		1.45	63373 63373

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = l	1000	S=	16.5	Ia=	3.31	Width:
Elev Up	14	Lag =	1.1 Hours			63.37
Elev Dn (Inv)	5.3	Tc =	1.8 Hours			
Slope % = Y	0.87	Tc =	105.3 Minutes			
CN =	38					

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E017M

Pervious CN Calc		CN	Area Ac.	Area SF	
Wooded - Good Cond	A Soils	30	0.00	0	Pervious Comp CN = 55
Wooded - Good Cond	B Soils	55	0.51	22322	
Open Space - Good	A Soils	39	0.00	0	
Open Space - Good	B Soils	61	0.00	192	
CN SubTotal			0.52	22514	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Impervious Tabulations

	Area Ac.	Area SF
Coverage Total:	0.00	0
% of DA:	0%	
% Routed to Perv:	#DIV/0!	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		0.52	22514 22514

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = l	100	S=	8.2	Ia=	1.63	Width:
Elev Up	9	Lag =	0.1 Hours			225.14
Elev Dn (Inv)	5.3	Tc =	0.1 Hours			
Slope % = Y	3.70	Tc =	5.1 Minutes			
CN =	55					

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E018M

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	1.31	56913	Pervious Comp CN = 50
Wooded - Good Cond B Soils	55	5.51	239798	
Open Space - Good A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	0.09	4051		Area Ac. Area SF
CN SubTotal		6.90	300762	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.00	0
% of DA:	0%	
% Routed to Perv:	#DIV/0!	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		6.90	300762 300762

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = 1	450	S=	9.9	Ia=	1.97	Width:	668.36
Elev Up	10	Lag =	0.4 Hours				
Elev Dn (Inv)	5.3	Tc =	0.6 Hours				
Slope % = Y	1.04	Tc =	36.3 Minutes				
CN =	50						

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E019

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.78	33912	Pervious Comp CN = 39
Wooded - Good Cond B Soils	55	0.43	18692	
Open Space - Good A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	0.00	0		Area Ac. Area SF
CN SubTotal		1.21	52604	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.00	0
% of DA:	0%	
% Routed to Perv:	#DIV/0!	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		1.21	52604 52604

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = 1	450	S=	15.7	Ia=	3.14	Width:	116.90
Elev Up	10.5	Lag =	0.5 Hours				
Elev Dn (Inv)	5.4	Tc =	0.8 Hours				
Slope % = Y	1.13	Tc =	47.1 Minutes				
CN =	39						

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E019M

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	1.13	49190	Pervious Comp CN = 53
Wooded - Good Cond B Soils	55	11.30	492071	
Open Space - Good A Soils	39	0.00	0	
Open Space - Good B Soils	61	0.12	5147	
CN SubTotal		12.54	546408	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured: 0.00	0

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured: 0.00	0

Impervious Tabulations

Area Ac.	Area SF
Coverage Total: 0.00	0
% of DA: 0%	
% Routed to Perv: #DIV/0!	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		12.54	546408

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = 1	550	S=	8.9	Ia=	1.79	Width:	993.47
Elev Up	9	Lag =	0.5 Hours				
Elev Dn (Inv)	5.4	Tc =	0.8 Hours				
Slope % = Y	0.65	Tc =	50.5 Minutes				
CN =	53						

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E020

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.05	2349	Pervious Comp CN = 51
Wooded - Good Cond B Soils	55	0.29	12575	
Open Space - Good A Soils	39	0.00	0	
Open Space - Good B Soils	61	0.00	0	
CN SubTotal		0.34	14924	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured: 0.00	0

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured: 0.00	0

Impervious Tabulations

Area Ac.	Area SF
Coverage Total: 0.00	0
% of DA: 0%	
% Routed to Perv: #DIV/0!	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		0.34	14924

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = 1	1200	S=	9.6	Ia=	1.92	Width:	12.44
Elev Up	9.3	Lag =	1.4 Hours				
Elev Dn (Inv)	5.3	Tc =	2.3 Hours				
Slope % = Y	0.33	Tc =	138.2 Minutes				
CN =	51						

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E020M

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.52	22569	Pervious Comp CN = 54
Wooded - Good Cond B Soils	55	13.65	594516	
Open Space - Good A Soils	39	0.00	0	
Open Space - Good B Soils	61	0.25	10770	
CN SubTotal		14.41	627855	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured: 0.00	0

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured: 0.00	0

Impervious Tabulations

Area Ac.	Area SF
Coverage Total: 0.00	0
% of DA: 0%	
% Routed to Perv: #DIV/0!	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		14.41	627855

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = l	850	S=	8.4	Ia=	1.69	Width:
Elev Up	8.2	Lag =	1.0 Hours			738.65
Elev Dn (Inv)	5.3	Tc =	1.6 Hours			
Slope % = Y	0.34	Tc =	95.7 Minutes			
CN =	54					

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E021

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	2.37	103348	Pervious Comp CN = 46
Wooded - Good Cond B Soils	55	5.08	221332	
Open Space - Good A Soils	39	0.61	26742	
Open Space - Good B Soils	61	0.00	0	
CN SubTotal		8.07	351422	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured: 0.00	0

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured: 0.34	14795

Impervious Tabulations

Area Ac.	Area SF
Coverage Total: 0.34	14795
% of DA: 4%	
% Routed to Perv: 100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		8.41	366217

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = l	650	S=	11.5	Ia=	2.31	Width:
Elev Up	14	Lag =	0.5 Hours			563.41
Elev Dn (Inv)	5.2	Tc =	0.8 Hours			
Slope % = Y	1.35	Tc =	47.3 Minutes			
CN =	46					

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E022

Pervious CN Calc		CN	Area Ac.	Area SF	
Wooded - Good Cond	A Soils	30	0.73	31735	Pervious Comp CN = 52
Wooded - Good Cond	B Soils	55	9.77	425551	
Open Space - Good	A Soils	39	0.98	42647	<u>Connected Impervious Tabulation:</u>
Open Space - Good	B Soils	61	0.00	0		Area Ac. Area SF
CN SubTotal			11.48	499933	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.08	3515

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.08	3515
% of DA:	1%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		11.56	503448 503448

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

	Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Tc =	Ia=	Width:
	700	13	4.8	1.17	52	9.2	0.5 Hours	0.8 Hours	46.7 Minutes	1.84	719.21

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E022M

Pervious CN Calc		CN	Area Ac.	Area SF	
Wooded - Good Cond	A Soils	30	0.00	0	Pervious Comp CN = 55
Wooded - Good Cond	B Soils	55	2.56	111570	
Open Space - Good	A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>
Open Space - Good	B Soils	61	0.08	3403		Area Ac. Area SF
CN SubTotal			2.64	114973	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.00	0
% of DA:	0%	
% Routed to Perv:	#DIV/0!	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		2.64	114973 114973

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

	Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Tc =	Ia=	Width:
	550	7.8	4.8	0.55	55	8.1	0.5 Hours	0.9 Hours	52.2 Minutes	1.62	209.04

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E023

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.64	28007	Pervious Comp CN = 52
Wooded - Good Cond B Soils	55	6.99	304537	
Open Space - Good A Soils	39	1.57	68457	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	1.10	48053		Area Ac. Area SF
CN SubTotal		10.31	449054	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.45	19796

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.45	19796
% of DA:	4%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		10.76	468850 468850

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = l	675	S =	9.4	Ia =	1.87	Width:
Elev Up	13	Lag =	0.5 Hours			694.59
Elev Dn (Inv)	6	Tc =	0.8 Hours			
Slope % = Y	1.04	Tc =	48.7 Minutes			
CN =	52					

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E023M

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.11	4740	Pervious Comp CN = 55
Wooded - Good Cond B Soils	55	2.36	102739	
Open Space - Good A Soils	39	0.11	4655	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	0.53	23199		Area Ac. Area SF
CN SubTotal		3.11	135333	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.15	6616

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.15	6616
% of DA:	5%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		3.26	141949 141951

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = l	80	S =	8.3	Ia =	1.66	Width:
Elev Up	9.8	Lag =	0.0 Hours			1774.36
Elev Dn (Inv)	6	Tc =	0.1 Hours			
Slope % = Y	4.75	Tc =	3.8 Minutes			
CN =	55					

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E025

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.00	0	Pervious Comp CN = 56
Wooded - Good Cond B Soils	55	1.39	60396	
Open Space - Good A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	0.16	7176		Area Ac. Area SF
CN SubTotal		1.55	67572	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.40	17437

Impervious Tabulations

	Area Ac.	Area SF
Coverage Total:	0.40	17437
% of DA:	21%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		1.95	85009 85009

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

	Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Tc =	Ia=	Width:
	120	10	7	2.50	56	8.0	0.1 Hours	0.1 Hours	7.1 Minutes	1.59	708.41

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E025M

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.00	0	Pervious Comp CN = 57
Wooded - Good Cond B Soils	55	0.67	29305	
Open Space - Good A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	0.38	16457		Area Ac. Area SF
CN SubTotal		1.05	45762	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.03	1299

Impervious Tabulations

	Area Ac.	Area SF
Coverage Total:	0.03	1299
% of DA:	3%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		1.08	47061 47061

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

	Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Tc =	Ia=	Width:
	50	9	7	4.00	57	7.5	0.0 Hours	0.0 Hours	2.7 Minutes	1.50	941.22

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E027

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.00	0	Pervious Comp CN = 59
Wooded - Good Cond B Soils	55	0.23	10113	
Open Space - Good A Soils	39	0.16	6969	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	1.87	81427	Area Ac. Area SF
CN SubTotal		2.26	98509	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	1.13	49103

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	1.13	49103
% of DA:	33%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		3.39	147612 147612

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

	Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Tc =	Ia=	Width:
	600	12	7.7	0.72	59	7.0	0.4 Hours	0.7 Hours	44.5 Minutes	1.40	246.02

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E028

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	5.24	228232	Pervious Comp CN = 42
Wooded - Good Cond B Soils	55	3.01	131165	
Open Space - Good A Soils	39	31.29	1363167	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	5.08	221213	Area Ac. Area SF
CN SubTotal		44.62	1943777	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	11.89	517780

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	11.89	517780
% of DA:	21%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		56.51	2461557 2461550

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

	Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Tc =	Ia=	Width:
	1200	12	7.8	0.35	42	14.1	1.7 Hours	2.9 Hours	172.8 Minutes	2.82	2051.30

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E029

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.00	0	Pervious Comp CN = 59
Wooded - Good Cond B Soils	55	1.32	57287	
Open Space - Good A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	2.16	93990		Area Ac. Area SF
CN SubTotal		3.47	151277	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.58	25474

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.58	25474
% of DA:	14%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		4.06	176751 176751

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = l	500	S=	7.0	Ia=	1.41	Width:
Elev Up	10	Lag =	0.3 Hours			353.50
Elev Dn (Inv)	5	Tc =	0.5 Hours			
Slope % = Y	1.00	Tc =	32.6 Minutes			
CN =	59					

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E030

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.28	12408	Pervious Comp CN = 57
Wooded - Good Cond B Soils	55	16.11	701717	
Open Space - Good A Soils	39	4.37	190530	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	25.69	1118966		Area Ac. Area SF
CN SubTotal		46.46	2023621	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	3.00	130892

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	3.00	130892
% of DA:	6%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		49.46	2154513 2154517

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = l	1500	S=	7.6	Ia=	1.53	Width:
Elev Up	9	Lag =	1.9 Hours			1436.34
Elev Dn (Inv)	6	Tc =	3.1 Hours			
Slope % = Y	0.20	Tc =	185.1 Minutes			
CN =	57					

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E032

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.00	0	Pervious Comp CN = 55
Wooded - Good Cond B Soils	55	0.16	6840	
Open Space - Good A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	0.00	0		Area Ac. Area SF
CN SubTotal		0.16	6840	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.07	3079

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.07	3079
% of DA:	31%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		0.23	9919 9922

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

	Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Tc =	Ia=	Width:
	100	9	6	3.00	55	8.2	0.1 Hours	0.1 Hours	5.7 Minutes	1.64	99.19

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E032M

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.00	0	Pervious Comp CN = 55
Wooded - Good Cond B Soils	55	1.08	46996	
Open Space - Good A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	0.02	984		Area Ac. Area SF
CN SubTotal		1.10	47980	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.00	0
% of DA:	0%	
% Routed to Perv:	#DIV/0!	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		1.10	47980 47980

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

	Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Tc =	Ia=	Width:
	280	12	6	2.14	55	8.1	0.2 Hours	0.3 Hours	15.4 Minutes	1.63	171.36

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E033

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.21	9274	Pervious Comp CN = 46
Wooded - Good Cond B Soils	55	0.39	17026	
Open Space - Good A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	0.00	0		Area Ac. Area SF
CN SubTotal		0.60	26300	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.26	11214

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.26	11214
% of DA:	30%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		0.86	37514 37514

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

	Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Tc =	Ia=	Width:
	200	9.6	7.6	1.00	46	11.7	0.2 Hours	0.4 Hours	21.6 Minutes	2.33	187.57

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E033M

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	17.63	767914	Pervious Comp CN = 33
Wooded - Good Cond B Soils	55	2.84	123842	
Open Space - Good A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	0.00	0		Area Ac. Area SF
CN SubTotal		20.47	891756	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.00	0
% of DA:	0%	
% Routed to Perv:	#DIV/0!	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		20.47	891756 891756

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

	Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Tc =	Ia=	Width:
	650	9	7.6	0.22	33	19.9	1.7 Hours	2.8 Hours	169.3 Minutes	3.98	1371.93

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E034

<u>Pervious CN Calc</u>	<u>CN</u>	<u>Area Ac.</u>	<u>Area SF</u>		
Wooded - Good Cond A Soils	30	2.27	98956	Pervious Comp CN =	37
Wooded - Good Cond B Soils	55	0.00	0		
Open Space - Good A Soils	39	7.97	347017	<u>Connected Impervious Tabulation:</u>	
Open Space - Good B Soils	61	0.00	0	Area Ac.	Area SF
CN SubTotal		10.24	445973	Measured:	0.00 0

Disconnected Impervious Tabulation:

	<u>Area Ac.</u>	<u>Area SF</u>
Measured:	0.49	21556

<u>Impervious Tabulations</u>	<u>Area Ac.</u>	<u>Area SF</u>
Coverage Total:	0.49	21556
% of DA:	5%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF	Area SF
		10.73	467529	467529

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = l	450	S=	17.0	Ia=	3.40	Width:	1038.95
Elev Up	12	Lag =	0.6 Hours				
Elev Dn (Inv)	9	Tc =	1.1 Hours				
Slope % = Y	0.67	Tc =	64.7 Minutes				
CN =	37						

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E034M

<u>Pervious CN Calc</u>	<u>CN</u>	<u>Area Ac.</u>	<u>Area SF</u>		
Wooded - Good Cond A Soils	30	3.52	153470	Pervious Comp CN =	30
Wooded - Good Cond B Soils	55	0.00	0		
Open Space - Good A Soils	39	0.10	4325	<u>Connected Impervious Tabulation:</u>	
Open Space - Good B Soils	61	0.00	0	Area Ac.	Area SF
CN SubTotal		3.62	157795	Measured:	0.00 0

Disconnected Impervious Tabulation:

	<u>Area Ac.</u>	<u>Area SF</u>
Measured:	0.00	0

<u>Impervious Tabulations</u>	<u>Area Ac.</u>	<u>Area SF</u>
Coverage Total:	0.00	0
% of DA:	0%	
% Routed to Perv:	#DIV/0!	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF	Area SF
		3.62	157795	157795

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = l	675	S=	23.1	Ia=	4.61	Width:	233.77
Elev Up	11	Lag =	1.6 Hours				
Elev Dn (Inv)	9	Tc =	2.7 Hours				
Slope % = Y	0.30	Tc =	164.3 Minutes				
CN =	30						

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E036

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.00	0	Pervious Comp CN = 58
Wooded - Good Cond B Soils	55	1.04	45484	
Open Space - Good A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	0.94	40874		Area Ac. Area SF
CN SubTotal		1.98	86358	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.07	2863

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.07	2863
% of DA:	3%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		2.05	89221 89221

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = 1	350	S=	7.3	Ia=	1.46	Width:
Elev Up	9	Lag =	0.3 Hours			254.92
Elev Dn (Inv)	6	Tc =	0.5 Hours			
Slope % = Y	0.86	Tc =	27.1 Minutes			
CN =	58					

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E036M

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded - Good Cond A Soils	30	0.00	0	Pervious Comp CN = 55
Wooded - Good Cond B Soils	55	0.20	8912	
Open Space - Good A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	0.00	0		Area Ac. Area SF
CN SubTotal		0.20	8912	Measured: 0.00 0

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Impervious Tabulations	Area Ac.	Area SF
Coverage Total:	0.00	0
% of DA:	0%	
% Routed to Perv:	#DIV/0!	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		0.20	8912 8912

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = 1	100	S=	8.2	Ia=	1.64	Width:
Elev Up	9.5	Lag =	0.1 Hours			89.12
Elev Dn (Inv)	6	Tc =	0.1 Hours			
Slope % = Y	3.50	Tc =	5.3 Minutes			
CN =	55					

Drainage Area Parameters - SWMM SCS Method
Ex. Cond - The Meadows Subdivision

DA-E037

<u>Pervious CN Calc</u>	<u>CN</u>	<u>Area Ac.</u>	<u>Area SF</u>	
Wooded - Good Cond A Soils	30	18.15	790434	Pervious Comp CN = 44
Wooded - Good Cond B Soils	55	2.73	118966	
Open Space - Good A Soils	39	56.83	2475404	<u>Connected Impervious Tabulation:</u>
Open Space - Good B Soils	61	26.89	1171239	Area Ac. Area SF
CN SubTotal		104.59	4556043	Measured: 0.00 0

Disconnected Impervious Tabulation:

	<u>Area Ac.</u>	<u>Area SF</u>
Measured:	11.97	521257

Impervious Tabulations

	<u>Area Ac.</u>	<u>Area SF</u>
Coverage Total:	11.97	521257
% of DA:	10%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	$Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		116.56	5077300 5077300

Formula: Time of Concentration = $5 / 3 * Lag$

Length = 1	1450	S=	13.0	Ia=	2.60	Width:	3501.59
Elev Up	13	Lag =	1.9 Hours				
Elev Dn (Inv)	8	Tc =	3.2 Hours				
Slope % = Y	0.34	Tc =	192.1 Minutes				
CN =	44						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-Pond1

Pervious CN Calc	CN	Area Ac.	Area SF	
Water	Water	98	5.73	249665
Wooded	A Soils	30	0.00	0
Wooded	B Soils	55	0.00	0
Open Space	A Soils	39	0.08	3407
Open Space	B Soils	61	2.27	99046
Res Lot Perv	A Soils	39	0.04	1783.6
Res Lot Perv	B Soils	61	3.35	145972.4
CN SubTotal			11.48	499874

Pervious Comp CN = 79

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.06	2548
Lot Area (B Soils):	4.79	208532
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	1.45	63324

<u>Impervious Tabulations</u>	Area Ac.	Area SF
Coverage Total:	1.45	63324
% of DA:	11%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF	
12.93	563198	563199

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	175	S=	2.6	Ia=	0.52	Width:	3218.27
Elev Up	10.5	Lag =	0.0 Hours				
Elev Dn (Inv)	5.7	Tc =	0.1 Hours				
Slope % = Y	2.74	Tc =	4.9 Minutes				
CN =	79						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-Tig-Ma-Tar Management Pond

Pervious CN Calc	CN	Area Ac.	Area SF	
Water	Water	98	0.92	39894
Wooded	A Soils	30	1.89	82143
Wooded	B Soils	55	0.44	19150
Open Space	A Soils	39	0.15	6700
Open Space	B Soils	61	0.16	7006
Res Lot Perv	A Soils	39	0.00	0
Res Lot Perv	B Soils	61	0.00	0
CN SubTotal			3.56	154893

Pervious Comp CN = 52

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.00	0

<u>Impervious Tabulations</u>	Area Ac.	Area SF
Coverage Total:	0.00	0
% of DA:	0%	
% Routed to Perv:	#DIV/0!	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF	
3.56	154893	563199

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	381	S=	9.1	Ia=	1.82	Width:	406.54
Elev Up	11.47	Lag =	0.2 Hours				
Elev Dn (Inv)	4	Tc =	0.4 Hours				
Slope % = Y	1.96	Tc =	22.0 Minutes				
CN =	52						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P001

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.15	6556	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 58
Open Space B Soils	61	0.15	6571	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.30	13127	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.10	4454
On Res Lots:	0.00	0

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.10	4454
% of DA:	25%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(l^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF	
0.40	17581	17581

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	15.3	S=	7.2	Ia=	1.45	Width:	1149.08
Elev Up	9.53	Lag =	0.0 Hours				
Elev Dn (Inv)	8.95	Tc =	0.0 Hours				
Slope % = Y	3.79	Tc =	1.0 Minutes				
CN =	58						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P002

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.04	1901	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 58
Open Space B Soils	61	0.05	2006	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.09	3907	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.03	1438
On Res Lots:	0.00	0

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.03	1438
% of DA:	27%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(l^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF	
0.12	5345	5346

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	20	S=	7.2	Ia=	1.44	Width:	267.25
Elev Up	9.53	Lag =	0.0 Hours				
Elev Dn (Inv)	8.95	Tc =	0.0 Hours				
Slope % = Y	2.90	Tc =	1.5 Minutes				
CN =	58						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P002A

	Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded	A Soils	30	0.00	0	
Wooded	B Soils	55	0.05	2281	
Open Space	A Soils	39	0.00	0	Pervious Comp CN = 58
Open Space	B Soils	61	0.06	2468	
Res Lot Perv	A Soils	39	0.00	0	
Res Lot Perv	B Soils	61	0.00	0	
	CN SubTotal		0.11	4749	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.04	1647
On Res Lots:	0.00	0

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.04	1647
% of DA:	26%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(l^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

	Area Ac	Area SF
	0.15	6396
		6395

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	20	S=	7.2	Ia=	1.44	Width:	319.80
Elev Up	9.53	Lag =	0.0 Hours				
Elev Dn (Inv)	8.95	Tc =	0.0 Hours				
Slope % = Y	2.90	Tc =	1.5 Minutes				
CN =	58						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P003

	Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded	A Soils	30	0.00	0	
Wooded	B Soils	55	0.08	3547	
Open Space	A Soils	39	0.00	0	Pervious Comp CN = 58
Open Space	B Soils	61	0.07	3047	
Res Lot Perv	A Soils	39	0.00	0	
Res Lot Perv	B Soils	61	0.00	0	
	CN SubTotal		0.15	6594	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.05	2183
On Res Lots:	0.00	0

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.05	2183
% of DA:	25%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(l^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

	Area Ac	Area SF
	0.20	8777
		8777

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	14	S=	7.3	Ia=	1.46	Width:	626.93
Elev Up	9.51	Lag =	0.0 Hours				
Elev Dn (Inv)	9	Tc =	0.0 Hours				
Slope % = Y	3.64	Tc =	1.0 Minutes				
CN =	58						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P004

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.08	3548	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 57
Open Space B Soils	61	0.05	2138	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.13	5686	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.03	1331
On Res Lots:	0.00	0

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.03	1331
% of DA:	19%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
0.16	7017 7017

Formula: Time of Concentration = $5 / 3 * Lag$

Length = 1	18	S=	7.5	Ia=	1.49	Width:	389.83
Elev Up	9.5	Lag =	0.0 Hours				
Elev Dn (Inv)	9.07	Tc =	0.0 Hours				
Slope % = Y	2.39	Tc =	1.5 Minutes				
CN =	57						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P005

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 61
Open Space B Soils	61	0.74	32041	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.16	7000	
CN SubTotal		0.90	39041	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.23	10000
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.07	3000

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.07	3000
% of DA:	7%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
0.97	42041 42041

Formula: Time of Concentration = $5 / 3 * Lag$

Length = 1	80.5	S=	6.4	Ia=	1.28	Width:	522.25
Elev Up	9.6	Lag =	0.0 Hours				
Elev Dn (Inv)	7	Tc =	0.1 Hours				
Slope % = Y	3.23	Tc =	4.0 Minutes				
CN =	61						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P006

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.00	50	Pervious Comp CN = 61
Open Space B Soils	61	0.99	42947	
Res Lot Perv A Soils	39	0.02	768.6	
Res Lot Perv B Soils	61	0.05	2059.4	
CN SubTotal		1.05	45825	

<u>Connected Impervious Tabulation:</u>		
	Area Ac.	Area SF
Measured:	0.00	0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.03	1098
Lot Area (B Soils):	0.07	2942
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.03	1212

<u>Impervious Tabulations:</u>		
	Area Ac.	Area SF
Coverage Total:	0.03	1212
% of DA:	3%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF	
1.08	47037	47037

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Ia=	Width:
63	10.8	8	4.44	61	6.5	0.0 Hours	0.0 Hours	1.30	746.62
						2.8 Minutes			

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P007

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.32	13974	Pervious Comp CN = 45
Open Space B Soils	61	0.19	8374	
Res Lot Perv A Soils	39	0.30	12856.2	
Res Lot Perv B Soils	61	0.02	780.5	
CN SubTotal		0.83	35984.7	

<u>Connected Impervious Tabulation:</u>		
	Area Ac.	Area SF
Measured:	0.00	0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.42	18366
Lot Area (B Soils):	0.03	1115
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.13	5844

<u>Impervious Tabulations:</u>		
	Area Ac.	Area SF
Coverage Total:	0.13	5844
% of DA:	14%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF	
0.96	41829	41829

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Ia=	Width:
98	10.7	7	3.78	45	12.4	0.1 Hours	0.1 Hours	2.48	426.83
						6.5 Minutes			

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P008

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 39
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	1.29	56146.3	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		1.29	56146.3	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	1.84	80209
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0
On Res Lots:	0.55 24063

Impervious Tabulations:

Area Ac.	Area SF
Coverage Total:	0.55 24063
% of DA:	30%
% Routed to Perv:	100%

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
1.84	80209 80200

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	176	S=	15.6	Ia=	3.13	Width:	455.73
Elev Up	11.63	Lag =	0.2 Hours				
Elev Dn (Inv)	9	Tc =	0.3 Hours				
Slope % = Y	1.49	Tc =	19.3 Minutes				
CN =	39						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P008-OS

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.05	2120	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	3.96	172604	Pervious Comp CN = 39
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		4.01	174724	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.22 9488
On Res Lots:	0.00 0

Impervious Tabulations:

Area Ac.	Area SF
Coverage Total:	0.22 9488
% of DA:	5%
% Routed to Perv:	100%

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
4.23	184212 184221

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	395	S=	15.7	Ia=	3.14	Width:	466.36
Elev Up	12.95	Lag =	0.5 Hours				
Elev Dn (Inv)	9	Tc =	0.8 Hours				
Slope % = Y	1.00	Tc =	45.2 Minutes				
CN =	39						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P009

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 39
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	1.29	55997.9	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		1.29	55997.9	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	1.84	79997
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0
On Res Lots:	0.55 23999

Impervious Tabulations:

Area Ac.	Area SF
Coverage Total:	0.55 23999
% of DA:	30%
% Routed to Perv:	100%

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
1.84	79997 79997

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	193	S=	15.6	Ia=	3.13	Width:	414.49
Elev Up	11.65	Lag =	0.2 Hours				
Elev Dn (Inv)	9	Tc =	0.4 Hours				
Slope % = Y	1.37	Tc =	21.7 Minutes				
CN =	39						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P009-05

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.64	27961	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	2.99	130035	Pervious Comp CN = 37
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		3.63	157996	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.07 2968
On Res Lots:	0.00 0

Impervious Tabulations:

Area Ac.	Area SF
Coverage Total:	0.07 2968
% of DA:	2%
% Routed to Perv:	100%

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
3.70	160964 160964

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	391	S=	16.7	Ia=	3.35	Width:	411.67
Elev Up	13.91	Lag =	0.5 Hours				
Elev Dn (Inv)	10	Tc =	0.8 Hours				
Slope % = Y	1.00	Tc =	46.7 Minutes				
CN =	37						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P010

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 39
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	1.27	55534.5	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		1.27	55534.5	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	1.82	79335
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0
On Res Lots:	0.55 23801

Impervious Tabulations:

Area Ac.	Area SF
Coverage Total:	0.55 23801
% of DA:	30%
% Routed to Perv:	100%

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF	
1.82	79335	79335

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l		S=		Ia=	Width:
200		15.6		3.13	396.68
Elev Up 11.65		Lag = 0.3 Hours			
Elev Dn (Inv) 10		Tc = 0.5 Hours			
Slope % = Y 0.83		Tc = 28.8 Minutes			
CN = 39					

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P010-OS

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	1.79	78128	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	1.01	43948	Pervious Comp CN = 33
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		2.80	122076	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0
On Res Lots:	0.00 0

Impervious Tabulations:

Area Ac.	Area SF
Coverage Total:	0.00 0
% of DA:	0%
% Routed to Perv:	#DIV/0!

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF	
2.80	122076	122064

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l		S=		Ia=	Width:
285		20.1		4.02	428.34
Elev Up 12.85		Lag = 0.4 Hours			
Elev Dn (Inv) 10		Tc = 0.7 Hours			
Slope % = Y 1.00		Tc = 40.9 Minutes			
CN = 33					

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P011

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 40
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	0.31	13320.3	
Res Lot Perv B Soils	61	0.02	833.7	
CN SubTotal		0.32	14154	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.44	19029
Lot Area (B Soils):	0.03	1191
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0
On Res Lots:	0.14 6066

Impervious Tabulations:

Area Ac.	Area SF
Coverage Total:	0.14 6066
% of DA:	30%
% Routed to Perv:	100%

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		0.46	20220 20184

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S =	Lag =	Tc =	Ia =	Width:
138	11.8	10	1.30	40	14.8	0.2 Hours	0.3 Hours	2.96	146.52
							16.4 Minutes		

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P011-OS

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.16	7105	
Wooded B Soils	55	0.38	16604	
Open Space A Soils	39	0.13	5836	Pervious Comp CN = 48
Open Space B Soils	61	0.09	3788	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.77	33333	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0
On Res Lots:	0.00 0

Impervious Tabulations:

Area Ac.	Area SF
Coverage Total:	0.00 0
% of DA:	0%
% Routed to Perv:	#DIV/0!

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac	Area SF
		0.77	33333 33279

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S =	Lag =	Tc =	Ia =	Width:
55	10.55	10	1.00	48	11.0	0.1 Hours	0.1 Hours	2.21	606.05
							7.4 Minutes		

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P012

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.13	5770	Pervious Comp CN = 39
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	0.55	24145.1	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.69	29915.1	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.79	34493
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.24	10348

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.24	10348
% of DA:	26%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(l^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
0.92	40263
	40263

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Ia=	Width:
124	11.65	10	1.33	39	15.6	0.2 Hours	0.3 Hours	3.13	324.70
							15.4 Minutes		

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P013

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.44	19352	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 57
Open Space B Soils	61	0.28	12009	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.72	31361	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.18	8017
On Res Lots:	0.00	0

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.18	8017
% of DA:	20%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(l^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
0.90	39378
	39378

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Ia=	Width:
23	9.65	8.95	3.04	57	7.5	0.0 Hours	0.0 Hours	1.49	1712.09
							1.7 Minutes		

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P014

	Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded	A Soils	30	0.00	0	
Wooded	B Soils	55	0.14	6141	
Open Space	A Soils	39	0.00	0	Pervious Comp CN = 57
Open Space	B Soils	61	0.06	2429	
Res Lot Perv	A Soils	39	0.00	0	
Res Lot Perv	B Soils	61	0.00	0	
	CN SubTotal		0.20	8570	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.03	1519
On Res Lots:	0.00	0

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.03	1519
% of DA:	15%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

	Area Ac	Area SF
	0.23	10089
		10088

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	26	S=	7.6	Ia=	1.53	Width:	388.04
Elev Up	9.65	Lag =	0.0 Hours				
Elev Dn (Inv)	8.95	Tc =	0.0 Hours				
Slope % = Y	2.69	Tc =	2.0 Minutes				
CN =	57						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P014A

	Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded	A Soils	30	0.00	0	
Wooded	B Soils	55	0.22	9736	
Open Space	A Soils	39	0.00	0	Pervious Comp CN = 56
Open Space	B Soils	61	0.06	2476	
Res Lot Perv	A Soils	39	0.00	0	
Res Lot Perv	B Soils	61	0.00	0	
	CN SubTotal		0.28	12212	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.04	1648
On Res Lots:	0.00	0

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.04	1648
% of DA:	12%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

	Area Ac	Area SF
	0.32	13860
		13861

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	40	S=	7.8	Ia=	1.56	Width:	346.50
Elev Up	9.65	Lag =	0.0 Hours				
Elev Dn (Inv)	8.95	Tc =	0.1 Hours				
Slope % = Y	1.75	Tc =	3.5 Minutes				
CN =	56						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P015

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 61
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.94	41107.5	
CN SubTotal		0.94	41107.5	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	1.35	58725
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.40	17618

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.40	17618
% of DA:	30%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
1.35	58725 58730

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	200	S=	6.4	Ia=	1.28	Width:	293.63
Elev Up	10.5	Lag =	0.1 Hours				
Elev Dn (Inv)	8	Tc =	0.2 Hours				
Slope % = Y	1.25	Tc =	13.2 Minutes				
CN =	61						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P015-OS

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.94	41084	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 58
Open Space B Soils	61	0.79	34325	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		1.73	75409	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.08	3554
On Res Lots:	0.00	0

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.08	3554
% of DA:	5%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
1.81	78963 78963

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	84	S=	7.3	Ia=	1.46	Width:	940.04
Elev Up	8.84	Lag =	0.1 Hours				
Elev Dn (Inv)	8	Tc =	0.1 Hours				
Slope % = Y	1.00	Tc =	8.0 Minutes				
CN =	58						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P016

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 61
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	1.61	69946.1	
CN SubTotal		1.61	69946.1	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	2.29	99923
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.69	29977

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.69	29977
% of DA:	30%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
2.29	99923
99923	99923

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	200	S=	6.4	Ia=	1.28	Width:	499.62
Elev Up	10.68	Lag =	0.2 Hours				
Elev Dn (Inv)	9	Tc =	0.3 Hours				
Slope % = Y	0.84	Tc =	16.1 Minutes				
CN =	61						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P016-05

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.98	42533	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 57
Open Space B Soils	61	0.52	22762	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		1.50	65295	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.00	0

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.00	0
% of DA:	0%	
% Routed to Perv:	#DIV/0!	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
1.50	65295
65295	65296

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	97	S=	7.5	Ia=	1.50	Width:	673.14
Elev Up	9.97	Lag =	0.1 Hours				
Elev Dn (Inv)	9	Tc =	0.2 Hours				
Slope % = Y	1.00	Tc =	9.2 Minutes				
CN =	57						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P017

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.14	6298	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 58
Open Space B Soils	61	0.13	5483	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.27	11781	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.08	3571
On Res Lots:	0.00	0

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.08	3571
% of DA:	23%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(l^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF	
0.35	15352	15352

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	16.5	S=	7.3	Ia=	1.46	Width:	930.42
Elev Up	9.7	Lag =	0.0 Hours				
Elev Dn (Inv)	9.12	Tc =	0.0 Hours				
Slope % = Y	3.52	Tc =	1.2 Minutes				
CN =	58						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P018

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.06	2681	
Open Space A Soils	39	0.04	1597	Pervious Comp CN = 55
Open Space B Soils	61	0.10	4246	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.20	8524	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.09	4021
On Res Lots:	0.00	0

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.09	4021
% of DA:	32%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(l^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF	
0.29	12545	12545

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	37	S=	8.2	Ia=	1.64	Width:	339.05
Elev Up	10.7	Lag =	0.0 Hours				
Elev Dn (Inv)	10.2	Tc =	0.1 Hours				
Slope % = Y	1.35	Tc =	3.8 Minutes				
CN =	55						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P019

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.06	2802	Pervious Comp CN = 52
Open Space B Soils	61	0.10	4175	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.16	6977	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.09	3978
On Res Lots:	0.00	0

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.09	3978
% of DA:	36%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(l^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
0.25	10955 10955

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	43	S=	9.2	Ia=	1.83	Width:	254.77
Elev Up	12.6	Lag =	0.0 Hours				
Elev Dn (Inv)	11.6	Tc =	0.1 Hours				
Slope % = Y	2.33	Tc =	3.5 Minutes				
CN =	52						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P020

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.11	4660	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 60
Open Space B Soils	61	0.34	14860	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.45	19520	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.16	7115
On Res Lots:	0.00	0

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.16	7115
% of DA:	27%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(l^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
0.61	26635 26635

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	16	S=	6.8	Ia=	1.36	Width:	1664.69
Elev Up	11.35	Lag =	0.0 Hours				
Elev Dn (Inv)	10.65	Tc =	0.0 Hours				
Slope % = Y	4.38	Tc =	1.0 Minutes				
CN =	60						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P021

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.00	111	Pervious Comp CN = 57
Open Space B Soils	61	0.13	5879	
Res Lot Perv A Soils	39	0.19	8094.1	
Res Lot Perv B Soils	61	0.74	32238.5	
CN SubTotal		1.06	46322.6	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.27	11563
Lot Area (B Soils):	1.06	46055
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0
On Res Lots:	0.40 17285

Impervious Tabulations:

Area Ac.	Area SF
Coverage Total:	0.40 17285
% of DA:	27%
% Routed to Perv:	100%

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(l^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF	
1.46	63608	63608

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	113	S=	7.5	Ia=	1.50	Width:	562.90
Elev Up	12.1	Lag =	0.1 Hours				
Elev Dn (Inv)	10	Tc =	0.1 Hours				
Slope % = Y	1.86	Tc =	7.6 Minutes				
CN =	57						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P022

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 39
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	0.91	39526.9	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.91	39526.9	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	1.30	56467
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0
On Res Lots:	0.39 16940

Impervious Tabulations:

Area Ac.	Area SF
Coverage Total:	0.39 16940
% of DA:	30%
% Routed to Perv:	100%

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(l^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF	
1.30	56467	56467

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	200	S=	15.6	Ia=	3.13	Width:	282.34
Elev Up	11.75	Lag =	0.2 Hours				
Elev Dn (Inv)	7.6	Tc =	0.3 Hours				
Slope % = Y	2.08	Tc =	18.1 Minutes				
CN =	39						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-P024

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.13	5528	Pervious Comp CN = 39
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	0.59	25844	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.72	31372	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.85	36920
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0
On Res Lots:	0.25 11076

Impervious Tabulations:

Area Ac.	Area SF
Coverage Total:	0.25 11076
% of DA:	26%
% Routed to Perv:	100%

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
0.97	42448 42448

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Ia=	Width:
184	11.35	7.5	2.09	39	15.6	0.2 Hours	0.3 Hours	3.13	230.70
						16.9 Minutes			

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-CB-02

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 61
Open Space B Soils	61	0.15	6567	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.37	16159.5	
CN SubTotal		0.52	22726.5	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.12 5268

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.53	23085
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0
On Res Lots:	0.16 6926

Impervious Tabulations:

Area Ac.	Area SF
Coverage Total:	0.28 12194
% of DA:	35%
% Routed to Perv:	57%

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
0.80	34920 34919

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Ia=	Width:
64	10.5	9.18	2.06	61	6.4	0.0 Hours	0.1 Hours	1.28	545.63
						4.1 Minutes			

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-CB-03

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 61
Open Space B Soils	61	0.16	6962	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.28	12250	
CN SubTotal		0.44	19212	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.12	5363

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.40	17500
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.12	5250

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.24	10613
% of DA:	36%	
% Routed to Perv:	49%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
0.68	29825 29825

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	64	S=	6.4	Ia=	1.28	Width:	466.02
Elev Up	10.3	Lag =	0.0 Hours				
Elev Dn (Inv)	9.18	Tc =	0.1 Hours				
Slope % = Y	1.75	Tc =	4.5 Minutes				
CN =	61						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-CB-04

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 61
Open Space B Soils	61	0.16	7107	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.41	17768.1	
CN SubTotal		0.57	24875.1	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.13	5584

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.58	25383
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.17	7615

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.30	13199
% of DA:	35%	
% Routed to Perv:	58%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
0.87	38074 38074

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	64	S=	6.4	Ia=	1.28	Width:	594.91
Elev Up	10.7	Lag =	0.0 Hours				
Elev Dn (Inv)	9.18	Tc =	0.1 Hours				
Slope % = Y	2.38	Tc =	3.9 Minutes				
CN =	61						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-CB-05

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 61
Open Space B Soils	61	0.16	7107	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.41	17768.1	
CN SubTotal		0.57	24875.1	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.13	5584

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.58	25383
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.17	7615

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.30	13199
% of DA:	35%	
% Routed to Perv:	58%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
0.87	38074
38074	38074

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	64	S =	6.4	Ia =	1.28	Width:
Elev Up	10.4	Lag =	0.0 Hours			594.91
Elev Dn (Inv)	9.18	Tc =	0.1 Hours			
Slope % = Y	1.91	Tc =	4.3 Minutes			
CN =	61					

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-CB-06

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.03	1113	Pervious Comp CN = 58
Open Space B Soils	61	0.12	5230	
Res Lot Perv A Soils	39	0.05	2331	
Res Lot Perv B Soils	61	0.30	13242.6	
CN SubTotal		0.50	21916.6	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.12	5024

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.08	3330
Lot Area (B Soils):	0.43	18918
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.15	6674

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.27	11698
% of DA:	35%	
% Routed to Perv:	57%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
0.77	33615
33615	33616

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	63	S =	7.4	Ia =	1.48	Width:
Elev Up	11.6	Lag =	0.0 Hours			533.57
Elev Dn (Inv)	9.7	Tc =	0.1 Hours			
Slope % = Y	3.02	Tc =	3.7 Minutes			
CN =	58					

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-CB-07

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.06	2623	Pervious Comp CN = 56
Open Space B Soils	61	0.17	7221	
Res Lot Perv A Soils	39	0.06	2436	
Res Lot Perv B Soils	61	0.19	8320.2	
CN SubTotal		0.47	20600.2	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.14 6235

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.08	3480
Lot Area (B Soils):	0.27	11886
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0
On Res Lots:	0.11 4610

Impervious Tabulations:

Area Ac.	Area SF
Coverage Total:	0.25 10845
% of DA:	34%
% Routed to Perv:	43%

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
0.72	31445 31445

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	41	S=	8.0	Ia=	1.60	Width:	766.95
Elev Up	11.8	Lag =	0.0 Hours				
Elev Dn (Inv)	9.7	Tc =	0.0 Hours				
Slope % = Y	5.12	Tc =	2.1 Minutes				
CN =	56						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-CB-08

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.23	9823	Pervious Comp CN = 39
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	0.11	4953.9	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.34	14776.9	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.12 5281

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.16	7077
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0
On Res Lots:	0.05 2123

Impervious Tabulations:

Area Ac.	Area SF
Coverage Total:	0.17 7404
% of DA:	33%
% Routed to Perv:	29%

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
0.51	22181 22180

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	40	S=	15.6	Ia=	3.13	Width:	554.53
Elev Up	11.7	Lag =	0.0 Hours				
Elev Dn (Inv)	9.8	Tc =	0.1 Hours				
Slope % = Y	4.75	Tc =	3.3 Minutes				
CN =	39						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-CB-09

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.37	1596.4	Pervious Comp CN = 39
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	0.07	3191.3	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.44	19155.3	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.17 7522

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.10	4559
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0
On Res Lots:	0.03 1368

Impervious Tabulations:

Area Ac.	Area SF
Coverage Total:	0.20 8890
% of DA:	32%
% Routed to Perv:	15%

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
0.64	28045 28046

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	50	S=	15.6	Ia=	3.13	Width:	560.90
Elev Up	10.26	Lag =	0.1 Hours				
Elev Dn (Inv)	9.8	Tc =	0.1 Hours				
Slope % = Y	0.92	Tc =	9.0 Minutes				
CN =	39						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-CB-10

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.12	5066	Pervious Comp CN = 41
Open Space B Soils	61	0.02	940	
Res Lot Perv A Soils	39	0.34	14809.2	
Res Lot Perv B Soils	61	0.03	1204.7	
CN SubTotal		0.51	22019.9	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.16 7154

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.49	21156
Lot Area (B Soils):	0.04	1721
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0
On Res Lots:	0.16 6863

Impervious Tabulations:

Area Ac.	Area SF
Coverage Total:	0.32 14017
% of DA:	39%
% Routed to Perv:	49%

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
0.83	36037 36038

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	65	S=	14.3	Ia=	2.86	Width:	554.42
Elev Up	10.8	Lag =	0.1 Hours				
Elev Dn (Inv)	9.36	Tc =	0.1 Hours				
Slope % = Y	2.22	Tc =	6.7 Minutes				
CN =	41						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-CB-11

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.22	9527	Pervious Comp CN = 42
Open Space B Soils	61	0.07	3035	
Res Lot Perv A Soils	39	0.21	9137.1	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.50	21699.1	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.18	7638

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.30	13053
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.09	3916

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.27	11554
% of DA:	35%	
% Routed to Perv:	34%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac.	Area SF	
		0.76	33253	33253

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = l	65	S =	13.8	Ia =	2.75	Width:
Elev Up	12.4	Lag =	0.0 Hours			511.58
Elev Dn (Inv)	9.8	Tc =	0.1 Hours			
Slope % = Y	4.00	Tc =	4.9 Minutes			
CN =	42					

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-CB-12

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.16	6856	Pervious Comp CN = 39
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	0.47	20429.5	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.63	27285.5	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.19	8420

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.67	29185
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.20	8756

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.39	17176
% of DA:	39%	
% Routed to Perv:	51%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula:	Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	Area Ac.	Area SF	
		1.02	44461	44461

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length = l	64	S =	15.6	Ia =	3.13	Width:
Elev Up	11.5	Lag =	0.1 Hours			694.70
Elev Dn (Inv)	10.14	Tc =	0.1 Hours			
Slope % = Y	2.13	Tc =	7.2 Minutes			
CN =	39					

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-CB-13

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.17	7458	Pervious Comp CN = 39
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	0.40	17332.7	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.57	24790.7	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.20	8825

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.57	24761
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.17	7428

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.37	16253
% of DA:	40%	
% Routed to Perv:	46%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF	
0.94	41044	41046

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	64	S=	15.6	Ia=	3.13	Width:	641.31
Elev Up	11.6	Lag =	0.1 Hours				
Elev Dn (Inv)	10.14	Tc =	0.1 Hours				
Slope % = Y	2.28	Tc =	6.9 Minutes				
CN =	39						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-CB-14

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.17	7455	Pervious Comp CN = 39
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	0.50	21882	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.67	29337	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.20	8786

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.72	31260
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.22	9378

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.42	18164
% of DA:	38%	
% Routed to Perv:	52%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF	
1.09	47501	47500

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	64	S=	15.6	Ia=	3.13	Width:	742.20
Elev Up	11.2	Lag =	0.1 Hours				
Elev Dn (Inv)	10.18	Tc =	0.1 Hours				
Slope % = Y	1.59	Tc =	8.3 Minutes				
CN =	39						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-CB-15

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.15	6327	Pervious Comp CN = 39
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	0.40	17528.7	<u>Connected Impervious Tabulation:</u>
Res Lot Perv B Soils	61	0.00	0		Area Ac. Area SF
CN SubTotal		0.55	23855.7	Measured: 0.18 7864

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.57	25041
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.17	7512

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.35	15376
% of DA:	39%	
% Routed to Perv:	49%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
0.90	39232 39232

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	64	S=	15.6	Ia=	3.13	Width:	613.00
Elev Up	11.3	Lag =	0.1 Hours				
Elev Dn (Inv)	10.18	Tc =	0.1 Hours				
Slope % = Y	1.75	Tc =	7.9 Minutes				
CN =	39						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-DI-03

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 60
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	0.05	2384.9	<u>Connected Impervious Tabulation:</u>
Res Lot Perv B Soils	61	1.70	74118.8		Area Ac. Area SF
CN SubTotal		1.76	76503.7	Measured: 0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.08	3407
Lot Area (B Soils):	2.43	105884
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.75	32787

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.75	32787
% of DA:	30%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
2.51	109291 109363

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	200	S=	6.6	Ia=	1.32	Width:	546.46
Elev Up	11.38	Lag =	0.1 Hours				
Elev Dn (Inv)	9	Tc =	0.2 Hours				
Slope % = Y	1.19	Tc =	13.8 Minutes				
CN =	60						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-DI-03-05

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	1.29	56353	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 57
Open Space B Soils	61	0.50	21644	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		1.79	77997	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0
On Res Lots:	0.00 0

Impervious Tabulations:

Area Ac.	Area SF
Coverage Total:	0.00 0
% of DA:	0%
% Routed to Perv:	#DIV/0!

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
1.79	77997 77924

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	127	S=	7.6	Ia=	1.53	Width:	614.15
Elev Up	10.27	Lag =	0.1 Hours				
Elev Dn (Inv)	9	Tc =	0.2 Hours				
Slope % = Y	1.00	Tc =	11.5 Minutes				
CN =	57						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-DI-04

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.02	795	Pervious Comp CN = 40
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	0.78	33994.8	
Res Lot Perv B Soils	61	0.02	858.9	
CN SubTotal		0.82	35648.7	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	1.11	48564
Lot Area (B Soils):	0.03	1227
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0
On Res Lots:	0.34 14937

Impervious Tabulations:

Area Ac.	Area SF
Coverage Total:	0.34 14937
% of DA:	30%
% Routed to Perv:	100%

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
1.16	50586 50586

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	150	S=	15.3	Ia=	3.06	Width:	337.24
Elev Up	11.75	Lag =	0.2 Hours				
Elev Dn (Inv)	10	Tc =	0.3 Hours				
Slope % = Y	1.17	Tc =	18.9 Minutes				
CN =	40						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-DI-04-05

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.04	1567	
Wooded B Soils	55	0.05	2200	
Open Space A Soils	39	0.13	5671	Pervious Comp CN = 45
Open Space B Soils	61	0.06	2576	
Res Lot Perv A Soils	39	0.00	0	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		0.28	12014	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.00	0

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.00	0
% of DA:	0%	
% Routed to Perv:	#DIV/0!	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
0.28	12014 12014

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	S=	Lag =	Ia=	Width:
53	12.0	0.1 Hours	2.40	226.68
Elev Up 10.53		0.1 Hours		
Elev Dn (Inv) 10		7.6 Minutes		
Slope % = Y 1.00				
CN = 45				

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-DI-05

Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded A Soils	30	0.00	0	
Wooded B Soils	55	0.00	0	
Open Space A Soils	39	0.00	0	Pervious Comp CN = 39
Open Space B Soils	61	0.00	0	
Res Lot Perv A Soils	39	1.26	54903.1	
Res Lot Perv B Soils	61	0.00	0	
CN SubTotal		1.26	54903.1	

Connected Impervious Tabulation:

Area Ac.	Area SF
Measured:	0.00 0
On Res Lots:	0.54 23530

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	1.80	78433
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0
On Res Lots:	0.54	23530

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	0.54	23530
% of DA:	30%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
1.80	78433 78433

Formula: Time of Concentration = $5 / 3 * Lag$

Length = l	S=	Lag =	Ia=	Width:
200	15.6	0.2 Hours	3.13	392.17
Elev Up 11.4		0.3 Hours		
Elev Dn (Inv) 7.3		18.2 Minutes		
Slope % = Y 2.05				
CN = 39				

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

DA-JB-01A

	Pervious CN Calc	CN	Area Ac.	Area SF	
Wooded	A Soils	30	0.34	14737	
Wooded	B Soils	55	0.00	0	
Open Space	A Soils	39	2.59	112917	Pervious Comp CN = 38
Open Space	B Soils	61	0.06	2645	
Res Lot Perv	A Soils	39	0.00	0	
Res Lot Perv	B Soils	61	0.00	0	
	CN SubTotal		2.99	130299	

Connected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	0.00	0

Proposed Lots Tabulation:

	Area Ac.	Area SF
Lot Area (A Soils):	0.00	0
Lot Area (B Soils):	0.00	0
Max Lot Coverage:	30%	

Disconnected Impervious Tabulation:

	Area Ac.	Area SF
Measured:	1.71	74328
On Res Lots:	0.00	0

Impervious Tabulations:

	Area Ac.	Area SF
Coverage Total:	1.71	74328
% of DA:	36%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$

Total Drainage Area:

Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$

Area Ac	Area SF
4.70	204627
	204627

Formula: Time of Concentration = $5 / 3 * Lag$

	Length = l	Elev Up	Elev Dn (Inv)	Slope % = Y	CN =	S=	Lag =	Tc =	Ia=	Width:
	700	14.5	11.7	0.40	38	16.0	1.1 Hours	1.9 Hours	3.20	292.32
								114.3 Minutes		

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

REVISED-E017

<u>Pervious CN Calc</u>	<u>CN</u>	<u>Area Ac.</u>	<u>Area SF</u>		
Wooded - A Soils	30	0.36	15624	Pervious Comp CN	44
Wooded - B Soils	55	0.25	10966		
Open Spa A Soils	39	0.56	24377	<u>Connected Impervious Tabulation:</u>	
Open Spa B Soils	61	0.30	13120	Area Ac.	Area SF
CN SubTotal		1.47	64087	Measured:	0.00 0

Disconnected Impervious Tabulation:

	<u>Area Ac.</u>	<u>Area SF</u>
Measured:	0.29	12460

Impervious Tabulation:

	<u>Area Ac.</u>	<u>Area SF</u>
Coverage Total:	0.29	12460
% of DA:	16%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$ Total Drainage Area:

	<u>Area Ac</u>	<u>Area SF</u>
Formula: Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	1.76	76547 76550

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

					<u>Width:</u>
Length =	1000	S =	12.7	Ia =	2.54 76.55
Elev Up	14	Lag =	0.9 Hours		
Elev Dn (	5.3	Tc =	1.5 Hours		
Slope % =	0.87	Tc =	88.6 Minutes		
CN =	44				

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

REVISED-E018

<u>Pervious CN Calc</u>	<u>CN</u>	<u>Area Ac.</u>	<u>Area SF</u>		
Wooded - A Soils	30	0.29	12604	Pervious Comp CN	47
Wooded - B Soils	55	0.46	19970		
Open Spa A Soils	39	0.03	1459	<u>Connected Impervious Tabulation:</u>	
Open Spa B Soils	61	0.08	3614	Area Ac.	Area SF
CN SubTotal		0.86	37647	Measured:	0.00 0

Disconnected Impervious Tabulation:

	<u>Area Ac.</u>	<u>Area SF</u>
Measured:	0.00	0

Impervious Tabulation:

	<u>Area Ac.</u>	<u>Area SF</u>
Coverage Total:	0.00	0
% of DA:	0%	
% Routed to Perv:	#DIV/0!	

Formula: Potential Max Retention $S = (1000 / CN) - 10$ Total Drainage Area:

	<u>Area Ac</u>	<u>Area SF</u>
Formula: Lag = $[(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	0.86	37647 37707

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

					<u>Width:</u>
Length =	175	S =	11.5	Ia =	2.29 215.13
Elev Up	13.37	Lag =	0.1 Hours		
Elev Dn (	5.3	Tc =	0.1 Hours		
Slope % =	4.61	Tc =	8.9 Minutes		
CN =	47				

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

REVISED-E019

<u>Pervious CN Calc</u>	<u>CN</u>	<u>Area Ac.</u>	<u>Area SF</u>		
Wooded - A Soils	30	0.04	1679	Pervious Comp CN	55
Wooded - B Soils	55	1.02	44449		
Open Spa A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>	
Open Spa B Soils	61	0.11	4691	Area Ac.	Area SF
CN SubTotal		1.17	50819	Measured:	0.00 0

Disconnected Impervious Tabulation:

<u>Area Ac.</u>	<u>Area SF</u>
Measured:	0.00 0

Impervious Tabulation:

<u>Area Ac.</u>	<u>Area SF</u>
Coverage Total:	0.00 0
% of DA:	0%
% Routed to Perv:	#DIV/0!

Formula: Potential Max Retention $S = (1000 / CN) - 10$	Total Drainage Area:
	Area Ac Area SF
Formula: Lag = $[(1^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	1.17 50819 50819

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length =	275	S =	8.3	Ia =	1.65	Width:	184.80
Elev Up	8.55	Lag =	0.2 Hours				
Elev Dn (	5.4	Tc =	0.3 Hours				
Slope % =	1.15	Tc =	20.9 Minutes				
CN =	55						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

REVISED-E020

<u>Pervious CN Calc</u>	<u>CN</u>	<u>Area Ac.</u>	<u>Area SF</u>		
Wooded - A Soils	30	0.00	0	Pervious Comp CN	57
Wooded - B Soils	55	0.12	5174		
Open Spa A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>	
Open Spa B Soils	61	0.07	2908	Area Ac.	Area SF
CN SubTotal		0.19	8082	Measured:	0.00 0

Disconnected Impervious Tabulation:

<u>Area Ac.</u>	<u>Area SF</u>
Measured:	0.00 0

Impervious Tabulation:

<u>Area Ac.</u>	<u>Area SF</u>
Coverage Total:	0.00 0
% of DA:	0%
% Routed to Perv:	#DIV/0!

Formula: Potential Max Retention $S = (1000 / CN) - 10$	Total Drainage Area:
	Area Ac Area SF
Formula: Lag = $[(1^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	0.19 8082 8082

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

Length =	25	S =	7.5	Ia =	1.50	Width:	323.28
Elev Up	7.5	Lag =	0.0 Hours				
Elev Dn (	5.3	Tc =	0.0 Hours				
Slope % =	8.80	Tc =	1.0 Minutes				
CN =	57						

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

REVISED-E021

<u>Pervious CN Calc</u>	<u>CN</u>	<u>Area Ac.</u>	<u>Area SF</u>		
Wooded - A Soils	30	2.17	94584	Pervious Comp CN	47
Wooded - B Soils	55	4.97	216483		
Open Spa A Soils	39	0.82	35703	<u>Connected Impervious Tabulation:</u>	
Open Spa B Soils	61	0.41	17739	Area Ac.	Area SF
CN SubTotal		8.37	364509	Measured:	0.00 0

Disconnected Impervious Tabulation:

<u>Area Ac.</u>	<u>Area SF</u>
Measured:	0.33 14576

Impervious Tabulation

<u>Area Ac.</u>	<u>Area SF</u>
Coverage Total:	0.33 14576
% of DA:	4%
% Routed to Perv:	100%

Formula: Potential Max Retention $S = (1000 / CN) - 10$ Total Drainage Area:

	<u>Area Ac</u>	<u>Area SF</u>
Formula: $Lag = [(1^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	8.70	379085 379086

Formula: Time of Concentration = $5 / 3 * Lag$

					Width:
Length =	500	S=	11.2	Ia=	2.23 758.17
Elev Up	14	Lag =	0.3 Hours		
Elev Dn (	5.2	Tc =	0.5 Hours		
Slope % =	1.76	Tc =	32.9 Minutes		
CN =	47				

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

REVISED-E022

<u>Pervious CN Calc</u>	<u>CN</u>	<u>Area Ac.</u>	<u>Area SF</u>		
Wooded - A Soils	30	0.94	40948	Pervious Comp CN	52
Wooded - B Soils	55	10.48	456563		
Open Spa A Soils	39	0.77	33557	<u>Connected Impervious Tabulation:</u>	
Open Spa B Soils	61	0.00	0	Area Ac.	Area SF
CN SubTotal		12.19	531068	Measured:	0.00 0

Disconnected Impervious Tabulation:

<u>Area Ac.</u>	<u>Area SF</u>
Measured:	0.08 3391

Impervious Tabulation

<u>Area Ac.</u>	<u>Area SF</u>
Coverage Total:	0.08 3391
% of DA:	1%
% Routed to Perv:	100%

Formula: Potential Max Retention $S = (1000 / CN) - 10$ Total Drainage Area:

	<u>Area Ac</u>	<u>Area SF</u>
Formula: $Lag = [(1^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	12.27	534459 534459

Formula: Time of Concentration = $5 / 3 * Lag$

					Width:
Length =	670	S=	9.2	Ia=	1.84 797.70
Elev Up	13	Lag =	0.4 Hours		
Elev Dn (	4.8	Tc =	0.7 Hours		
Slope % =	1.22	Tc =	44.1 Minutes		
CN =	52				

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

REVISED-E023

<u>Pervious CN Calc</u>	<u>CN</u>	<u>Area Ac.</u>	<u>Area SF</u>		
Wooded - A Soils	30	0.78	33945	Pervious Comp CN	51
Wooded - B Soils	55	7.27	316681		
Open Spa A Soils	39	1.68	73065	<u>Connected Impervious Tabulation:</u>	
Open Spa B Soils	61	1.26	54687	Area Ac.	Area SF
CN SubTotal		10.98	478378	Measured:	0.00 0

Disconnected Impervious Tabulation:

<u>Area Ac.</u>	<u>Area SF</u>
Measured:	0.36 15594

Impervious Tabulation

<u>Area Ac.</u>	<u>Area SF</u>
Coverage Total:	0.36 15594
% of DA:	3%
% Routed to Perv:	100%

Formula: Potential Max Retention $S = (1000 / CN) - 10$ Total Drainage Area:

	<u>Area Ac</u>	<u>Area SF</u>
Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	11.34	493972 493982

Formula: Time of Concentration = $5 / 3 * Lag$

					Width:
Length =	547	S=	9.4	Ia=	1.89 903.06
Elev Up	12	Lag =	0.4 Hours		
Elev Dn (	6	Tc =	0.7 Hours		
Slope % =	1.10	Tc =	40.2 Minutes		
CN =	51				

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

REVISED-E025

<u>Pervious CN Calc</u>	<u>CN</u>	<u>Area Ac.</u>	<u>Area SF</u>		
Wooded - A Soils	30	0.00	0	Pervious Comp CN	57
Wooded - B Soils	55	1.86	80984		
Open Spa A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>	
Open Spa B Soils	61	0.84	36388	Area Ac.	Area SF
CN SubTotal		2.69	117372	Measured:	0.00 0

Disconnected Impervious Tabulation:

<u>Area Ac.</u>	<u>Area SF</u>
Measured:	0.32 13943

Impervious Tabulation

<u>Area Ac.</u>	<u>Area SF</u>
Coverage Total:	0.32 13943
% of DA:	11%
% Routed to Perv:	100%

Formula: Potential Max Retention $S = (1000 / CN) - 10$ Total Drainage Area:

	<u>Area Ac</u>	<u>Area SF</u>
Formula: $Lag = [(I^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	3.01	131315 131315

Formula: Time of Concentration = $5 / 3 * Lag$

					Width:
Length =	400	S=	7.6	Ia=	1.52 328.29
Elev Up	12	Lag =	0.3 Hours		
Elev Dn (	7	Tc =	0.4 Hours		
Slope % =	1.25	Tc =	25.6 Minutes		
CN =	57				

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

REVISED-E028

<u>Pervious CN Calc</u>	<u>CN</u>	<u>Area Ac.</u>	<u>Area SF</u>		
Wooded - A Soils	30	4.90	213495	Pervious Comp CN	42
Wooded - B Soils	55	3.01	131165		
Open Spa A Soils	39	28.70	1250250	<u>Connected Impervious Tabulation:</u>	
Open Spa B Soils	61	5.02	218568	Area Ac.	Area SF
CN SubTotal		41.63	1813478	Measured:	0.00 0

Disconnected Impervious Tabulation:

<u>Area Ac.</u>	<u>Area SF</u>
Measured:	10.18 443452

Impervious Tabulation

<u>Area Ac.</u>	<u>Area SF</u>
Coverage Total:	10.18 443452
% of DA:	20%
% Routed to Perv:	100%

Formula: Potential Max Retention $S = (1000 / CN) - 10$ Total Drainage Area:

	<u>Area Ac</u>	<u>Area SF</u>
Formula: Lag = $[(1^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	51.81	2256930 2256923

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

					Width:
Length =	1200	S=	14.0	Ia=	2.79 1880.78
Elev Up	12	Lag =	1.7 Hours		
Elev Dn (	7.8	Tc =	2.9 Hours		
Slope % =	0.35	Tc =	171.7 Minutes		
CN =	42				

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

REVISED-E032

<u>Pervious CN Calc</u>	<u>CN</u>	<u>Area Ac.</u>	<u>Area SF</u>		
Wooded - A Soils	30	0.00	0	Pervious Comp CN	60
Wooded - B Soils	55	0.08	3332		
Open Spa A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>	
Open Spa B Soils	61	0.25	10678	Area Ac.	Area SF
CN SubTotal		0.32	14010	Measured:	0.00 0

Disconnected Impervious Tabulation:

<u>Area Ac.</u>	<u>Area SF</u>
Measured:	0.08 3357

Impervious Tabulation

<u>Area Ac.</u>	<u>Area SF</u>
Coverage Total:	0.08 3357
% of DA:	19%
% Routed to Perv:	100%

Formula: Potential Max Retention $S = (1000 / CN) - 10$ Total Drainage Area:

	<u>Area Ac</u>	<u>Area SF</u>
Formula: Lag = $[(1^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	0.40	17367 17367

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

					Width:
Length =	26	S=	6.8	Ia=	1.36 667.96
Elev Up	9	Lag =	0.0 Hours		
Elev Dn (	6	Tc =	0.0 Hours		
Slope % =	11.54	Tc =	0.9 Minutes		
CN =	60				

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

REVISED-E033

<u>Pervious CN Calc</u>	<u>CN</u>	<u>Area Ac.</u>	<u>Area SF</u>		
Wooded - A Soils	30	0.02	864	Pervious Comp CN	54
Wooded - B Soils	55	0.32	13959		
Open Spa A Soils	39	0.29	12614	<u>Connected Impervious Tabulation:</u>	
Open Spa B Soils	61	0.58	25226	Area Ac.	Area SF
CN SubTotal		1.21	52663	Measured:	0.00 0

Disconnected Impervious Tabulation:

	<u>Area Ac.</u>	<u>Area SF</u>
Measured:	0.28	12295

Impervious Tabulation:

	<u>Area Ac.</u>	<u>Area SF</u>
Coverage Total:	0.28	12295
% of DA:	19%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$ Total Drainage Area:

	<u>Area Ac</u>	<u>Area SF</u>
Formula: Lag = $[(d^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	1.49	64958 64959

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

					Width:
Length =	50	S =	8.6	Ia =	1.73 1299.16
Elev Up	10.5	Lag =	0.0 Hours		
Elev Dn (	7.6	Tc =	0.0 Hours		
Slope % =	5.80	Tc =	2.4 Minutes		
CN =	54				

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

REVISED-E034

<u>Pervious CN Calc</u>	<u>CN</u>	<u>Area Ac.</u>	<u>Area SF</u>		
Wooded - A Soils	30	0.06	2735	Pervious Comp CN	39
Wooded - B Soils	55	0.00	0		
Open Spa A Soils	39	1.23	53382	<u>Connected Impervious Tabulation:</u>	
Open Spa B Soils	61	0.00	0	Area Ac.	Area SF
CN SubTotal		1.29	56117	Measured:	0.00 0

Disconnected Impervious Tabulation:

	<u>Area Ac.</u>	<u>Area SF</u>
Measured:	0.14	6224

Impervious Tabulation:

	<u>Area Ac.</u>	<u>Area SF</u>
Coverage Total:	0.14	6224
% of DA:	10%	
% Routed to Perv:	100%	

Formula: Potential Max Retention $S = (1000 / CN) - 10$ Total Drainage Area:

	<u>Area Ac</u>	<u>Area SF</u>
Formula: Lag = $[(d^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	1.43	62341 62341

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

					Width:
Length =	295	S =	15.9	Ia =	3.19 211.33
Elev Up	11.5	Lag =	0.4 Hours		
Elev Dn (	9	Tc =	0.7 Hours		
Slope % =	0.85	Tc =	39.2 Minutes		
CN =	39				

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

REVISED-E036

<u>Pervious CN Calc</u>	<u>CN</u>	<u>Area Ac.</u>	<u>Area SF</u>		
Wooded - A Soils	30	0.00	0	Pervious Comp CN	58
Wooded - B Soils	55	1.20	52225		
Open Spa A Soils	39	0.00	0	<u>Connected Impervious Tabulation:</u>	
Open Spa B Soils	61	0.93	40642	Area Ac.	Area SF
CN SubTotal		2.13	92867	Measured:	0.00 0

Disconnected Impervious Tabulation:

<u>Area Ac.</u>	<u>Area SF</u>
Measured:	0.06 2740

Impervious Tabulation

<u>Area Ac.</u>	<u>Area SF</u>
Coverage Total:	0.06 2740
% of DA:	3%
% Routed to Perv:	100%

Formula: Potential Max Retention $S = (1000 / CN) - 10$ Total Drainage Area:

	<u>Area Ac</u>	<u>Area SF</u>
Formula: Lag = $[(d^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	2.19	95607 95607

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

					Width:
Length =	170	S=	7.4	Ia=	1.47 562.39
Elev Up	9.5	Lag =	0.1 Hours		
Elev Dn (	5.14	Tc =	0.1 Hours		
Slope % =	2.56	Tc =	8.8 Minutes		
CN =	58				

**Proposed Drainage Area Parameters - SWMM SCS Method
The Meadows Subdivision**

REVISED-E037

<u>Pervious CN Calc</u>	<u>CN</u>	<u>Area Ac.</u>	<u>Area SF</u>		
Wooded - A Soils	30	18.15	790434	Pervious Comp CN	44
Wooded - B Soils	55	2.72	118626		
Open Spa A Soils	39	56.83	2475404	<u>Connected Impervious Tabulation:</u>	
Open Spa B Soils	61	26.89	1171239	Area Ac.	Area SF
CN SubTotal		104.58	4555703	Measured:	0.00 0

Disconnected Impervious Tabulation:

<u>Area Ac.</u>	<u>Area SF</u>
Measured:	11.97 521257

Impervious Tabulation

<u>Area Ac.</u>	<u>Area SF</u>
Coverage Total:	11.97 521257
% of DA:	10%
% Routed to Perv:	100%

Formula: Potential Max Retention $S = (1000 / CN) - 10$ Total Drainage Area:

	<u>Area Ac</u>	<u>Area SF</u>
Formula: Lag = $[(d^{0.8}) * (S+1)^{0.7}] / 1900 * (Y^{0.5})$	116.55	5076960 5076960

Formula: Time of Concentration = $5 / 3 * \text{Lag}$

					Width:
Length =	1450	S=	13.0	Ia=	2.60 3501.35
Elev Up	13	Lag =	1.9 Hours		
Elev Dn (	8	Tc =	3.2 Hours		
Slope % =	0.34	Tc =	192.1 Minutes		
CN =	44				

APPENDIX D
EPA SWMM Model Report

EPA SWMM Model Report

The Meadows – Residential Subdivision
Powells Point, Currituck County
February 14, 2026

General

The following report will detail the EPA SWMM Model which was constructed & analyzed in order to provide design guidance for the stormwater management systems to be installed with the construction of the proposed Meadows residential subdivision in Powells Point, NC.

The Project Site

The Meadows Subdivision project is a proposed Residential Subdivision to be located on an area of (+/-) 66.75 acres across four parcels located to the east of US 158 and to the north of South Spot Road in Powells Point, Currituck County, NC. The western portion of the property (entrance road) and all areas west of Tig-Ma-Tar Ditch will be permitted under a NCDEQ Low Density Stormwater Permit. Additionally, the rest of the subdivision BUA (entire developed area east of the entrance road) will be permitted under a NCDEQ High Density Stormwater Permit. The total proposed impervious coverage will be 22.12% for the project.

The project area currently consists of a wooded area surrounded by mostly open land with an existing golf course to the south and a mix of residential and manufacturing development to the north. Runoff from the project site and the surrounding area is drained via overland flow into the Tig-Ma-Tar-Ditch which runs primarily north to south. Soil across the site consists primarily of loamy sand.

The Meadows Subdivision proposes to construct 55 single family residential lots with associated subdivision road and infrastructure improvements. Runoff from the proposed subdivision roads, lots, and open space will be collected via a storm sewer system as well as grassed swales running through and around the project site all conveying to a wet pond in the southwest corner of the developed area.



Plans which accompany this submittal are schematic in nature and are intended to provide guidance in how the

SWMM Model was constructed. A separate submission of detailed Construction Plans will be submitted for Currituck County Construction Plans review.

Target Design Standards

Post-construction runoff resulting from a 10-yr, 24 hr storm event will be retained and released at a peak flow rate which does not exceed the 2-yr, 24 hr peak runoff rate for the site in a theoretical wooded pre-development condition. Post-construction runoff resulting from a 100-yr, 24 hr storm event will be retained and released at a peak flow rate which does not exceed the actual calculated pre-construction 100-yr, 24 hr peak runoff rate for the site.

Pre-development peak flow was calculated utilizing the NRCS (SCS) Method as incorporated into EPA SWMM software. A singular culvert along Tig-Ma-Tar ditch was identified and analyzed as a link of interest. Pre-development (target) peak flows calculated for the link of interest are as follows:

E017-E016 Culvert link immediately downstream of the wet pond's control outlet structure and all ancillary uncontrolled flows from the site.

2yr-10yr Analysis (Currituck County Req'mt):

	2yr-10yr Pre (cfs)
E017-E016	2.68

100yr Analysis (Currituck County Req'mt):

	100yr Pre (cfs)
E017-E016	13.97

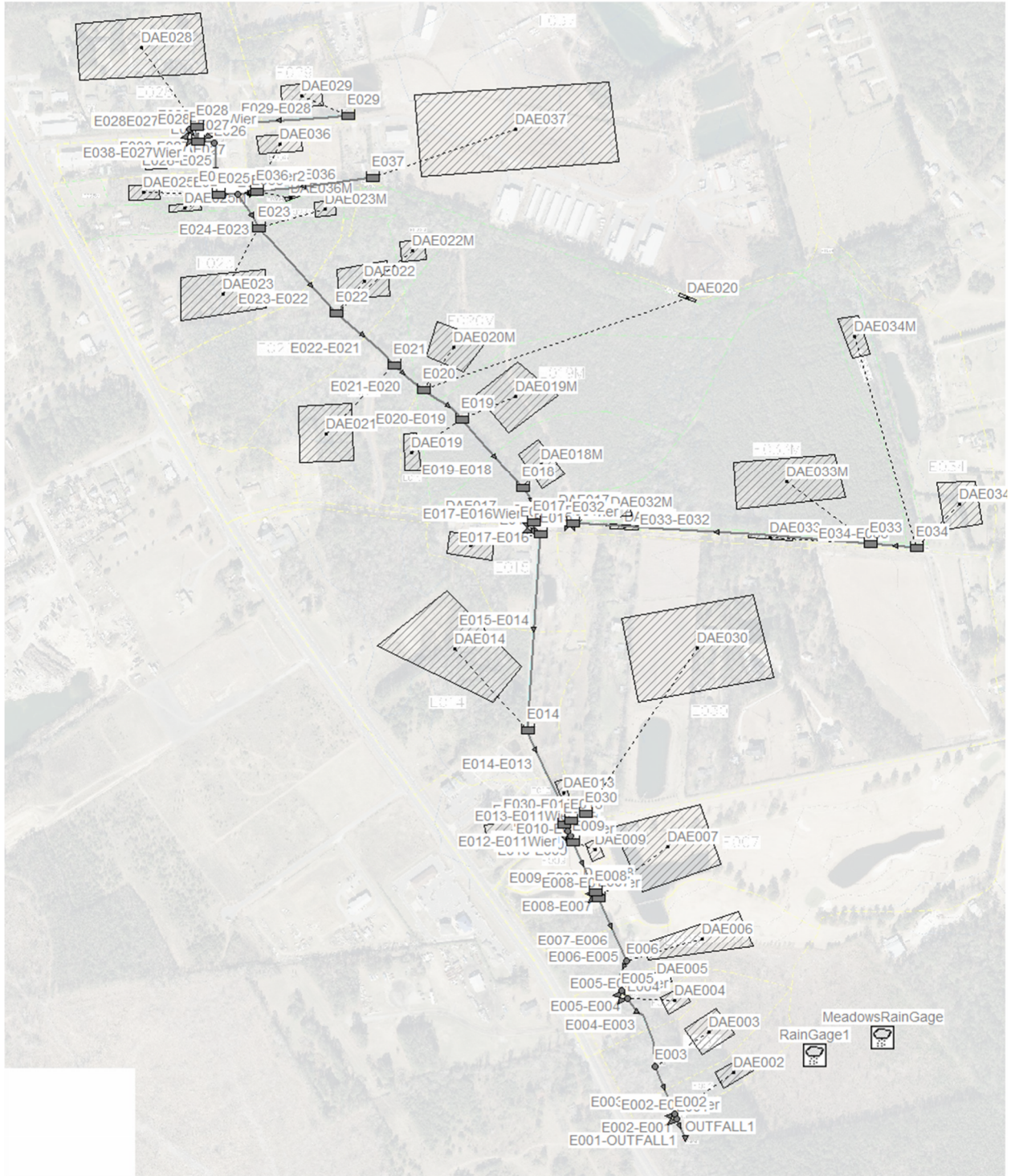
EPA SWMM Model (Ex. Conditions Aerial Schematic):

Electronic (readable) Copy enclosed with this submission



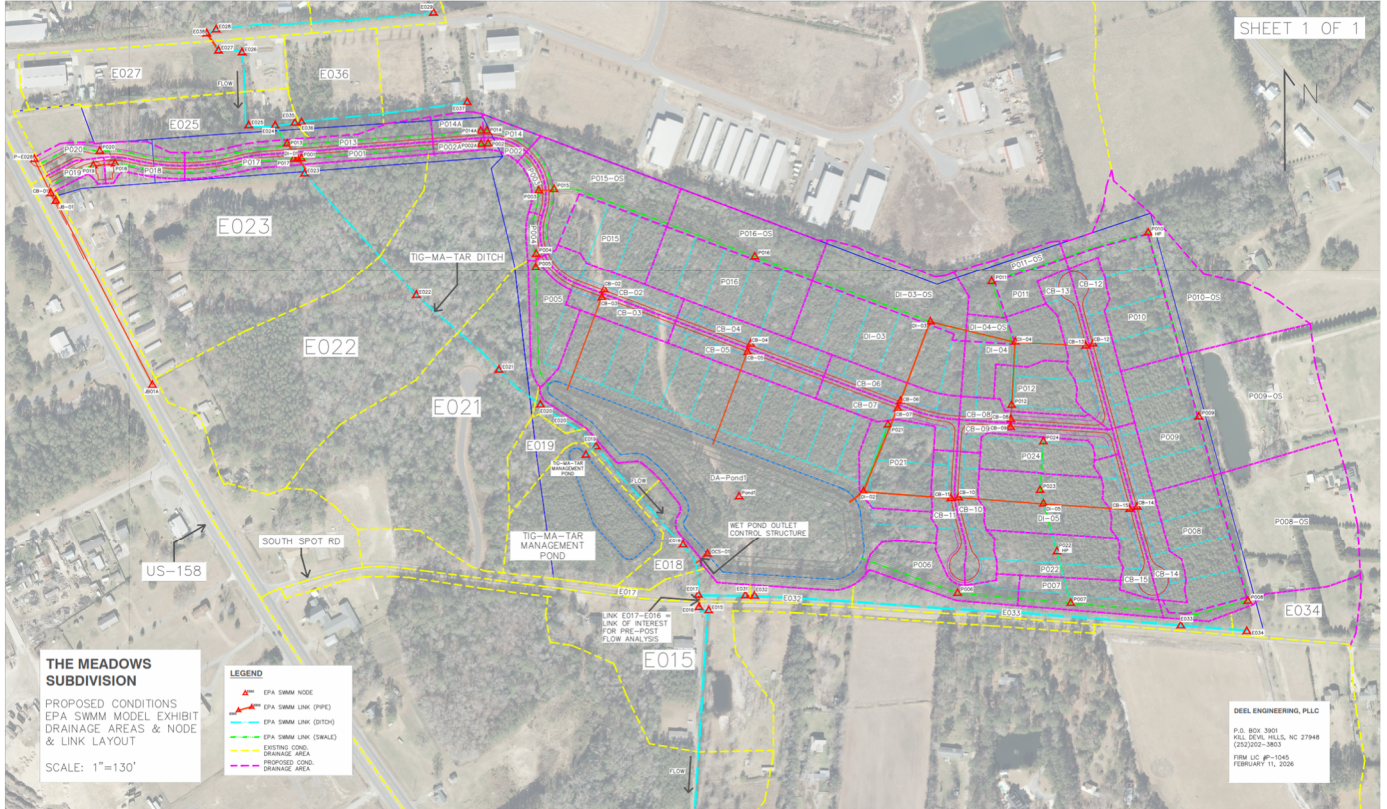
EPA SWMM Model (Ex. Conditions Graphical Model):

Electronic Copy enclosed with this submission



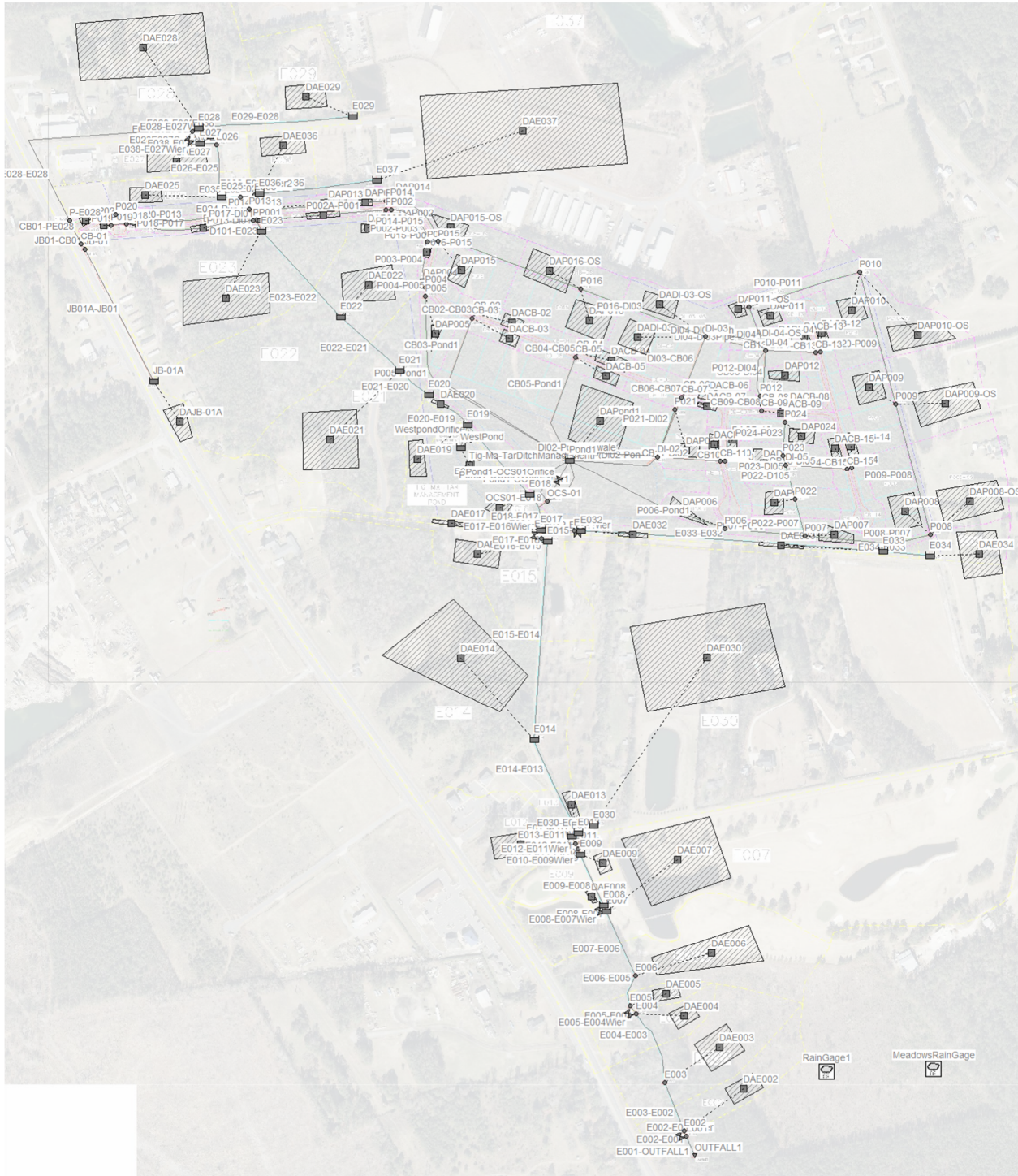
EPA SWMM Model (Prop. Conditions Aerial Schematic):

Full-Size (readable) Copy enclosed with this submission



EPA SWMM Model (Prop. Conditions Graphical Model):

Electronic Copy enclosed with this submission



Model Hydrology

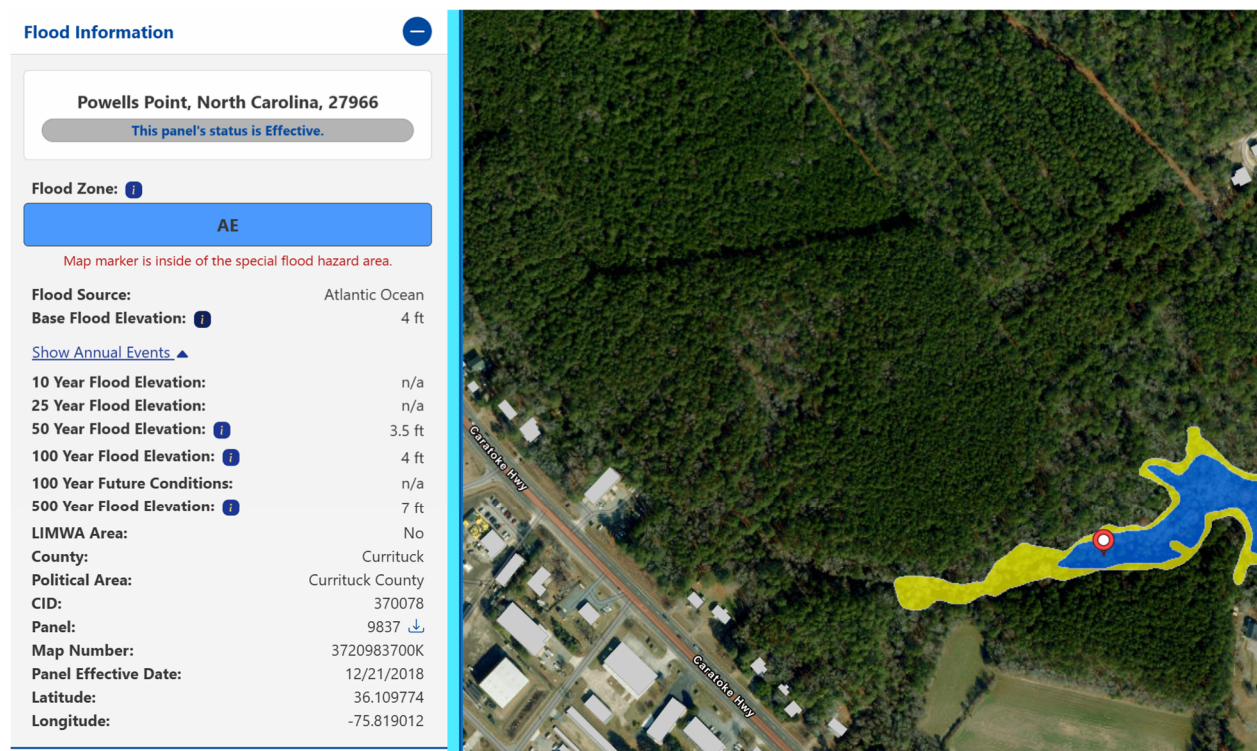
Runoff was modeled utilizing the NRCS (SCS) Method for the 2-yr, 10-yr, and 100-yr, 24-hour storm events. NRCS standard Type III (coastal) rainfall distributions were utilized with total rainfall depths of:

- 2yr, 24hr Total Rainfall Depth = 3.74 in. (Currituck County Standard)
- 10yr, 24 hr Total Rainfall Depth = 5.74 in. (NOAA Atlas 14)
- 100yr, 24 hr Total Rainfall Depth = 9.54 in. (NOAA Atlas 14)

Runoff was routed through the model utilizing a Dynamic Wave method.

Model Tailwater

Tailwater conditions are obtained via flood analysis data posted to the NCEM FRIS website:



*Since the only available tailwater information is for the 100yr-24hr storm event a fixed tailwater is only applied to that model. The “2-yr,10-yr” and 10-yr models utilize a ‘normal’ state applied to the outlet

Model Elements

Model Elements input data is included in the electronic files accompanying this narrative.

Methodology

In an examination of the drainage shed, one Link of Interest (LOI) within the drainage system was identified:

E017-E016	Culvert link immediately downstream of the wet pond's control outlet structure and all ancillary uncontrolled flows from the site.
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The project area currently consists of a wooded area surrounded by mostly open land with an existing golf course to the south and a mix of residential and manufacturing development to the north. Runoff from the project site and the surrounding area is drained via overland flow into the Tig-Ma-Tar-Ditch which runs primarily north to south.

All contributing drainage areas flowing towards the outlet were analyzed and the proposed project area was segregated from off-site areas so that on-site conditions can be changed for the pre- / post- construction analysis. The LOI was identified within the existing drainage system immediately downstream of the project area. The LOI was utilized as the "comparison location" to analyze the effectiveness of the system design in mitigating post-construction flows to pre-construction levels.

Off-site drainage areas were included in the analysis so that tailwater effects at the outfall can be properly accounted for in the model.

The Post-Construction runoff from the proposed subdivision roads, lots, and open space will be collected via a storm sewer system as well as grassed swales running through and around the project site all conveying to a wet pond in the southwest corner of the developed area. The proposed wet pond is designed to maintain a Normal Water Surface Elevation (NWSEL) of 5.7', which is regulated at that level via a weir & orifice structure which discharges to Tig-Ma-Tar Ditch.

In order to account for the overland storage during large rainfall events that may be lost with the installation of the subdivision, and to account for uncontrolled flow for the project site's undisturbed area, a secondary pond has been added on the west side of Tig-Ma-Tar Ditch to allow for the mitigation of flows within the ditch by providing temporary storage during larger storm events. This pond is labeled "Tig-Ma-Tar Management Pond" on project exhibits and construction plans. This pond is NOT a Stormwater Control Measure (SCM) for the purposes of NCDEQ permitting and no proposed developed area will drain to this pond. The proposed secondary pond is designed to maintain a NSWEL of 4.0', which is regulated at that level via an orifice structure which discharges to Tig-Ma-Tar Ditch. Overflow from Tig-Ma-Tar Ditch is allowed to flow into the pond once the water level in the ditch reaches an elevation of 5.7' during larger storm events via a trapezoidal swale connection between the ditch and the pond.

Existing and Proposed Conditions models were run to generate peak flow results for the "2-yr,10-yr", 10-yr, and 100-yr, 24 hr rainfall events.

Multiple weir configurations were tested in an iterative process until balance between pre-construction model peak flows and post-construction peak flows were achieved. The final design calls for the following control structure:

<u>Pond</u>	<u>Outfall</u>	<u>Weir Configuration</u>
Pond 1	Tig-Ma-Tar Ditch	Conc. Weir Structure with: 6"x4" rectangular orifice @ elev. 5.7' 2' wide weir @ elev. 6.8' 8' wide weir @ elev. 7.0'

Results:

A complete tabulation of flow & velocity results for the proposed project can be found in the Appendix to the Stormwater Narrative. Summary results pertaining to the design and Currituck County Compliance are as follows:

Peak Flow Mitigation Results:

2-yr / 10-yr Rainfall Peak Flow Mitigation:

	2yr-10yr Pre* (cfs)	10yr Post (cfs)
E017-E016	2.68	2.52

100-yr Rainfall Peak Flow Mitigation:

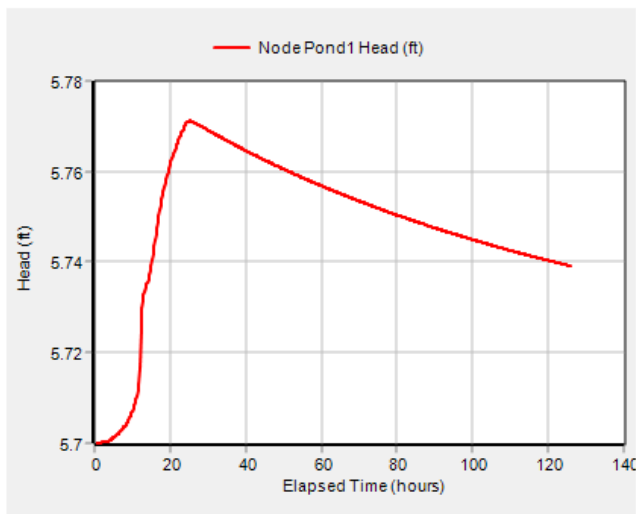
	100yr Pre (cfs)	100yr Post (cfs)
E017-E016	13.97	11.6

* "2-yr / 10yr Pre" results reported represent results from the model with the 10-yr rainfall event applied to all off-site drainage areas and the 2-yr rainfall event applied to the Project Site

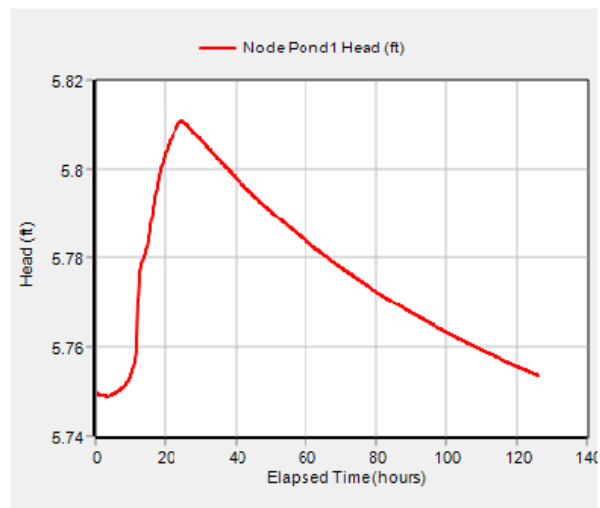
Pond System Draw-down:

Outflow of the water quality volume is controlled via an orifice in the outlet control structure located adjacent to (and discharging to) Tig-Ma-Tar Ditch. Per the EPA SWMM model constructed for the entire system, the water quality volume for the entire system is achieved at a water surface elevation of 5.77' (permanent pool is at elevation 5.7'). The proposed pond system is also utilized to meet peak flow requirements for the 2-yr, 10-yr, and 100-yr rainfall events. Therefore, the system is significantly oversized when compared to NCDEQ requirements. The result is a very shallow (low-head) storage depth for the WQV, which causes difficulty in getting the pond system to drawdown completely to its original permanent pool elevation of 5.7' within five days after a storm. The actual 5-day drawdown is to an elevation of 5.74'.

To address this, the overflow weir above the WQV storage was set at an elevation of 6.8', providing additional storage within the system for multiple WQV events. Multiple EPA SWMM Models were then run: The first model established that after five days, the pond system would draw-down to an elevation of 5.74'. Then a second model was run which applied a new 1.5" rainfall event on top of the "wet-period permanent pool" of 5.74'. This model showed storage within the system up to an elevation of 5.80' (still below the overflow elevation), and then a draw-down back to a new "wet-period permanent pool" of 5.75'. Next a third model was run which applied a new 1.5" rainfall event on top of the new "wet-period permanent pool" of 5.75'. This model showed storage within the system up to an elevation of 5.81' (still below the overflow elevation), and then a draw-down back to the new "wet-period permanent pool" of 5.75'.



"Dry-Period Permanent Pool" = 5.7'



"Wet-Period Permanent Pool" = 5.75'

The higher head of the third stored event brings the system into equilibrium where it can store, treat, and discharge an endless number of back-to-back 1.5" rainfall events spaced five days apart. Based on this analysis, the pond system meets the requirement for draw-down of the water quality volume within 5 days after a rainfall event.

Conclusions:

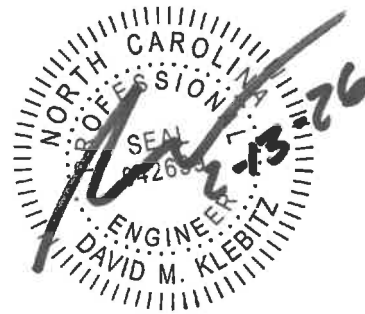
SWMM Modeling of the entire Meadows Subdivision drainage shed demonstrates that the proposed design complies with the Currituck County Stormwater Ordinance requirement that Post-Development peak flow from the 10-yr, 24 hr rainfall event be maintained at or below the Pre-Development peak flow from a 2-yr, 24hr rainfall event across a theoretical wooded site. The proposed design also reduces post-development peak flow below the pre-development peak flow for the 100-yr, 24 hr rainfall event for the primary outfall (Tig-Ma-Tar Ditch).

APPENDIX E
SESCP Flow & Velocities Check

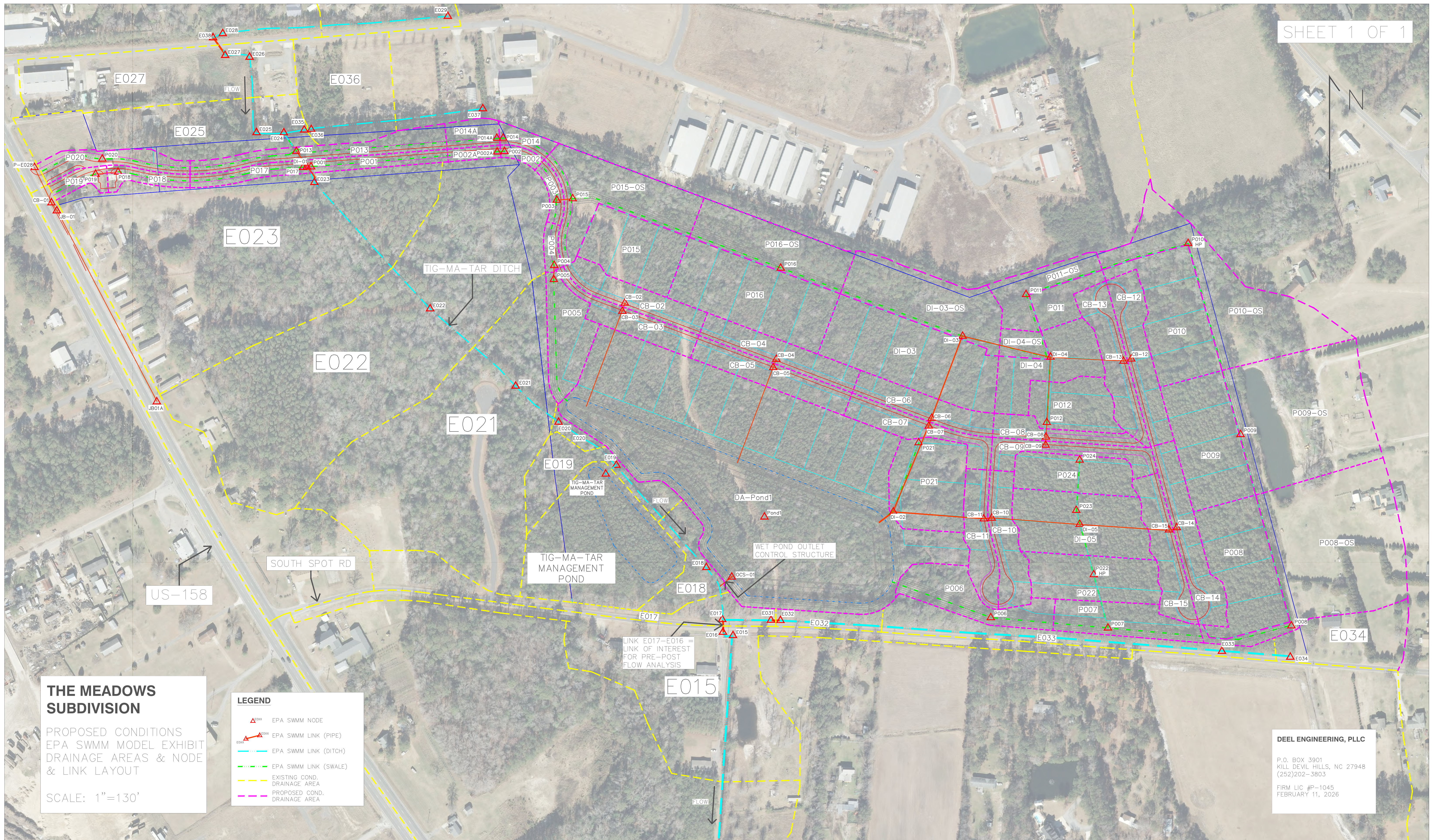
APPENDIX — SEDIMENTATION & EROSION CONTROL CALCULATIONS

Calculations Include the Following:

- EPA SWMM -POST DEVELOPMENT - LINK & NODE MAP
- DISTURBED DRAINAGE AREA MAP
- EROSION VELOCITY CHECKS
- SEDIMENT BASIN CALCULATIONS
- EROSION CONTROL SKIMMER CALCULATIONS



EPA SWMM -POST DEVELOPMENT - LINK & NODE MAP



THE MEADOWS SUBDIVISION

PROPOSED CONDITIONS
EPA SWMM MODEL EXHIBIT
DRAINAGE AREAS & NODE
& LINK LAYOUT

SCALE: 1"=130'

LEGEND

- ▲ EPA SWMM NODE
- ▲— EPA SWMM LINK (PIPE)
- EPA SWMM LINK (DITCH)
- - - EPA SWMM LINK (SWALE)
- - - EXISTING COND. DRAINAGE AREA
- - - PROPOSED COND. DRAINAGE AREA

LINK E017-E016 =
LINK OF INTEREST
FOR PRE-POST
FLOW ANALYSIS

DEEL ENGINEERING, PLLC

P.O. BOX 3901
KILL DEVIL HILLS, NC 27948
(252)202-3803

FIRM LIC #P-1045
FEBRUARY 11, 2026

DISTURBED DRAINAGE AREA MAP

- DA #1 ≈ 51 AC. - SED. BASIN 1
- DA #2 ≈ 0.60 AC. - TEMP. CHECK DAM
- DA #3 ≈ 0.85 AC. - TEMP. CHECK DAM
- DA #4 ≈ 0.86 AC. - TEMP. CHECK DAM
- DA #5 ≈ 0.54 AC. - TEMP. CHECK DAM



BRASSIEL
 Engineers, Planners, Surveyors

DEVELOPMENT OVERVIEW
 AND PHASING PLAN

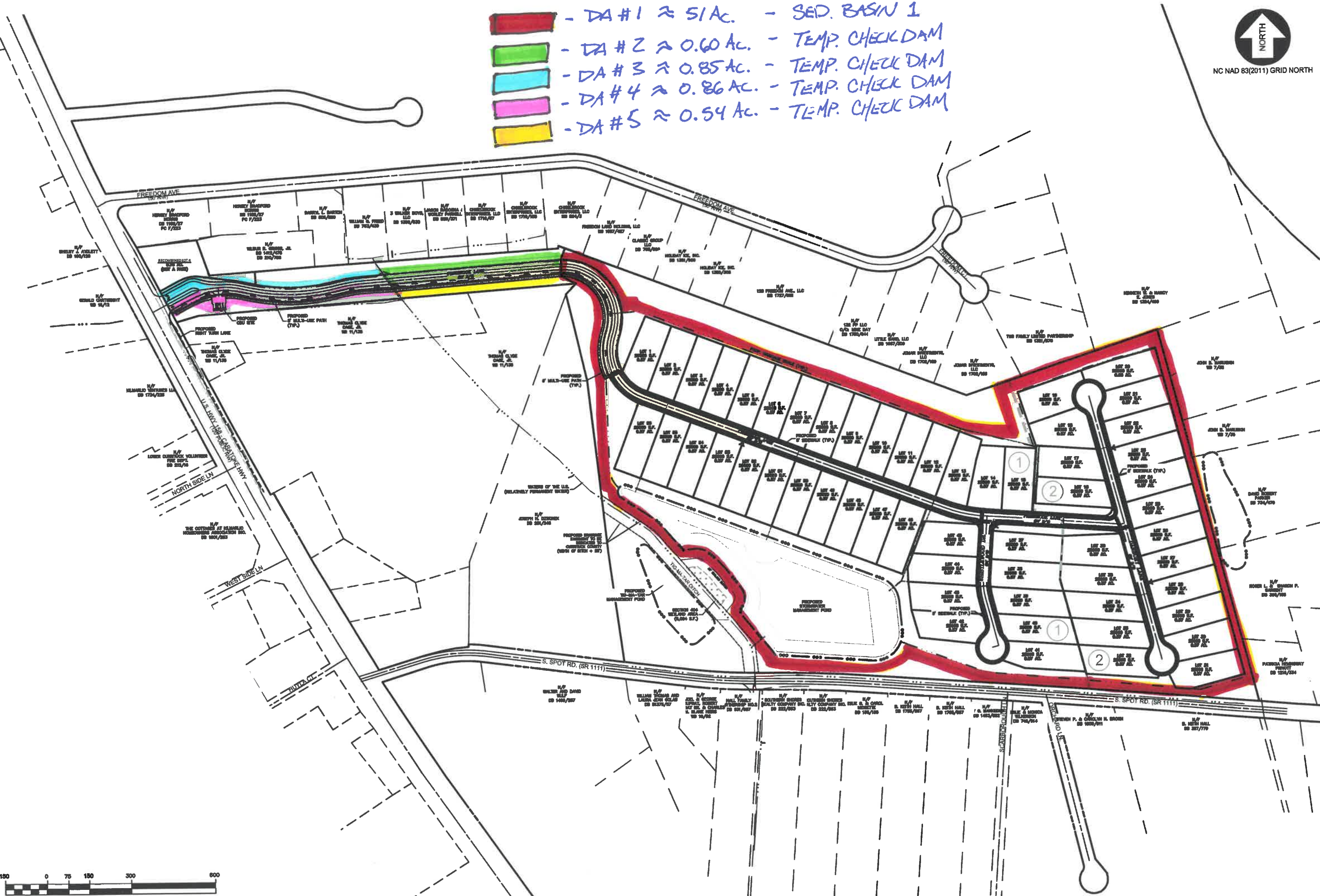
SEASIDE MEADOWS
 CURRITUCK COUNTY, NORTH CAROLINA
 CONSTRUCTION DRAWINGS

POPULAR BRANCH TOWNSHIP

NO.	DATE	DESCRIPTION
1	12-24-25	ISSUED FOR PERMITS

PRELIMINARY
 DO NOT USE FOR CONSTRUCTION

DATE: 12-24-25 SCALE: 1" = 1'
 CHECKED: DMK, BPG
 SHEET: 4 OF 21
 CAD FILE: 430400B1
 PROJECT NO: 4304



EROSIVE VELOCITY CHECK

Calculations Include the Following:

- 2 Year, Bare Soil Condition; 2 fps Max Velocity
- 10 Year, Vegetated Condition; 4 fps Max Velocity

Note:

This check is performed by highlighting respective summaries of conveyances that exceed maximum permissible velocities as determined by EPA SWMM modeling performed by Deel Engineering, PLLC.

Link Flow and Velocity - 2yr				Velocity Check
Link	Type	Flow (cfs)	Velocity (fps)	Bare Soil > 2 fps
CB01-PE028	CONDUIT	0	0	ok
CB02-CB03	CONDUIT	0.44	1.72	ok
CB03-Pond1	CONDUIT	0.78	0.71	ok
CB04-CB05	CONDUIT	0.5	1.66	ok
CB05-Pond1	CONDUIT	0.98	0.88	ok
CB06-CB07	CONDUIT	2.71	0.41	ok
CB07-DI02	CONDUIT	3.16	0.47	ok
CB08-DI04	CONDUIT	0.93	1.48	ok
CB09-CB08	CONDUIT	0.55	1.68	ok
CB10-CB11	CONDUIT	1.73	0.40	ok
CB11-DI02	CONDUIT	2.27	0.39	ok
CB12-CB13	CONDUIT	0.62	1.69	ok
CB13-DI04	CONDUIT	1.26	1.95	ok
CB14-CB15	CONDUIT	0.63	1.85	ok
CB15-DI05	CONDUIT	1.2	1.06	ok
D101-E023	CONDUIT	1.04	0.44	ok
DI02-Pond1	CONDUIT	5.38	0.47	ok
DI02-Pond1-Swale	Swale	0	0	ok
DI03-CB06	CONDUIT	2.34	0.36	ok
DI04-DI03Ditch	Swale	0	0	ok
DI04-DI03Pipe	CONDUIT	2.32	0.97	ok
DI05-CB10	CONDUIT	1.21	0.41	ok
JB01A-JB01	CONDUIT	0	0	ok
JB01-CB01	CONDUIT	0	0	ok
OCS01-E018	CONDUIT	0.52	2.61	ok, culvert
P001-DI01	CONDUIT	0.15	1.00	ok
P002A-P001	Swale	0.02	0.32	ok
P002-P003	Swale	0.05	0.11	ok
P003-P004	Swale	1.35	0.93	ok
P004-P005	CONDUIT	1.33	2.17	ok, culvert
P005-Pond1	Swale	1.28	0.85	ok
P006-Pond1	Swale	0.03	0.05	ok
P007-P006	Swale	0	0	ok
P008-P007	Swale	0	0	ok
P009-P008	Swale	0	0	ok
P010-P009	Swale	0	0	ok
P010-P011	Swale	0	0	ok
P011-DI04	Swale	0	0	ok
P012-DI04	Swale	0	0	ok
P013-DI01	CONDUIT	0.84	0.38	ok
P014A-P013	Swale	0	0.28	ok
P014-P015	Swale	0.01	0.09	ok
P015-P003	CONDUIT	1.28	1.67	ok

P016-DI03	Swale	0.08	0.17	ok
P016-P015	Swale	0.88	0.5	ok
P017-DI01	CONDUIT	0.2	0.56	ok
P018-P017	Swale	0.13	1.3	ok
P019-P018	CONDUIT	0.1	2.17	ok, culvert
P020-P013	Swale	0.21	0.78	ok
P021-DI02	Swale	0.3	0.69	ok
P022-D105	Swale	0	0	ok
P022-P007	Swale	0	0	ok
P023-DI05	Swale	0	0	ok
P024-P023	Swale	0	0	ok
WestPond-E019	CONDUIT	0	0	ok

*Estimated peak flows and velocities per EPA SWMM calculations prepared by Deel Engineering, PLLC.

Link Flow and Velocity -10yr				Velocity Check
Link	Type	Flow (cfs)	Velocity (fps)	Vegetated > 4 fps
CB01-PE028	CONDUIT	0.55	0.96	ok
CB02-CB03	CONDUIT	2.47	2.50	ok
CB03-Pond1	CONDUIT	4.39	2.99	ok
CB04-CB05	CONDUIT	2.73	2.39	ok
CB05-Pond1	CONDUIT	5.26	3.32	ok
CB06-CB07	CONDUIT	8.51	1.20	ok
CB07-DI02	CONDUIT	9.51	1.35	ok
CB08-DI04	CONDUIT	1.43	1.65	ok
CB09-CB08	CONDUIT	0.85	1.87	ok
CB10-CB11	CONDUIT	2.64	0.55	ok
CB11-DI02	CONDUIT	3.44	0.56	ok
CB12-CB13	CONDUIT	0.95	1.89	ok
CB13-DI04	CONDUIT	1.93	2.18	ok
CB14-CB15	CONDUIT	0.97	2.07	ok
CB15-DI05	CONDUIT	1.84	1.55	ok
D101-E023	CONDUIT	6.82	1.44	ok
DI02-Pond1	CONDUIT	13.97	1.20	ok
DI02-Pond1-Swale	Swale	0	0	ok
DI03-CB06	CONDUIT	6.63	0.94	ok
DI04-DI03Ditch	Swale	0	0	ok
DI04-DI03Pipe	CONDUIT	3.25	1.26	ok
DI05-CB10	CONDUIT	1.85	0.60	ok
JB01A-JB01	CONDUIT	0.55	0.98	ok
JB01-CB01	CONDUIT	0.55	0.78	ok
OCS01-E018	CONDUIT	1.27	2.95	ok
P001-DI01	CONDUIT	1.33	4.26	ok, culvert
P002A-P001	Swale	0.21	0.60	ok
P002-P003	Swale	0.35	0.45	ok
P003-P004	Swale	5.18	1.24	ok
P004-P005	CONDUIT	5.26	3.59	ok
P005-Pond1	Swale	5.92	1.33	ok
P006-Pond1	Swale	0.73	0.51	ok
P007-P006	Swale	0.53	0.28	ok
P008-P007	Swale	0.44	0.49	ok
P009-P008	Swale	0.27	0.37	ok
P010-P009	Swale	0.09	0.33	ok
P010-P011	Swale	0.08	0.46	ok
P011-DI04	Swale	0.09	0.44	ok
P012-DI04	Swale	0.04	0.35	ok
P013-DI01	CONDUIT	6.09	0.81	ok
P014A-P013	Swale	0.09	0.44	ok
P014-P015	Swale	0.17	0.18	ok
P015-P003	CONDUIT	4.97	2.47	ok

P016-DI03	Swale	0.43	0.29	ok
P016-P015	Swale	3.04	0.54	ok
P017-DI01	CONDUIT	1.75	2.30	ok
P018-P017	Swale	1.06	1.25	ok
P019-P018	CONDUIT	0.71	2.61	ok
P020-P013	Swale	1.27	1.23	ok
P021-DI02	Swale	2.65	1.27	ok
P022-D105	Swale	0.03	0.35	ok
P022-P007	Swale	0.11	0.37	ok
P023-DI05	Swale	0.05	0.44	ok
P024-P023	Swale	0.05	0.26	ok
WestPond-E019	CONDUIT	2.25	0.61	ok

*Estimated peak flows and velocities per EPA SWMM calculations prepared by Deel Engineering, PLLC.

SEDIMENT BASIN CALCULATIONS

Sediment Basin 1

Requirements

Tributary Disturbed Area*	51.00 acres	
Min. Required Storage Volume	91,800 ft ³	(1,800 ft ³ /acre)
Estimated 10 year peak inflow**	63.35 cfs	
Min. Required Surface Area	27,557 ft ²	(435 ft ² /cfs)

Design

Choose Avg. Storage Depth	3.50 ft	
Necessary Storage Surface Area	26,229 ft ²	
Is Necessary Surface Area > Required	NO	
Choose Storage Width	120 ft	
Choose Storage Length	240 ft	
Length to Width Ratio	2.0	OK
Surface Area Provided	28,800 ft ²	1.0 times required
Is Surface Area Provided > Required	YES	
Storage Volume Provided	92,323 ft ³	
Is Storage Volume Provided > Required	YES	1.0 times required

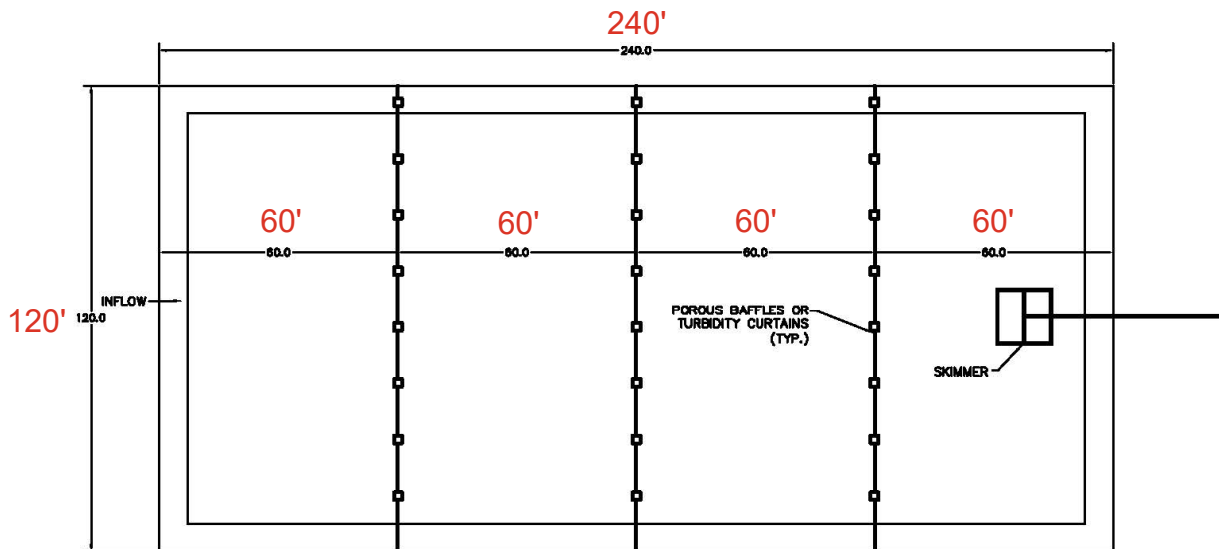
The above calculations determine minimum required sediment basin dimensions as detailed below. During construction, the stormwater management pond will be used as an oversized sediment basin providing the following actual area and volume:

Actual Pond Surface Area Provided	249,665 ft ²	9.1 times required
Actual Pond Volume Provided	2,848,827 ft ³	31.0 times required

Porous Baffles or Turbidity Curtains shall be installed within the stormwater pond at the spacing dimensioned below and as illustrated on the Erosion and Sediment Control Plan

* Tributary Disturbed Area from Autocad

** Estimated 10 year peak flows per EPA SWMM calculations prepared by Deel Engineering, PLLC.



Typical Sediment Basin Detail and Minimum Dimensions

EROSION CONTROL SKIMMER CALCULATIONS

Sediment Basin A - Skimmer A

Drawdown Period [t_d]	2.00	days	
*Drawdown Volume [V]	92,323	ft^3	
Drawdown Discharge Rate [Q_d]	46,162	ft^3/day	0.53 cfs
Choose Skimmer Body Diameter	6.0	in.	2.72 fps
Head on Orifice from Table [H]	0.417	ft.	
Resulting Orifice Diameter [D]	5.6	in.	
Is Orifice Diameter < Skimmer Body Diameter	YES		

Head on orifice of various skimmer sizes

Skimmer Size (in.)	Head on Orifice (ft.)
1.5	0.125
2	0.167
2.5	0.208
3	0.250
4	0.333
5	0.333
6	0.417
8	0.500

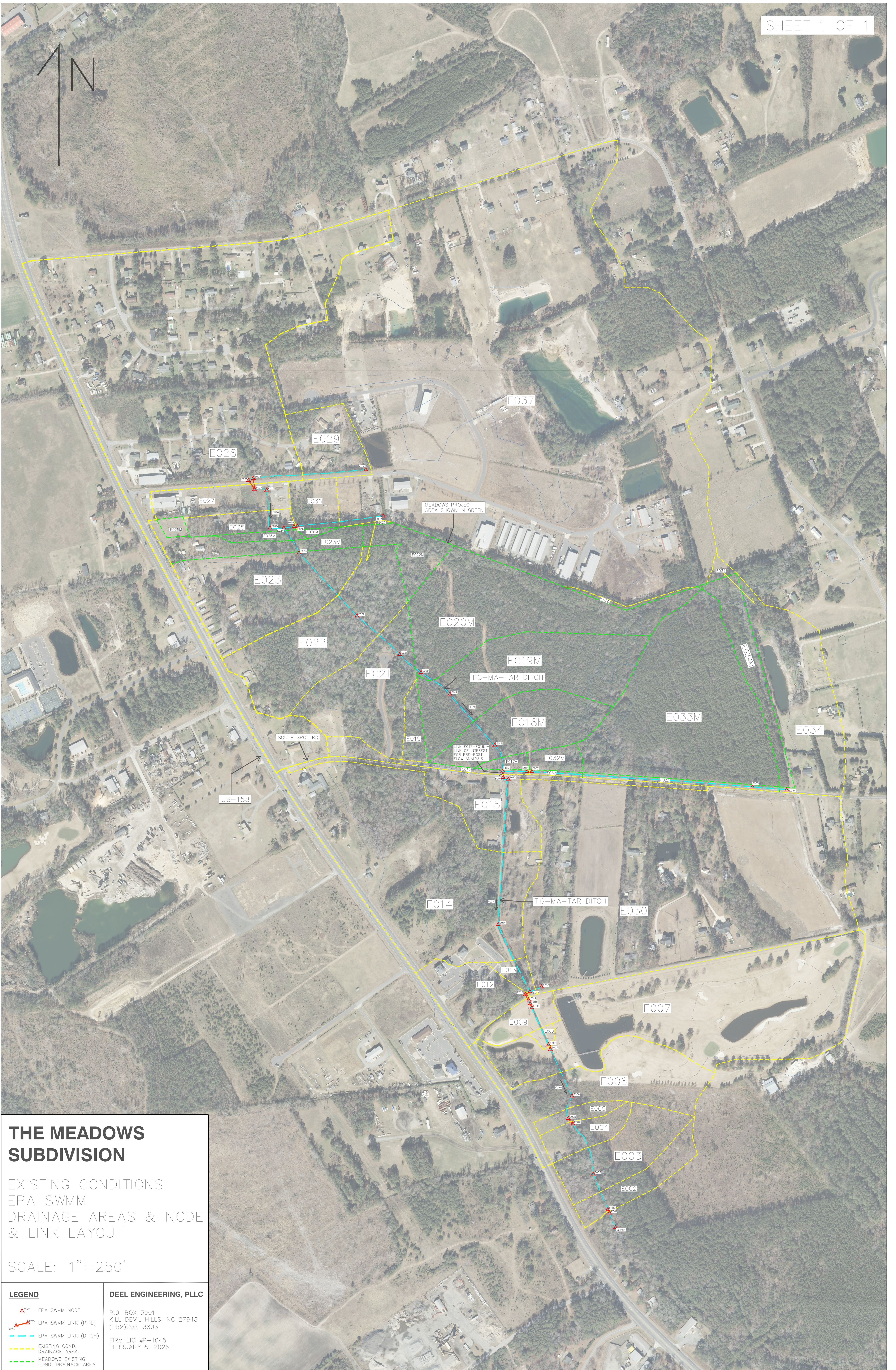
Table 6.64a NC Erosion Control Manual

Equations:

$$Q_d = V / t_d \text{ (ft}^3\text{/day)}$$

$$D = \sqrt{Q_d / (2310 * \sqrt{H})} \text{ (inches)}$$

*Drawdown volume based on combined min. required volumes per separate Sediment Basin Calculations.

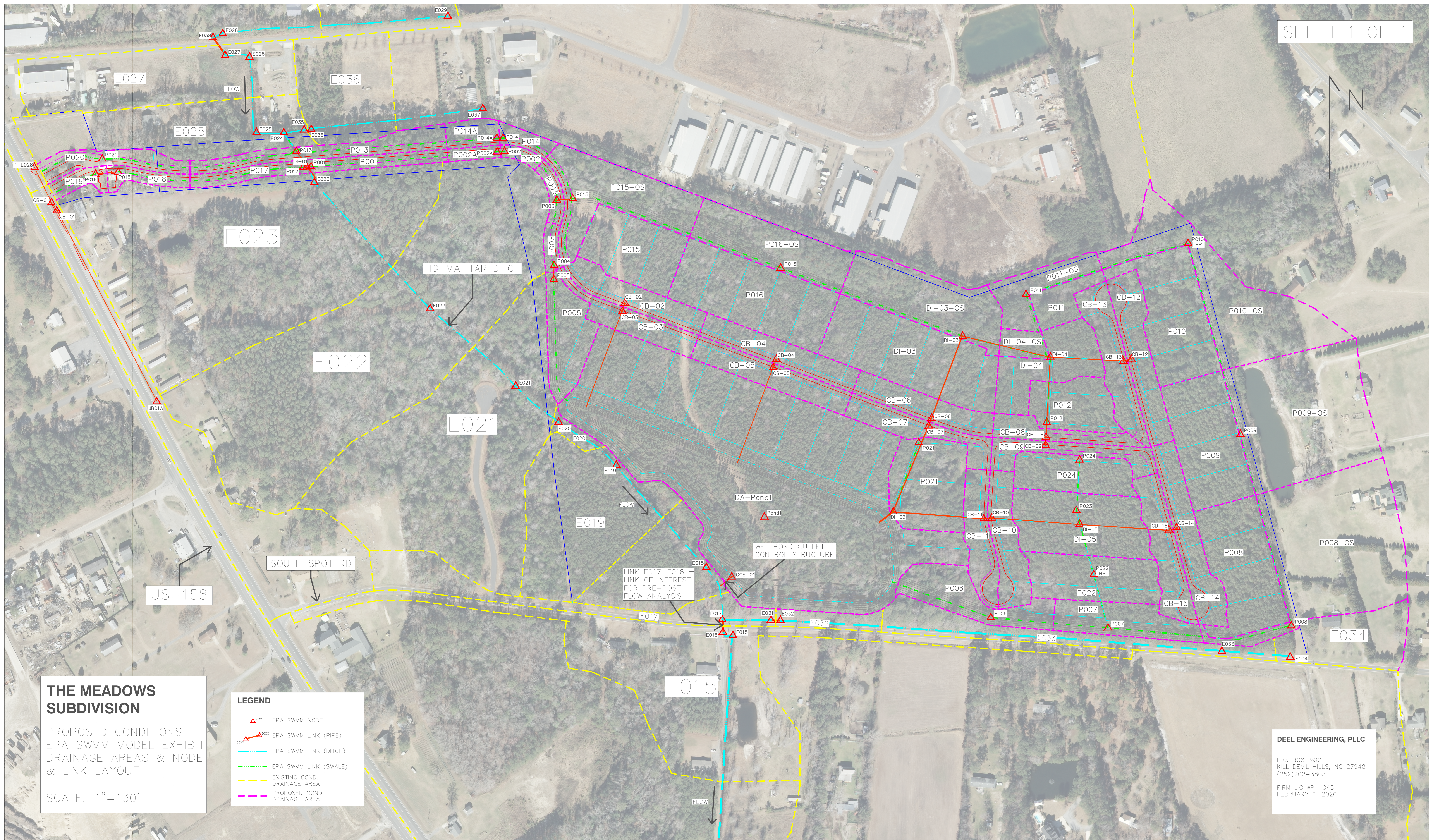


THE MEADOWS SUBDIVISION

EXISTING CONDITIONS
EPA SWMM
DRAINAGE AREAS & NODE
& LINK LAYOUT

SCALE: 1"=250'

LEGEND		DEEL ENGINEERING, PLLC	
	EPA SWMM NODE	P.O. BOX 3901 KILL DEVIL HILLS, NC 27948 (252)202-3803 FIRM LIC #P-1045 FEBRUARY 5, 2026	
	EPA SWMM LINK (PIPE)		
	EPA SWMM LINK (DITCH)		
	EXISTING COND. DRAINAGE AREA		
	MEADOWS EXISTING COND. DRAINAGE AREA		



THE MEADOWS SUBDIVISION

PROPOSED CONDITIONS
EPA SWMM MODEL EXHIBIT
DRAINAGE AREAS & NODE
& LINK LAYOUT

SCALE: 1"=130'

LEGEND

	EPA SWMM NODE
	EPA SWMM LINK (PIPE)
	EPA SWMM LINK (DITCH)
	EPA SWMM LINK (SWALE)
	EXISTING COND. DRAINAGE AREA
	PROPOSED COND. DRAINAGE AREA

DEEL ENGINEERING, PLLC

P.O. BOX 3901
KILL DEVIL HILLS, NC 27948
(252)202-3803

FIRM LIC #P-1045
FEBRUARY 6, 2026

March 6, 2026

Mr. Carl Dunn
NCDEQ
Division of Water Quality
943 Washington Square Mall
Washington, North Carolina 27889

Re: **Seaside Meadows Subdivision**
Proposed Residential Subdivision, Powells Point, Currituck County, North Carolina
Stormwater Permit Application (Includes High & Low Density Project Areas)

Dear Mr. Dunn;

On behalf of South Spot, LLC, we hereby submit for review and approval a Stormwater Management permit application package for the aforementioned project. We are requesting Express Review for this package.

The following items are included with and shall be considered part of this submittal package:

1. Review Fee check in the amount of \$3,724.00
2. Two (2) copies (one original signature) of the Stormwater Management Permit Application Form
3. Two (2) copies (one original signature) of the High Density Deed Restrictions Form
4. Two (2) copies (one original signature) of the Low Density Deed Restrictions Form
5. Two (2) copies (original signature) of the Wet Pond O&M Agreement (O&M EZ)
6. Two (2) copies (original signature) of the Low Density O&M Agreement (O&M EZ)
7. One (1) copy of the Wet Pond Supplement (original signature)
8. One (1) copy of Stormwater Management Plan Narrative with Calculations
9. (2) sets of the Grading & Drainage Plans (one 24x36 copy and one 11x17 copy)

Please review and approve the attached information. If you have any questions, or if you require any additional information, please do not hesitate to contact me at (252) 202-3803.

Sincerely,


David A. Deel, P.E.

Encl: as stated

North Carolina Department of Environmental Quality Request for Express Permit Review with NEW EXPRESS Permitting Rules as of JULY 1, 2025

Please complete the information below and specify the Permit(s) for [NEW](#) express review. Afterward, email the [Regional Environmental Assistance Coordinator](#) this form along with an electronic copy of a detailed narrative, vicinity map, permit application, supporting documentation, site plans, and all items listed in [15A NCAC 02H.1042 \(2\)](#). Include a list of existing permits and potential permits, plans, or certificates, state and federal. Additionally, mail the required intake fee so the program engineer can determine if the project qualifies for the express permitting program. Contact the [Regional Environmental Assistance coordinator](#) with questions about [this form](#) or to schedule a scoping meeting.

Project Name: Seaside Meadows County: Currituck County

Applicant: South Spot, LLC Company: South Spot, LLC

Address: 2522 S. Croatan Highway, Suite 1C City: Nags Head, State: NC, Zip: 27959

Phone/Cell: 941, Email: 552-6834

Physical Location of Project Site: Approximately 1,525 feet North from the intersection of US Hwy 158 (Caratoke Hwy) and SR 1111

Project Drains into SC waters – Water classification 30-1 ([DWR Surface Water Classifications Map](#))

Project located in Pasquotank River basin, project drains to the class ORW water? N, within ½ mile and drainage to class SA waters N, or within 1 mile and drains to class HQW waters? N Water Supply Watershed (e.g., WS-I, II, III, IV)? _____

Engineer/Consultant: David A. Deel, P.E. Company: Deel Engineering, PLLC; **Experienced Consultant?** Yes No

By submitting this request form, I certify that the above-referenced consultant meets the definition of “Experienced Consultant” in 15A NCAC 01X.0102 and that, upon request, a list of obtained approvals will be provided.

Address: 322 W. Wilkinson Street City: Kill Devil Hills State NC Zip: 27948

Phone: 252-202-3803 Email: dadeeleng@gmail.com

SECTION ONE: CHECK ONLY THE PROGRAM(S) YOU ARE REQUESTING FOR EXPRESS PERMITTING

[Land Quality Erosion Control](#) Plan: ALL LAND QUALITY EROSION CONTROL PROJECTS CAN NOW AND SHOULD BE APPLIED FOR USING NCDEQ'S NEW ONLINE [ACCESSDEQ](#) PORTAL.

New Revision. Erosion Control Plan with _____Acres to be disturbed.

[Post-Construction Stormwater](#) – Proposed Permitting Action: Select all that apply. **NO MORE THAN 3 SCMs ALLOWED for HD**

Low Density Area(s): New, Mod, [SW _____(permit #)] Major, Minor, Revision, Redev.

Exclusion [SW _____(permit #)], Curb & Gutter, # _____Curb Outlet Swales, # Infiltrating Permeable Pavement,

Off-Site [SW _____(provide permit #)]

High-Density (HD) Area(s): New, Mod, [SW _____(permit #)] Major, Minor, Revision,

Redev. Exclusion [SW _____(permit #)], # 1Wet Ponds, # _____ Infiltrating Systems, # _____Bio Retention.

_____ SW Wetlands, # _____Other SCM _____,

General Permit: SFR, SFR<1 ac., Bkhd & BT Rmp, Clear & Grub, Linear Utility

SECTION TWO: PLEASE CHECK ALL THAT IS APPLICABLE TO YOUR PROJECT

Stream(s) and/or Wetland(s) on Site Yes No

Buffer Impacts: Yes #__ acre(s) No

Wetlands Delineation has been completed: Yes No

Isolated Wetland on Property Yes No

US ACOE Approval of Delineation completed: Yes No

404 Application in Process w/ US ACOE: Yes No

No Permit Received from US ACOE Yes No

CAMA Permit: No, Major, Minor

“Experienced Consultant” means an individual who has received approval from the Department for either 25 ESC Plan or 5 issued PCSW Permits, specific to the type of application for which a Request for Express Review is being made.

DEMLR USE ONLY		
Date Received	Fee Paid	Permit Number
Applicable Rules: <input type="checkbox"/> Coastal SW – 1995 <input type="checkbox"/> Coastal SW – 2008 <input type="checkbox"/> Ph II - Post Construction (select all that apply) <input type="checkbox"/> Non-Coastal SW- HQW/ORW Waters <input type="checkbox"/> Universal Stormwater Management Plan <input type="checkbox"/> Other WQ Mgmt Plan: _____		

State of North Carolina
Department of Environmental Quality
Division of Energy, Mineral and Land Resources

POST-CONSTRUCTION STORMWATER MANAGEMENT PERMIT APPLICATION FORM

This form may be photocopied for use as an original.

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.):

Seaside Meadows

2. Location of Project (street address):

South Spot Road

City: Powell's Point

County: Currituck

Zip: 27966

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

Approximately 1,525 feet North from the intersection of US Hwy 158 (Caratoke Hwy) and SR 1111

(S. Spot Road).

4. Latitude: 36° 07' 25.6512" N Longitude: -75° 50' 4.7436" W of the main entrance to the project.

II. PERMIT INFORMATION:

1. a. Specify whether project is (check one): New Modification Renewal w/ Modification[†]
[†]Renewals with modifications also requires SWU-102 – Renewal Application Form

- b. If this application is being submitted as the result of a **modification** to an existing permit, list the existing permit number _____, its issue date (if known) _____, and the status of construction: Not Started Partially Completed* Completed* *provide a designer's certification

2. Specify the type of project:

Low Density High Density Drains to an Offsite Stormwater System Other

3. If this application is being submitted as the result of a **previously returned application** or a **letter from DEMLR requesting a state stormwater management permit application**, list the stormwater project number, if assigned, _____ and the previous name of the project, if different than currently proposed, _____.

4. a. Additional Project Requirements (check applicable blanks; information on required state permits can be obtained by contacting the Customer Service Center at 1-877-623-6748):

CAMA Major Sedimentation/Erosion Control: 60 ac of Disturbed Area

NPDES Industrial Stormwater 404/401 Permit: Proposed Impacts _____

- b. 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: _____

5. Is the project located within 5 miles of a public airport? No Yes

If yes, see S.L. 2012-200, Part VI: <https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/stormwater/stormwater-program/stormwater-rules-and-regulations>

III. CONTACT INFORMATION

1. a. 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: South Spot, LLC

Signing Official & Title: Peter Kauffman, Manager

b. Contact information for person listed in item 1a above:

Street Address: 2522 S. Croatan Hwy. Ste 1C

City: Nags Head State: NC Zip: 27959

Mailing Address (if applicable): PO Box 633

City: Nags Head State: NC Zip: 27959

Phone: (941) 552-6834 Fax: ()

Email: pkauffman@ospavpartners.com

c. Please check (one) the appropriate box. The applicant listed above is:

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

2. a. 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 located on):

Property Owner/Organization: South Spot, LLC (above) and M.A. Shoes, LLC (below)

Signing Official & Title: Peter Kauffman, Manager

b. Contact information for person listed in item 2a above:

Street Address: 2522 S. Croatan Hwy. Ste 1C

City: Nags Head State: NC Zip: 27959

Mailing Address (if applicable): P.O. Box 633

City: Nags Head State: NC Zip: 27959

Phone: (941) 552-6834 Fax: ()

Email: pkauffman@ospavpartners.com

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

Other Contact Person/Organization: _____

Signing Official & Title: _____

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

Mailing Address: _____

City: _____ State: _____ Zip: _____

Phone: () Fax: ()

Email: _____

4. Local jurisdiction for building permits: County of Currituck, North Carolina

Point of Contact: Stacey Smith Phone #: (252) 232-3378

Email: Stacey.Smith@currituckcountync.gov

IV. PROJECT INFORMATION

1. In the space provided below, briefly summarize how the stormwater runoff will be treated.
Stormwater will be collected by a system of roadway swales and outlet to an existing on-site ditch

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

<input type="checkbox"/> Approval of a Site Specific Development Plan or PUD	Approval Date: _____
<input type="checkbox"/> Valid Building Permit	Issued Date: _____
<input type="checkbox"/> Other: _____	Date: _____
- b. **If claiming vested rights**, identify the regulation(s) the project has been designed in accordance with:

<input type="checkbox"/> Coastal SW – 1995	<input type="checkbox"/> Ph II – Post Construction
--	--
3. Stormwater runoff from this project drains to the Pasquotank River basin.
4. Total Property Area: 65.99 acres
5. Total Coastal Wetlands Area: 0 acres
6. Total Surface Water Area: 0 acres
7. Total Property Area (4) – Total Coastal Wetlands Area (5) – Total Surface Water Area (6) = Total Project Area*: 65.99 acres

* Total project area shall be calculated to exclude the following: the normal pool of impounded structures, the area between the banks of streams and rivers, the area below the Normal High Water (NHW) line or Mean High Water (MHW) line, and coastal wetlands landward from the NHW (or MHW) line. The resultant project area is used to calculate overall percent built upon area (BUA). Non-coastal wetlands landward of the NHW (or MHW) line may be included in the total project area.
8. Project percent of impervious area: (Total Impervious Area / Total Project Area) X 100 = 22.31 %
9. How many drainage areas does the project have? 2 (For high density, count 1 for each proposed SCM. For low density and other projects, use 1 for the whole property area. If there are multiple receiving streams, provide the drainage areas within the project area to each stream.)
10. Complete the following information for each drainage area directed to an SCM or low density area identified in Project Information item 9. If there are more than four drainage areas in the project, attach an additional sheet with the information for each area provided in the same format as below.

Basin Information	Drainage Area 1	Drainage Area ____	Drainage Area ____	Drainage Area ____
Receiving Stream Name	See Attached Table			
Stream Class *				
Stream Index Number *				
Total Drainage Area (sf)				
On-site Drainage Area (sf)				
Off-site Drainage Area (sf)				
Proposed Impervious Area** (sf)				
% Impervious Area ** (total)				

Impervious** Surface Area	Drainage Area 1	Drainage Area ____	Drainage Area ____	Drainage Area ____
On-site Buildings/Lots (sf)	See Attached Table			
On-site Streets (sf)				
On-site Parking (sf)				
On-site Sidewalks (sf)				
Other on-site (sf)				
Future (sf)				
Off-site (sf)				
Existing BUA*** (sf)				
Total (sf):				

* Stream Class and Index Number can be determined at: <https://www.deq.nc.gov/about/divisions/water-resources/water-planning/classification-standards/classifications>

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

*** Report only that amount of existing BUA that will remain after development. Do not report any existing BUA that is to be removed and which will be replaced by new BUA. See definition 15A NCAC 02H .1002(17).

11. How was the off-site impervious area listed the Section IV, 10 Tables determined? Provide documentation.
N/A

Projects in Union County: Contact DEMLR Central Office staff to check if the project is located within a Threatened & Endangered Species watershed that may be subject to more stringent stormwater requirements as per 15A NCAC 02B .0600.

V. SUPPLEMENT AND O&M FORMS

The applicable state stormwater management permit supplement and operation and maintenance (O&M) forms must be submitted for each SCM specified for this project. The latest versions of the forms can be downloaded from <https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/stormwater/stormwater-program/stormwater-design-manual>. For SCMs subject to older design standards or offsite projects, the archived supplement can be found from <https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/stormwater/stormwater-program/stormwater-design-manual/archived-stormwater-design-manual-supplemental-forms>

VI. CHECKLIST OF SUBMITTAL REQUIREMENTS FOR AN ADMINISTRATIVELY COMPLETE APPLICATION PACKAGE PER 15A NCAC 02H .1042(2)

Only complete application packages will be accepted and reviewed by the Division of Energy, Mineral and Land Resources (DEMLR). An administratively complete application package includes all of the items listed below. A detailed application instruction sheet and SCM checklists are available from <https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/stormwater/post-construction-program/new-permits-permit-modifications>. The complete application package should be submitted to the appropriate DEMLR Office. (The appropriate office may be found by locating project on the interactive online map at <https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/stormwater/stormwater-program/post-construction-program>.)

Please **indicate that the following required information have been provided by initialing** in the space provided for each item. All original documents **MUST** be signed and initialed in **blue ink**. **Download the latest versions for each submitted application package** from <https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/stormwater/stormwater-program>.

- | | Initials |
|---|------------|
| 1. Original and one copy of the Stormwater Management Permit Application Form. | <u>DAD</u> |
| 2. Original and one copy of the signed and notarized Deed Restrictions & Protective Covenants Form or, for major modifications, a copy of the recorded deed restrictions and protective covenants limiting the built-upon area so that it does not exceed the capacity of the SCM(s) or the BUA thresholds. (if required as per Part VII below)
Deed book: <u>N/A</u> Page No: _____ Relevant section: _____ | <u>DAD</u> |
| 3. Original of the applicable Supplement Form(s) (<u>sealed, signed and dated</u>) and O&M agreement(s) for <u>each</u> SCM. (please refer to Section V for more information) | <u>DAD</u> |
| 4. Appropriate permit application processing fee per NCGS 143-215.3D(e)(2) payable to NCDEQ.
A full list of fee adjustments is available on the DEQ website: https://www.deq.nc.gov/accessdeq/permit-fees-2025-updates
(For an Express review, refer to: https://www.deq.nc.gov/accessdeq/express-permitting for information on the Express program and the associated fees. Contact the appropriate Coastal regional office Express Permit Coordinator for additional information and to schedule the required application meeting.) | <u>DAD</u> |
| 5. A detailed narrative (one to two pages) describing the stormwater treatment/management for the project. This is required in addition to the brief summary provided in the Project Information, item 1. | <u>DAD</u> |
| 6. A USGS map identifying the site location. If the receiving stream is reported as class SA or the receiving stream drains to class SA waters within 1/2 mile of the site boundary, include the 1/2 mile radius on the map. | <u>DAD</u> |
| 7. Sealed, signed, and dated calculations (one copy). | <u>DAD</u> |

8. Two sets of plans folded to 8.5" x 14" (sealed, signed, & dated), including:
- a. Development/Project name.
 - b. Engineer and firm.
 - c. Location map with named streets and NCSR numbers.
 - d. Legend.
 - e. North arrow.
 - f. Scale.
 - g. Revision number and dates.
 - h. Identify all surface waters on the plans by delineating the normal pool elevation of impounded structures, the banks of streams and rivers, the MHW or NHW line of tidal waters, and any coastal wetlands landward of the MHW or NHW lines.
 - Delineate the vegetated setback landward from the normal pool elevation of impounded structures, the banks of streams or rivers, and the MHW (or NHW) of tidal waters.
 - i. Dimensioned property/project boundary with bearings & distances.
 - j. Site Layout with all BUA identified and dimensioned.
 - k. Existing contours, proposed contours, spot elevations, finished floor elevations.
 - l. Details of roads, drainage features, collection systems, and stormwater control measures (including any applicable SCM planting plans).
 - m. Wetlands delineated, or a note on the plans that none exist. (Must be delineated by a qualified person; identify the person who made the determination on the plans.
 - n. Existing drainage (including off-site), drainage easements, pipe sizes, runoff calculations.
 - o. Drainage areas delineated (included in the main set of plans, not as a separate document).
9. Copy of any applicable soils report with the associated SHWT elevations (Please identify elevations in addition to depths) as well as a map of the boring locations with the existing elevations and boring logs. Include an 8.5"x11" copy of the NRCS County Soils map with the project area clearly delineated. For projects with infiltration SCMs, the report should also include the soil type, expected infiltration rate, and the method of determining the infiltration rate. **(Infiltration Devices submitted to WiRO: Schedule a site visit for DEMLR to verify the SHWT. Prior to submittal, (910) 796-7378.)**
10. A copy of the most current property deed. Deed book: _____ Page No: _____
11. For corporations and limited liability corporations (LLC): Provide documentation from the NC Secretary of State or other official documentation, which supports the titles and positions held by the persons listed in Contact Information, item 1a, 2a, and/or 3a per 15A NCAC 2H.1040(1). The corporation or LLC must be listed as an active corporation in good standing with the NC Secretary of State, otherwise the application will be returned.
<http://www.secretary.state.nc.us/Corporations/CSearch.aspx>
12. If the applicant is not the property owner, a copy of a lease agreement, affidavit, or other document showing that the applicant has obtained legal rights to submit a stormwater permit application within the proposed project area;
13. If applicable, a copy of any recorded drainage, maintenance, or operation and maintenance easements demonstrating ownership interest sufficient to operate the SW system.
Deed book: _____ Page No: _____ Relevant section: _____
14. If a modification to an existing permit:
- a. The applicant / permit holder will remain the same and permit has not and will not expire within the next 180 days.
 - b. Signed, sealed & dated Designer Certification Forms
 - c. Copies of the following documents recorded with the County Register of Deeds
 - i. Deed restrictions and protective covenants limiting the BUA so that it does not exceed the capacity of the SCM(s) or the BUA thresholds.
 - ii. Drainage easements, when applicable.
 - iii. Operation & Maintenance Agreement
 - iv. Final subdivision plat referencing the Operation & Maintenance Agreement

DAD

DAD

multiple - see Narr Appx.

DAD

DAD

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

VII. DEED RESTRICTIONS AND PROTECTIVE 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. If lot sizes vary significantly or the proposed BUA allocations vary, 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 from <https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/stormwater/stormwater-program/post-construction-program/post-construction-forms>. Download the latest versions for each submittal.

In the 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 NC DEMLR, and that they will be recorded prior to the sale of any lot.

VIII. CONSULTANT INFORMATION AND AUTHORIZATION

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: David A. Deel, P.E.

Consulting Firm: Deel Engineering, PLLC

Mailing Address: P.O. Box 3901

City: Kill Devil Hills State: NC Zip: 27948

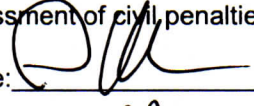
Phone: (252) 202-3803 Fax: ()

Email: dadeeleng@gmail.com

IX. PROPERTY OWNER AUTHORIZATION (if Contact Information, item 2 has been filled out, complete this section)

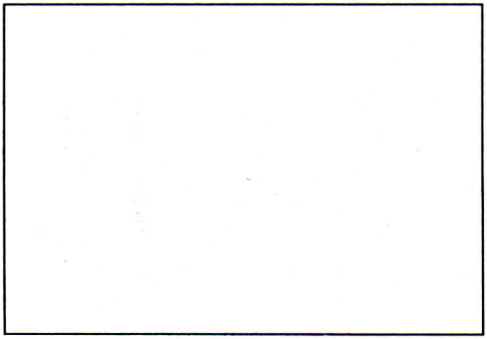
I, (print or type name of person listed in Contact Information, item 2a) Peter Kauffman, for M.A. Shoes, LLC, certify that I own the property identified in this permit application, and thus give permission to (print or type name of person listed in Contact Information, item 1a) Peter Kauffman with (print or type name of organization listed in Contact Information, item 1a) South Spot, 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 DEMLR Stormwater permit reverts back to me, the property owner. As the property owner, it is my responsibility to notify DEMLR 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 NC General Statute 143-215.1 and may result in appropriate enforcement action including the assessment of civil penalties of up to \$25,000 per day, pursuant to NCGS 143-215.6.

Signature:  Date: 12/31/25

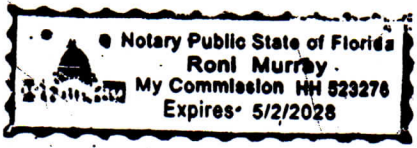
I, Roni Murray, a Notary Public for the State of Florida, County of Sarasota, do hereby certify that Peter Kauffman personally appeared before me this 31st day of December 2025, and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal,

Roni Murray



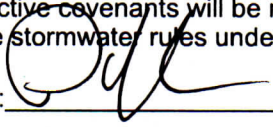
SEAL

My commission expires 5/2/28



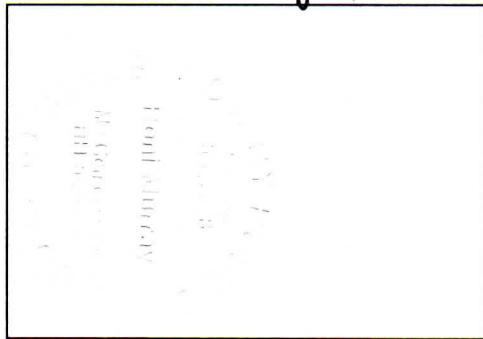
X. APPLICANT'S CERTIFICATION

I, (print or type name of person listed in Contact Information, item 1a) Peter Kauffman for South Spot, LLC, 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 15A NCAC 2H .1000 and any other applicable state stormwater requirements.

Signature:  Date: 12/31/25

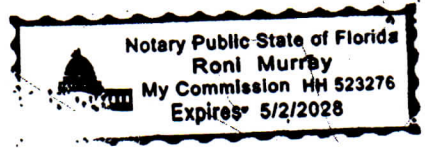
I, Roni Murray, a Notary Public for the State of Florida, County of Sarasota, do hereby certify that Peter Kauffman personally appeared before me this 31st day of December, 2025, and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal,

Roni Murray



SEAL

My commission expires 5/2/28



Seaside Meadows**High & Low Density Project Areas**

Coverage Table

3/5/2026

Basin Information	DA 1 (Infil. Basin)	Low Density Project Area	Total Project(HD & LD)
Receiving Stream Name	Currituck Sound	Currituck Sound	Currituck Sound
Stream Class	SC	SC	SC
Stream Index Number	30-1	30-1	30-1
Total Drainage Area (sf)	2,816,184	484,003	3,300,187
On-site Drainage Area (sf)	2,390,630	484,003	2,874,633
Off-site Drainage Area (sf)	425,554	-	425,554
Proposed Impervious Area (sf)	597,597	50,693	648,290
% Impervious Area (total)	21.2%	10.5%	19.6%

Impervious Surface Area	DA 1 (Infil. Basin)	DA 1 (Infil. Basin)	DA 1 (Infil. Basin)
On-site Buildings / Lots (sf)	420,000	-	420,000
On-site Streets (sf)	122,350	31,940	154,290
On-site Parking (sf)	-	2,596	2,596
On-site Sidewalks (sf)	40,199	10,807	51,006
Other on-site (sf)	8,000	350	8,350 (Misc Amenities)
Future (sf)	-	5,000	5,000
Off-site (sf)	7,048	-	7,048
Existing BUA (sf)	-	-	-
Total (sf):	597,597	50,693	648,290

On-site Project Area:	2,874,633
On-Site Proposed BUA (total):	641,242
On-Site % BUA:	22.31%

High Density Residential Subdivisions
Deed Restrictions & Protective Covenances

In accordance with Title 15 NCAC 2H.1000 and S.L. 2006-246, the Stormwater Management Regulations, deed restrictions and protective covenants are required for **High Density Residential Subdivisions** where lots will be subdivided and sold and runoff will be treated in an engineered stormwater control facility. Deed restrictions and protective covenants are necessary to ensure that the development maintains a "built-upon" area consistent with the design criteria used to size the stormwater control facility.

I, Peter Kauffman, acknowledge, affirm and agree by my signature below, that I will cause the following deed restrictions and covenants to be recorded prior to the sale of any lot:

1. *The following covenants are intended to ensure ongoing compliance with State Stormwater Management Permit Number _____, as issued by the Division of Energy, Mineral and Land Resources under the Stormwater Management Regulations.*
2. *The State of North Carolina is made a beneficiary of these covenants to the extent necessary to maintain compliance with the stormwater management permit.*
3. *These covenants are to run with the land and be binding on all persons and parties claiming under them.*
4. *The covenants pertaining to stormwater may not be altered or rescinded without the express written consent of the State of North Carolina, Division of Energy, Mineral and Land Resources.*
5. *Alteration of the drainage as shown on the approved plan may not take place without the concurrence of the Division of Energy, Mineral and Land Resources.*
6. *The maximum allowable built-upon area per lot is 7,500 square feet. This allotted amount includes any built-upon area constructed within the lot property boundaries, and that portion of the right-of-way between the front lot line and the edge of the pavement. Built upon area includes, but is not limited to, structures, asphalt, concrete, gravel, brick, stone, slate, coquina and parking areas, but does not include raised, open wood decking, or the water surface of swimming pools.*

OR, if the proposed built-upon areas per lot will vary, please REPLACE #6 above with the following:

6. *The maximum built-upon area per lot, in square feet, is as listed below:*

Lot #	BUA	Lot #	BUA	Lot #	BUA	Lot #	BUA
_____	_____	_____	_____	_____	_____	_____	_____

This allotted amount includes any built-upon area constructed within the lot property boundaries, and that portion of the right-of-way between the front lot line and the edge of the pavement. Built upon area includes, but is not limited to, structures, asphalt, concrete, gravel, brick, stone, slate, coquina and parking areas, but does not include raised, open wood decking, or the water surface of swimming pools.

7. *Each lot will maintain a 30** foot wide vegetated buffer between all impervious areas and surface waters.*

****50 foot for projects located in the 20 coastal counties.**

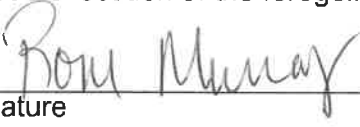
8. *All runoff from the built-upon areas on the lot must drain into the permitted system. This may be accomplished through a variety of means including roof drain gutters which drain to the street, grading the lot to drain toward the street, or grading perimeter swales to collect the lot runoff and directing them into a component of the stormwater collection system. Lots that will naturally drain into the system are not required to provide these additional measures.*

High Density Residential Subdivisions
Deed Restrictions & Protective Covenances

Signature:  Date: 12/31/25

I, Roni Murray, a Notary Public in the
State of Florida, County of Sarasota,

do hereby certify that Peter Kauffman personally appeared
before me this the 31st day of December, 2025, and acknowledge
the due execution of the foregoing instrument. Witness my hand and official seal,


Signature

SEAL

My Commission expires 5/2/25



LOT NO.	LOT AREA (ft ²)	Max. Allowable Built-Up Area (BUA)(ft ²)
1	25,000	7,500
2	25,000	7,500
3	25,000	7,500
4	25,000	7,500
5	25,000	7,500
6	25,000	7,500
7	25,000	7,500
8	25,000	7,500
9	25,000	7,500
10	25,000	7,500
11	25,000	7,500
12	25,000	7,500
13	25,000	7,500
14	25,000	7,500
15	25,000	7,500
16	25,000	7,500
17	25,000	7,500
18	25,000	7,500
19	25,000	7,500
20	25,000	7,500
21	25,000	7,500
22	25,000	7,500
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28	25,000	7,500
29	25,000	7,500
30	25,000	7,500
31	25,000	7,500
32	25,000	7,500
33	25,000	7,500
34	25,000	7,500
35	25,000	7,500
36	25,000	7,500
37	25,000	7,500
38	25,000	7,500
39	25,000	7,500
40	25,000	7,500
41	25,000	7,500
42	25,000	7,500
43	25,000	7,500
44	25,000	7,500
45	25,000	7,500
46	25,000	7,500
47	25,000	7,500
48	25,000	7,500
49	25,000	7,500
50	25,000	7,500
51	25,000	7,500
52	25,000	7,500
53	25,000	7,500
54	25,000	7,500
55	25,000	7,500
56	25,000	7,500
Total	1,400,000	420,000

<u>Property Area Data:</u>	Area (sf)	Area (Ac)
Prop. Subdivision High Density Project Area:	2,390,630	54.88

<u>Project Area Data:</u>	Area (sf)	Area (Ac)
Proposed Lot Area:	1,400,000	32.14
Proposed Right-of-Way Area:	213,674	4.91
Proposed Common Area:	776,956	17.84
Total Project Area:	2,390,630	54.88

<u>Project Built-Up Area Data:</u>	Area (sf)	Area (Ac)
Residential Lot Coverage:	420,000	9.64
Roadway Coverage:	122,350	2.81
Parking Coverage:	0	0.00
Sidewalk Coverage:	40,199	0.92
Misc. Amenity Coverage:	8,000	0.18
Total Built-Up Area:	590,549	13.56

Percentage Built-Up Area: 24.70%

Low Density Residential Subdivisions
Deed Restrictions & Protective Covenances

In accordance with Title 15 NCAC 2H.1000 and S.L. 2006-246, the Stormwater Management Regulations, deed restrictions and protective covenants are required for **Low Density Residential Subdivisions** where lots will be subdivided and sold. Deed restrictions and protective covenants are necessary to ensure that the development maintains a "built-upon" area consistent with the applicable regulation governing the density level.


I, Peter Kauffman acknowledge and affirm by my signature below, that I will cause the following deed restrictions and protective covenants to be recorded for Soundside Meadows prior to the sale of any lot:

1. *The following covenants are intended to ensure ongoing compliance with State Stormwater Management Permit Number _____, as issued by the Division of Energy, Mineral and Land Resources under the Stormwater Management Regulations.*
2. *The State of North Carolina is made a beneficiary of these covenants to the extent necessary to maintain compliance with the stormwater management permit.*
3. *These covenants are to run with the land and be binding on all persons and parties claiming under them.*
4. *The covenants pertaining to stormwater may not be altered or rescinded without the express written consent of the State of North Carolina, Division of Energy, Mineral and Land Resources.*
5. *Alteration of the drainage as shown on the approved plan may not take place without the concurrence of the Division of Energy, Mineral and Land Resources.*
6. *The maximum allowable built-upon area per lot is _____ square feet. This allotted amount includes any built-upon area constructed within the lot property boundaries, and that portion of the right-of-way between the front lot line and the edge of the pavement. Built upon area includes, but is not limited to, structures, asphalt, concrete, gravel, brick, stone, slate, and coquina, but does not include raised, open wood decking, or the water surface of swimming pools.*
7. *In the case of a lot within CAMA's regulated AEC, where the Division of Coastal Management calculates a different maximum allowable built-upon area for that lot than is shown herein, the governing maximum built-upon area for that lot shall be the most restrictive of the two.*
8. *Filling in or piping of any vegetative conveyances (ditches, swales, etc.) associated with the development except for average driveway crossings is strictly prohibited by any persons.*
9. *Each lot will maintain a 30* foot wide vegetated buffer between all impervious areas and surface waters.*
10. *All roof drains shall terminate at least 30* foot from the mean high water mark of surface waters.*

***50 foot for projects located in the 20 coastal counties.**

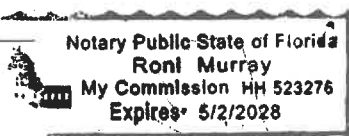
Signature:  Date: 12/31/25

I, Roni Murray, a Notary Public in the State of Florida, County of Sarasota, do hereby certify that Peter Kauffman personally appeared before me this the 31st day of December, 2025, and acknowledge the due execution of the foregoing instrument. Witness my hand and official seal,


Signature

SEAL

My Commission expires 5/2/28



Property Area Data:	Area (sf)	Area (Ac)
Proposed Subdivision Property Area:	484,003	11.11

Project Area Data:	Area (sf)	Area (Ac)
Proposed Right-of-Way Area:	78,465	1.80
Proposed Common Area:	405,538	9.31
Total Project Area:	484,003	11.11

Project Built-Up Area Data:	Area (sf)	Area (Ac)
Roadway Coverage:	31,940	0.73
Parking Coverage:	2,596	0.06
Sidewalk Coverage:	10,807	0.25
Misc. Amenity Coverage:	350	0.01
Future Coverage:	5,000	0.11
Total Built-Up Area:	50,693	1.16

Percentage Built-Up Area: 10.47%

Operation & Maintenance Agreement

Project Name: Seaside Meadows

Project Location: South Spot Road, Powell's Point, NC

Cover Page

Maintenance records shall be kept on the following SCM(s). This maintenance record shall be kept in a log in a known set location. Any deficient SCM 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 SCM(s).

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

Infiltration Basin	Quantity:		Location(s):	
Infiltration Trench	Quantity:		Location(s):	
Bioretention Cell	Quantity:		Location(s):	
Wet Pond	Quantity:	1	Location(s):	
Stormwater Wetland	Quantity:		Location(s):	
Permeable Pavement	Quantity:		Location(s):	
Sand Filter	Quantity:		Location(s):	
Rainwater Harvesting	Quantity:		Location(s):	
Green Roof	Quantity:		Location(s):	
Level Spreader - Filter Strip	Quantity:		Location(s):	
Proprietary System	Quantity:		Location(s):	
Treatment Swale	Quantity:		Location(s):	
Dry Pond	Quantity:		Location(s):	
Disconnected Impervious Surface	Present:	No	Location(s):	
User Defined SCM	Present:	No	Location(s):	
Low Density	Present:	No	Type:	

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

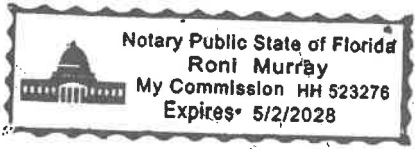
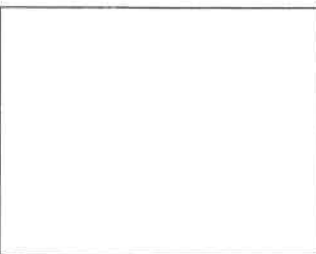
Responsible Party:	South Spot, LLC
Title & Organization:	Peter Kauffman, Manager
Street address:	2522 S. Croatan Hwy. Ste 1C
City, state, zip:	Nags Head, NC 27959
Phone number(s):	941-552-6834
Email:	pkauffman@ospavpartners.com

Signature: *[Handwritten Signature]* Date: 12/31/25

I, Roni Murray, a Notary Public for the State of Florida
 County of Sarasota, do hereby certify that Peter Kauffman
 personally appeared before me this 31st day of December 2025 and

acknowledge the due execution of the Operations and Maintenance Agreement

Witness my hand and official seal, *Roni Murray*



Seal My commission expires 5/2/28

Wet Pond Maintenance Requirements

Important operation and 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 pond should be fertilized after the initial fertilization that is required to establish the plants on the vegetated shelf.
- Stable groundcover will be maintained in the drainage area to reduce the sediment load to the wet pond.
- If the pond must be drained for an emergency or to perform maintenance, the flushing of sediment through the emergency drain will be minimized as much as possible.
- At least once annually, a dam safety expert will inspect the embankment. Any problems that are found will be repaired immediately.
- 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 the sediment.

After the wet pond is established, it will be inspected ~~quarterly 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 shall be kept in a known set location and shall be available upon request.

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

SCM element:	Potential problem:	How to remediate the problem:
The entire wet pond	Trash/debris is present	Remove the trash/debris.
The perimeter of the wet pond	Areas of bare soil and/or erosive gullies have formed.	Regrade the soil if necessary to remove the gully, plant ground cover and water until it is established. Provide lime and a one-time fertilizer application.
The inlet device	The inlet pipe is clogged (if applicable)	Unclog the pipe. Dispose of the sediment off-site.
	The inlet pipe is cracked or otherwise damaged (if applicable)	Repair or replace the pipe.
The forebay	Erosion is occurring in the swale (if applicable).	Regrade the swale if necessary and provide erosion control devices such as reinforced turf matting or riprap to avoid future problems with erosion.
	Sediment has accumulated to a depth greater than the original design depth for sediment	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 SCM.
	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 spray.

Wet Pond Maintenance Requirements (Continued)

SCM element:	Potential problem:	How to remediate the problem:
The main treatment area	Sediment has accumulated to a depth greater than the original design 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 SCM.
	Algal growth covers over 50% of the	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 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
	Weeds are present.	Remove the weeds, preferably by hand. If pesticide is used, wipe it on the plants rather than
The embankment	Shrubs have started to grow on the embankment.	Remove shrubs immediately.
	Evidence of muskrat or beaver activity is	Consult a professional to remove muskrats or beavers and repair any holes or erosion.
	A tree has started to grow on the	Consult a dam safety specialist to remove the tree.
	An annual inspection by an appropriate professional shows that the embankment needs repair.	Make all needed repairs immediately.
The outlet device	Clogging has occurred.	Clean out the outlet device and dispose of any sediment in a location where it will not cause impacts to streams or the SCM.
	The outlet device is damaged.	Repair or replace the outlet device.
Floating wetland island (if applicable)	Weeds or volunteer trees are growing on	Remove the weeds or trees.
	The anchor cable is damaged, disconnected or missing	Restore the anchor cable to its design state.

Wet Pond Maintenance Requirements (Continued)

SCM element:	Potential problem:	How to remediate the problem:
The receiving water	Erosion or other signs of damage have occurred at the outlet	Repair the damage and improve the flow dissipation structure.
	Discharges from the wet pond are causing erosion or sedimentation in the receiving water.	Contact the local NCDEQ Regional Office.

Wet Detention Pond Design Summary

Wet Pond Diagram

WET POND ID	FOREBAY	MAIN POND
Pond 1	Permanent Pool El. 5.7	Permanent Pool El. 5.7
	Temporary Pool El. 5.76	Temporary Pool El. 5.76
Pretreatment other than forebay? No	Clean Out Depth: 7.7	Clean Out Depth: 5.2
Has Veg. Filter? No	Sediment Removal El. -2	Sediment Removal El. 0.5
	Bottom Elevation: -3	Bottom Elevation: 0

ATTACH ADDITIONAL SHEETS IF NECESSARY

Operation & Maintenance Agreement

Project Name: Seaside Meadows
Project Location: South Spot Road, Powell's Point, NC

Cover Page

Maintenance records shall be kept on the following SCM(s). This maintenance record shall be kept in a log in a known set location. Any deficient SCM 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 SCM(s).

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

Infiltration Basin	Quantity:		Location(s):	
Infiltration Trench	Quantity:		Location(s):	
Bioretention Cell	Quantity:		Location(s):	
Wet Pond	Quantity:		Location(s):	
Stormwater Wetland	Quantity:		Location(s):	
Permeable Pavement	Quantity:		Location(s):	
Sand Filter	Quantity:		Location(s):	
Rainwater Harvesting	Quantity:		Location(s):	
Green Roof	Quantity:		Location(s):	
Level Spreader - Filter Strip	Quantity:		Location(s):	
Proprietary System	Quantity:		Location(s):	
Treatment Swale	Quantity:		Location(s):	
Dry Pond	Quantity:		Location(s):	
Disconnected Impervious Surface	Present:	No	Location(s):	
User Defined SCM	Present:	No	Location(s):	
Low Density	Present:	Yes	Type:	

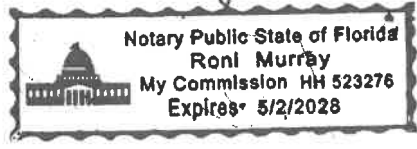
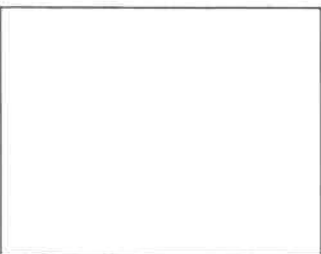
I acknowledge and agree by my signature below that I am responsible for the performance of the maintenance procedures listed for each SCM above, and attached O&M tables. I agree to notify NCDEQ of any problems with the system or prior to any changes to the system or responsible party.

Responsible Party:	South Spot, LLC
Title & Organization:	Peter Kauffman, Manager
Street address:	2522 S. Croatan Hwy. Ste 1C
City, state, zip:	Nags Head, NC 27959
Phone number(s):	941-552-6834
Email:	pkauffman@ospavpartners.com

Signature: *[Signature]* Date: 12/31/25

I, Roni Murray, a Notary Public for the State of Florida
 County of Sarasota, do hereby certify that Peter Kauffman
 personally appeared before me this 31st day of December 2025 and
 acknowledge the due execution of the Operations and Maintenance Agreement

Witness my hand and official seal, Roni Murray



Seal My commission expires 5/2/28

important maintenance procedures:

The drainage area to the vegetated conveyance or vegetated receiving area will be carefully managed to reduce the sediment load to the vegetated conveyance or receiving area. After the initial fertilization to establish the grass in the vegetated conveyance or the vegetated receiving area, fertilizer will not be applied to the vegetated receiving area.

The vegetated conveyance or vegetated receiving area will be inspected **quarterly**. Records of operation and maintenance will be kept in a known set location and will be available upon request.

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

SCM element:	Potential problem:	How to remediate the problem:
Vegetation	Vegetation is too short or too long.	Maintain grassed vegetation such that the swale or vegetated area does not erode during the peak flow from the 10-year storm
Vegetated receiving areas	Trash/debris is present.	Remove the trash/debris.
	Areas of bare soil and/or erosive gullies have formed.	Regrade the soil if necessary to remove the gully, and then re-sod (or plant with other appropriate species) and water until established. Provide lime and a one-time fertilizer application.
	Trees and/or other woody vegetation are present in the swale.	Remove the trees and woody vegetation from the swale, regrade the swale if necessary and re-establish grass as shown on the approved plans.
Vegetated conveyances / swales / roadside ditches (other than curb outlet swales)	Trash/debris is present.	Remove the trash/debris.
	Areas of bare soil and/or erosive gullies have formed.	Regrade the soil if necessary to remove the gully, and then re-sod (or plant with other appropriate species) and water until established. Provide lime and a one-time fertilizer application.
	Sediment covers the grass at the bottom of the swale.	Remove sediment and dispose in an area that will not impact streams or SCMs. Re-sod if necessary.
	The side slope is steeper than the approved configuration.	Regrade the slopes to the permitted configuration per the approved plan and reestablish vegetation. If as-built or existing conditions do not allow the slopes to be regraded, contact the applicable permitting
	Grass is dead, diseased or dying.	Determine the source of the problem: soils, hydrology, disease, etc. Remedy the problem and replace plants. Provide a one-time fertilizer application to establish the ground cover if necessary.
	Trees and/or other woody vegetation are present in the vegetated	Remove the trees and woody vegetation from the vegetated conveyance, regrade the vegetated conveyance if necessary and re-establish grass as shown on the approved plans.

urb outlet swales or vegetated areas	The longitudinal slope exceeds 5%.	Regrade to meet the permitted longitudinal slope as shown on the approved plans.
	The swale profile does not match the approved detail.	Regrade the swale to the approved profile as shown on the approved plans.
	The length of the swale or vegetated area is less than 100 feet.	Extend the swale to achieve the 100-foot minimum length. If as-built or existing conditions do not allow the slopes to be regraded, contact the applicable permitting agency.
ie outlet device (if applicable)	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.
ie receiving water	Erosion or other signs of damage have occurred at the outlet.	Repair the damage and improve the flow dissipation structure.
	Discharges from the site are causing erosion or sedimentation in the receiving water.	Contact the local NCDEQ Regional Office.

SUPPLEMENT-EZ COVER PAGE High Density Project Area

[FORMS LOADED](#)

PROJECT INFORMATION

		Seaside Meadows
1	Project Name	
2	Project Area (ac)	65.99
3	Coastal Wetland Area (ac)	0
4	Surface Water Area (ac)	0
5	Is this project High or Low Density?	High
6	Does this project use an off-site SCM?	No

COMPLIANCE WITH 02H .1003(4)

7	Width of vegetated setbacks provided (feet)	n/a
8	Will the vegetated setback remain vegetated?	n/a
9	If BUA is proposed in the setback, does it meet NCAC 02H.1003(4)(c-d)?	n/a
10	Is streambank stabilization proposed on this project?	no

NUMBER AND TYPE OF SCMs:

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

[FORMS LOADED](#)

DESIGNER CERTIFICATION

27	Name and Title:	David A. Deel, P.E.
28	Organization:	Deel Engineering, PLLC
29	Street address:	322 West Wilkinson Street
30	City, State, Zip:	Kill Devil Hills, NC 27948
31	Phone number(s):	252-202-3803
32	Email:	dadeeleng@gmail.com

Certification Statement:

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

Designer



David A. Deel

Signature of Designer

Date

DRAINAGE AREAS

1	Is this a high density project?	Yes
2	If so, number of drainage areas/SCMs	1
3	Does this project have low density areas?	No
4	If so, number of low density drainage areas	0
5	Is all/part of this project subject to previous rule versions?	No

[FORMS LOADED](#)

DRAINAGE AREA INFORMATION		Entire Site	1
4	Type of SCM	Wet Pond	Wet Pond
5	Total drainage area (sq ft)	2816184	2816184
6	Onsite drainage area (sq ft)	2390630	2390630
7	Offsite drainage area (sq ft)	425554	425554
8	Total BUA in project (sq ft)	597597 sf	597597 sf
9	New BUA on subdivided lots (subject to permitting) (sq ft)	420000 sf	420000 sf
10	New BUA not on subdivided lots (subject to permitting) (sf)	170549 sf	170549 sf
11	Offsite BUA (sq ft)	7048 sf	7048 sf
12	Breakdown of new BUA not on subdivided lots:		
	- Parking (sq ft)	sf	sf
	- Sidewalk (sq ft)	40199 sf	40199 sf
	- Roof (sq ft)	sf	sf
	- Roadway (sq ft)	122350 sf	122350 sf
	- Future (sq ft)	sf	sf
	- Other, please specify in the comment box below (sq ft)	8000 sf	8000 sf
13	New infiltrating permeable pavement on subdivided lots (sq ft)	sf	sf
14	New infiltrating permeable pavement not on subdivided lots (sq ft)	sf	sf
15	Existing BUA that will remain (not subject to permitting) (sq ft)	sf	sf
16	Existing BUA that is already permitted (sq ft)	sf	sf
17	Existing BUA that will be removed (sq ft)	sf	sf
18	Percent BUA	21%	21%
19	Design storm (inches)	1.5 in	1.5 in
20	Design volume of SCM (cu ft)	84831 cf	84831 cf
21	Calculation method for design volume	Simple	Simple

ADDITIONAL INFORMATION

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

Item #12: Covers Miscellaneous Subdivision Amenities

WET POND

1	Drainage area number	1
2	Minimum required treatment volume (cu ft)	84831 cf
GENERAL MDC FROM 02H .1050		
3	Is the SCM sized to treat the SW from all surfaces at build-out?	Yes
4	Is the SCM located away from contaminated soils?	Yes
5	What are the side slopes of the SCM (H:V)?	3:1
6	Does the SCM have retaining walls, gabion walls or other engineered side slopes?	No
7	Are the inlets, outlets, and receiving stream protected from erosion (10-year storm)?	Yes
8	Is there an overflow or bypass for inflow volume in excess of the design volume?	Yes
9	What is the method for dewatering the SCM for maintenance?	Pump (preferred)
10	If applicable, will the SCM be cleaned out after construction?	Yes
11	Does the maintenance access comply with General MDC (8)?	Yes
12	Does the drainage easement comply with General MDC (9)?	Yes
13	If the SCM is on a single family lot, does (will?) the plat comply with General MDC (10)?	N/A
14	Is there an O&M Agreement that complies with General MDC (11)?	Yes
15	Is there an O&M Plan that complies with General MDC (12)?	Yes
16	Does the SCM follow the device specific MDC?	Yes
17	Was the SCM designed by an NC licensed professional?	Yes
WET POND MDC FROM 02H .1053		
18	Sizing method used	HRT
19	Has a stage/storage table been provided in the calculations?	Yes
20	Elevation of the excavated main pool depth (bottom of sediment removal) (fmsl)	-3.00
21	Elevation of the main pool bottom (top of sediment removal) (fmsl)	-2.00
22	Elevation of the bottom of the vegetated shelf (fmsl)	4.70
23	Elevation of the permanent pool (fmsl)	5.70
24	Elevation of the top of the vegetated shelf (fmsl)	5.70
25	Elevation of the temporary pool (fmsl)	5.77
26	Surface area of the main permanent pool (square feet)	230526
27	Volume of the main permanent pool (cubic feet)	1630606 cf
28	Average depth of the main pool (feet)	6.73 ft
29	Average depth equation used	Equation 2
30	If using equation 3, main pool perimeter (feet)	
31	If using equation 3, width of submerged veg. shelf (feet)	
32	Volume of the forebay (cubic feet)	50785 cf
33	Is this 15-20% of the volume in the main pool?	No
34	Clean-out depth for forebay (inches)	62 in
35	Design volume of SCM (cu ft)	284289 cf
36	Is the outlet an orifice or a weir?	Weir
37	If orifice, orifice diameter (inches)	
38	If weir, weir height (inches)	4 in
39	If weir, weir length (inches)	6 in

WET POND

40	Drawdown time for the temporary pool (days)	5
41	Are the inlet(s) and outlet located in a manner that avoids short-circuiting?	Yes
42	Are berms or baffles provided to improve the flow path?	No
43	Depth of forebay at entrance (inches)	68 in
44	Depth of forebay at exit (inches)	68 in
45	Does water flow out of the forebay in a non-erosive manner?	Yes
46	Width of the vegetated shelf (feet)	6 ft
47	Slope of vegetated shelf (H:V)	6:1
48	Does the orifice drawdown from below the top surface of the permanent pool?	Yes
49	Does the pond minimize impacts to the receiving channel from the 1-yr, 24-hr storm?	Yes
50	Are fountains proposed? (If Y, please provide documentation that MDC(9) is met.)	No
51	Is a trash rack or other device provided to protect the outlet system?	Yes
52	Are the dam and embankment planted in non-clumping turf grass?	Yes
53	Species of turf that will be used on the dam and embankment	Bermuda
54	Has a planting plan been provided for the vegetated shelf?	Yes

ADDITIONAL INFORMATION

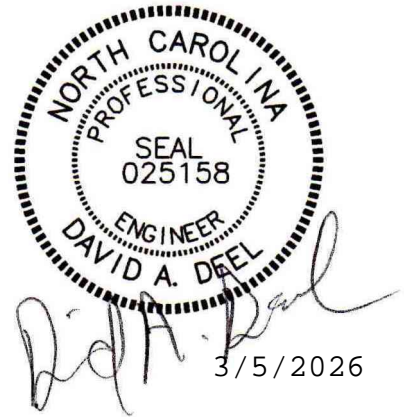
55	Please use this space to provide any additional information about the wet pond(s):
<p>Item #33: Wet Pond is greatly oversized in order to meet County Peak Flow requirements. This knocks the forebay Volume % number off. A detailed explanation & minimum forebay required calculations are in the Calculations Section of the Narrative Appendices.</p>	

Stormwater Management Plan Narrative

Seaside Meadows Subdivision

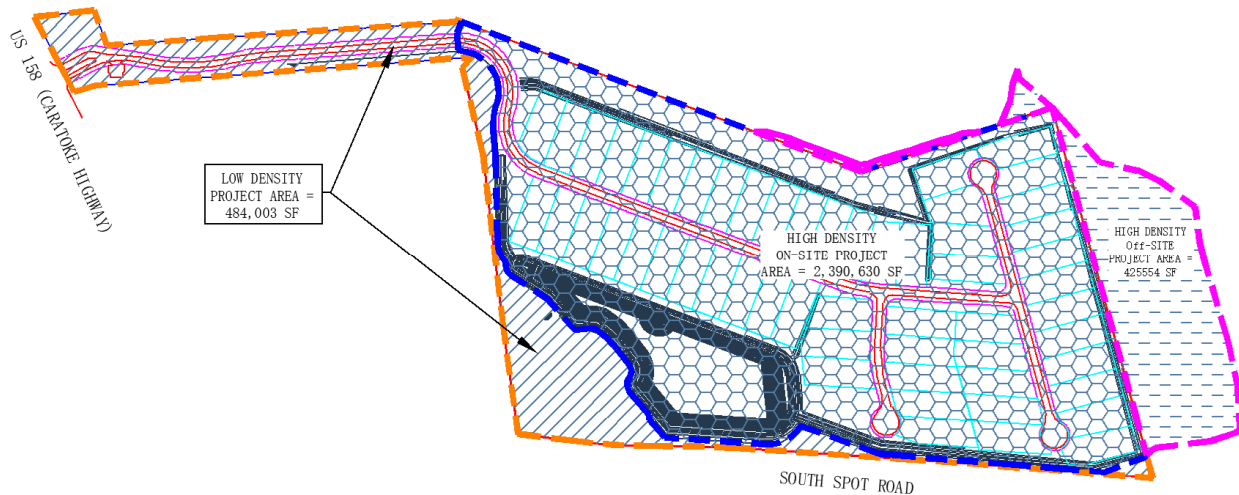
High-Density NCDEQ Submittal w/Low Density Area

3/5/2026



General

The Seaside Meadows Subdivision project is a proposed Residential Subdivision to be located on a (+/-) 65.99 acre parcel located on the north side of South Spot Road in Powells Point, NC. The subdivision entrance will access the east side of US 158 approximately 1,500 feet north of the intersection of South Spot Road and US 158 and the body of the subdivision will be located 1,600 feet to the east of the entrance road intersection with US 158. A High Density Stormwater Permit is being pursued for the main subdivision Project Area and a Low Density Stormwater Project Area has been defined for the entrance road and outlying undeveloped areas within the property boundary.



The following narrative will detail the stormwater management plan for the proposed subdivision.

A single High Density Drainage Area, containing the on-site High Density project Area and an off-site Drainage Areas has been delineated as shown on the above graphic, and the entirety of the High Density Drainage Area is proposed to be served by a single oversized Wet Pond SCM located in the southwest corner of the High Density Project Area. The pond is oversized in order to meet Currituck County Peak Flow Mitigation requirements, and water quality volume will be orifice controlled from a single orifice structure. The wet pond will have the ability to “stack” multiple 1.5” water quality volumes within the pond without overflow, resulting in enhanced treatment. As per State regulations, a High Density Permit is being pursued to address stormwater treatment within this Drainage Area.

A single Low Density project Area has also been defined, consisting primarily of the subdivision entrance road and peripheral open space. In accordance with state regulations, the Low Density Project Area will be restricted to containing less than 24% BUA 10.47% maximum BUA proposed - see coverage tabulation in Appendix A of this Narrative).

The following narrative, application and calculations will demonstrate the parameters of this design in compliance with NCDEQ low density stormwater permit requirements.

Summary of Existing Conditions

The project site consists of a (+/-) 65.99 acre parcel located on the north side of South Spot Road in Powells Point, NC. The property is wooded and drains to a north-south ditch (named “Tig-Ma-Tar Ditch in the Currituck County GIS), which slices through the western portion of the property. The property is drained to Tig-Ma-Tar Ditch via overland flow and minor ditches and soils across the site consist primarily of loamy fine sand and sandy fine loam.

Summary of Proposed Conditions – High Density Project Area

The project site consists of a (+/-) 65.99 acre parcel located on the north side of South Spot Road in Powells Point, NC. The subdivision entrance will access the east side of US 158 approximately 1,500 feet north of the intersection of South Spot Road and US 158 and the body of the subdivision will be located 1,600 feet to the east of the entrance road intersection with US 158. A High Density Stormwater Permit is being pursued for the main subdivision Project Area and a Low Density Project Area is defined for the entrance road and outlying undeveloped areas within the property boundary (please see graphic above).

The entirety of the High Density Project Area, as well as 9.77 acres of off-site drainage area, is proposed to be served by a single oversized Wet Pond SCM located in the southwest corner of the Project Area. The pond is oversized in order to meet Currituck County Peak Flow Mitigation requirements, and water quality volume will be orifice controlled from a single orifice structure. The wet pond will have the ability to “stack” multiple 1.5” water quality volumes within the pond without overflow, resulting in enhanced treatment. As per State regulations, a High Density Permit is being pursued to address stormwater treatment within the Project Area.

The project proposes to construct 55 single family residential lots with associated subdivision road and infrastructure improvements. Runoff from the proposed subdivision roads, lots, and open space will be collected via a storm sewer system as well as grassed swales running through and around the project site all conveying to an oversized wet pond in the southwest corner of the developed area. The wet pond serves the dual purpose of providing stormwater treatment as well as meeting the peak flow mitigation requirements of Currituck County’s stormwater ordinance.

In addition to providing stormwater treatment, the proposed pond also provides post-construction peak flow reduction for the development. Larger storm events will overflow the weir control structure to Tig-Ma-Tar ditch. Peak flows from the site for the post-construction 10-year rainfall event will be reduced to pre-construction 2-year rainfall event flows. Per Currituck County requirements, an EPA SWMM Model was developed for the entire project which demonstrates that post-construction peak flows are reduced compared to pre-construction peak flows. A copy of this model & report are not included with this submission.

Stormwater Collection, Treatment, Storage and Disposal

DA Pond 1

Collection

Stormwater runoff will be collected via site grading, swales, curb & gutter, drop inlets, and storm sewer. Runoff will be conveyed to a Wet Pond SCM located in the southwest part of the Project Area.

Treatment & Storage

The Wet Pond will offer several methods of stormwater runoff treatment prior to release. Runoff from the drainage area will enter the basin primarily via the proposed storm sewer. Pre-treatment is provided via drop inlet grates, where large particulates and debris will gather. A small portion of the runoff will enter the basin via overland flow. Pre-treatment for these areas is provided via filtration through the overland vegetation.

Initial treatment will be provided within the Pond forebay, where particulates will settle out and filtration will occur as water passes over the vegetated forebay weir.

Primary and secondary treatment will be provided in the Wet Pond main pool, via settling of particulates, filtration within the vegetated shelf and grassed side-slopes, biological uptake of nutrients by the vegetated shelf and grassed side-slopes, and infiltration into the pond subsurface.

The runoff generated by a 1.5 inch rainfall event will require 84,831 ft³ of storage. Per the EPA SWMM model, this volume is achieved at a water surface elevation of 5.77' (permanent pool is at elevation 5.7') and the system draws-down to an elevation of 5.74' within 5 days after conclusion of the rainfall event, due to the low-head storage. If a second 1.5" rainfall event occurs on top of the "wet-period" permanent pool of 5.74', the system will store runoff to an elevation of 5.80', and will draw-down to an elevation of 5.75' within 5 days. If a third 1.5" rainfall event occurs on top of the new "wet-period" permanent pool of 5.75', the system will store runoff to an elevation of 5.81', and will draw-down to wet-period permanent pool elevation of 5.75' within 5 days. Overflow does not occur until an elevation of 6.8' is reached, and therefore adequate capacity is provided for endless 1.5" rainfall events occurring at five day intervals. A discussion of the system drawdown is included at the end of this section and includes Stage vs Time curves from the EPA SWMM analysis of multiple 1.5 inch rainfall events to illustrate the draw-down vs storage capabilities of the system.

Pre-construction / post-construction peak flows are mitigated per the EPA SWMM analysis performed in accordance with Currituck County requirements.

Disposal

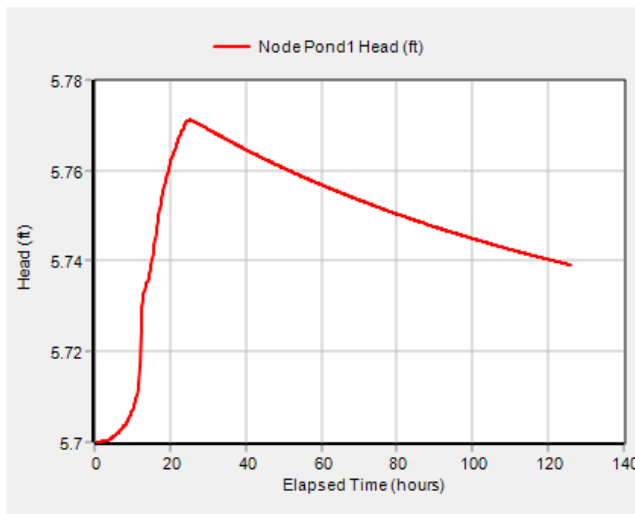
Outflow of the water quality volume is controlled via an orifice structure located adjacent to (and discharging to) Tig-Ma-Tar Ditch. Discharge through this orifice structure is the primary source of disposal. A secondary source of disposal will be via infiltration and evaporation of stored runoff. Storms which exceed the capacity of the system are conveyed to Tig-Ma-Tar Ditch via (first) weirs built into the Outlet Control Structure, and then an emergency overflow weir.

System Drawdown

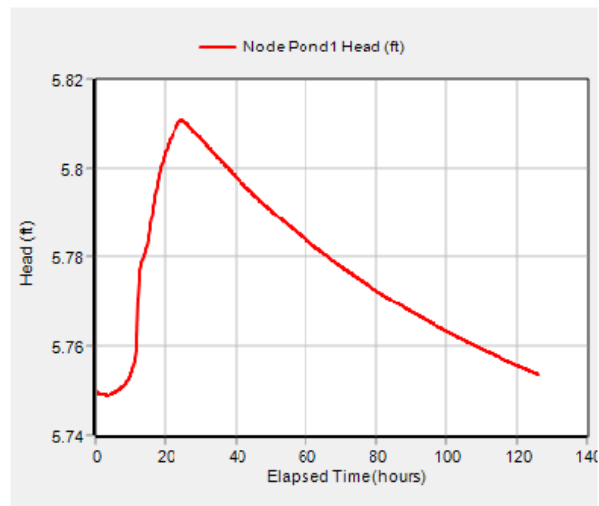
Outflow of the water quality volume is controlled via an orifice in the outlet control structure located adjacent to (and discharging to) Tig-Ma-Tar Ditch. Per the EPA SWMM model constructed for the entire system, the water quality volume for the entire system is achieved at a water surface elevation of 5.77' (permanent pool is at elevation

5.7'). The proposed pond system is also utilized to meet peak flow requirements for the 2-yr, 10-yr, and 100-yr rainfall events. Therefore, the system is significantly oversized when compared to NCDEQ requirements. The result is a very shallow (low-head) storage depth for the WQV, which causes difficulty in getting the pond system to drawdown completely to its original permanent pool elevation of 5.7' within five days after a storm. The actual 5-day drawdown is to an elevation of 5.74'.

To address this, the overflow weir above the WQV storage was set at an elevation of 6.8', providing additional storage within the system for multiple WQV events. Multiple EPA SWMM Models were then run: The first model established that after five days, the pond system would draw-down to an elevation of 5.74'. Then a second model was run which applied a new 1.5" rainfall event on top of the "wet-period permanent pool" of 5.74'. This model showed storage within the system up to an elevation of 5.80' (still below the overflow elevation), and then a draw-down back to a new "wet-period permanent pool" of 5.75'. Next a third model was run which applied a new 1.5" rainfall event on top of the new "wet-period permanent pool" of 5.75'. This model showed storage within the system up to an elevation of 5.81' (still below the overflow elevation), and then a draw-down back to the new "wet-period permanent pool" of 5.75'.



“Dry-Period Permanent Pool” = 5.7’



“Wet-Period Permanent Pool” = 5.75’

The higher head of the third stored event brings the system into equilibrium where it can store, treat, and discharge an endless number of back-to-back 1.5" rainfall events spaced five days apart. Based on this analysis, the pond system meets the requirement for draw-down of the water quality volume within 5 days after a rainfall event.

Summary of Proposed Conditions – Low Density Project Area

The proposed entrance road and adjoining open space are defined as a Low Density Project Area and will conform to NCDEQ's Low Density permit requirements. The entrance road will be installed without curb & gutter and will drain via roadside swales to the ultimate outfall, which is Tig-Ma-Tar Ditch. The bulk of the remaining open space will be left undeveloped and will drain via overland flow to the Tig-Ma-Tar ditch along existing flow patterns. A flow mitigation pond for flows in the existing Tig-Ma-Tar Ditch is proposed in the southern part of the Low Density Project Area (labeled "Pond 2" on the Plans. This is not an SCM and receives no runoff from developed areas. This pond is being installed as part of an effort with Currituck County to mitigate Peak flows within the existing Tig-Ma-Tar Ditch. The total coverage (BUA) requested within the Low Density Project Area is 10.47% impervious coverage.

Stormwater Collection, Treatment, Storage, and Disposal

Low Density Project Area:

This Project Area is being permitted as a Low Density Project Area. Impervious coverage is limited to 10.47% of the total project area, impervious coverage is disperse, runoff is directed across vegetated areas to the maximum extent feasible, and primary conveyance is via overland flow and vegetated swale. There is no storage component associated with a Low Density Project. Treatment of stormwater is achieved via filtration by the vegetation, filtration by the soils when runoff infiltrates, and evapotranspiration by the vegetation.

Low Density Compliance

The proposed project conforms to the Low Density requirements as outlined below.

- V. In addition to the requirements of Rule .1019, the development must also comply with the following general low density design requirements set forth by Rule .1003(2):
- a. The project shall not exceed the low density threshold of 24% as noted in III above.
 - b. The project shall be designed to maximize dispersed flow through vegetated areas and minimize channelization of flow.
 - c. Stormwater that cannot be released as dispersed flow shall be transported by vegetated conveyances. A minimal amount of non-vegetated conveyances for erosion protection or piping for driveways or culverts under a road shall be allowed by the permitting authority when it cannot be avoided. Vegetated conveyances shall meet the following requirements:
 - i. Side slopes shall be no steeper than 3:1
 - ii. The conveyance shall carry the peak flow from a 10-year storm at a non-erosive velocity
 - d. Low Density projects may use curb and gutter with outlets to convey stormwater to grassed swales or vegetated areas. Requirements for these curb outlet systems shall be as follows:
 - i. The receiving curb outlet swale or vegetated area shall carry the peak flow from a 10-year storm at a non-erosive velocity.
 - ii. The longitudinal slope of the swale or vegetated area shall not exceed 5%, except where not practical due to physical conditions.
 - iii. The swales cross-section shall be trapezoidal with a minimum bottom width of 2 feet
 - iv. The side slopes of the swale or vegetated area shall be no steeper than 3:1.
 - v. The minimum length of the swale or vegetated area shall be 100 feet
 - vi. Treatment swales designed in accordance with Rule .1061 may be used in lieu of the above.

Watershed Classification

The project drains via Ti-Ma-Tar Ditch to Currituck Sound, which is classified as having SC waters (Stream Index #30-1).

Soils

Information collected on site indicates that the soils found throughout this site are composed primarily of loam and loamy sand. These soil types will have moderate permeability. These findings generally correlate with the description mapped and discussed in the United States Department of Agriculture, Soil Conservation Service, Soil Survey of Currituck County, North Carolina, which map the soil for this site as follows:

BoA – Bojac loamy sand, Permeability is high

Cb – Conaby muck, permeability is moderately high

CnA – Conetoe loamy sand, Permeability is moderately high to moderately high

Ds – Dragston loamy fine sand, Permeability is high

Mu – Munden loamy sand, Permeability is moderately high to moderately high

Pt – Portsmouth fine sandy loam, Permeability is moderately high to moderately high

A soils report has been included in the appendix of this narrative. Water levels in the proposed Wet Pond will be regulated via the weir structure.

Calculations

Initial overall sizing of the wet pond is based on the Currituck County peak flow mitigation requirements and result in ponds that are over-sized relative to NCDEQ requirements. In order to “retrofit” NCDEQ Wet Pond elements onto this oversized ponds, a theoretical pond was calculated, having a 3:1 length to width ratio and then forebay and vegetated shelf elements were sized based on this “ideal” pond. These elements were then incorporated into the design of the oversized ponds. A detailed breakdown of how this calculation was made can be found in Appendix I.

Calculations requested on the Low Density Supplement sheet have been provided on the Supplement and attachment.

Conclusions

High Density Project Area:

The proposed stormwater management system provides storage, treatment, and disposal of the runoff generated by the 1.5” rainfall event over all surfaces within the drainage area. Furthermore, the pond system is oversized relative to NCDEQ requirements, providing additional treatment of storms significantly larger than the design storm. This proposed design will more than adequately serve the stormwater management requirements of this site.

Low Density Project Area:

The proposed stormwater management plan limits BUA to a maximum of 10.47%, disperses runoff from BUA across vegetated open space, and utilizes vegetated conveyances to manage runoff. This proposed design conforms with the NCDEQ requirements for a Low Density Project Area.

Compliance Analysis: General MDC's

GENERAL MDC 1: SIZING.

The design volume of SCMs shall take into account the runoff at build out from all surfaces draining to the system. Drainage from off-site areas may be bypassed. The combined design volume of all SCMs on the project shall be sufficient to handle the required storm depth.

Complies. As described in the Stormwater Narrative and documented in the stormwater calculations, all SCMs are designed to take into account all runoff from developed areas at build-out for the design storm.

GENERAL MDC 2: CONTAMINATED SOILS.

SCMs that allow stormwater to infiltrate shall not be located on or in areas with contaminated soils.

Complies. The project is not located within a brownfield area and soils investigations have not identified any contaminated soils.

GENERAL MDC 3: SIDE SLOPES.

Side slopes of SCMs stabilized with vegetated cover shall be no steeper than 3:1 (horizontal to vertical). Retaining walls, gabion walls, and other engineered surfaces may be steeper than 3:1. Steeper vegetated slopes may be considered on a case-by-case basis if the applicant demonstrates that the soils and vegetation shall remain stable.

Complies. Per the plan details, side slopes of proposed SCMs are specified to be no steeper than 3:1 max.

GENERAL MDC 4: EROSION PROTECTION.

The inlets SCMs shall be designed to protect the SCM from erosion resulting from stormwater discharges. The outlets of SCMs shall be designed so that they do not cause erosion immediately downslope of the discharge point during the peak flow from the 10-year storm event as shown by engineering calculations.

Complies. Discharge from the storm pipe will enter the basin via submerged outlet within the forebay. Where necessary, system outlets are protected via structural conveyances and aprons.

GENERAL MDC 5: EXCESS FLOWS.

SCMs shall include an overflow or bypass device for inflow volumes in excess of the treatment volume, or, if applicable, the peak attenuation volume.

Complies. In the event that the capacity of the SCM is exceeded, runoff will overflow the system via a weir system and be discharged to the existing outfall.

GENERAL MDC 6: DEWATERING.

SCMs shall have a method to draw down any standing water to facilitate maintenance and inspection.

Complies. Systems draw-down, if ever needed, shall be via portable pump.

GENERAL MDC 7: CLEAN OUT AFTER CONSTRUCTION.

Every SCM impacted by sedimentation and erosion control during the construction phase shall be cleaned out and converted to its approved design state.

Complies. This is specified in note #3 on the wet pond detail on Sheet 23 of the Plan Set

GENERAL MDC 8: MAINTENANCE ACCESS.

Every SCM installed pursuant to this Section shall be made accessible for maintenance and repair. Maintenance accesses shall:

- (a) have a minimum width of ten feet;*
- (b) not include lateral or incline slopes that exceed 3:1 (horizontal to vertical); and*
- (c) extend to the nearest public right-of-way.*

Complies. A note is included on the plan cover sheet indicating a non-exclusive Stormwater Management Maintenance & Access easement across all open space to allow for access & maintenance of the stormwater management system. A corresponding note on the Final Subdivision Plat shall be recorded prior to final certification of the system. Maximum slopes of 3:1 or shallower are specified throughout the system.

GENERAL MDC 9: EASEMENTS.

All SCMs and associated maintenance accesses on privately owned land except for those located on single family residential lots shall be located in permanent recorded easements. The SCM shall be shown and labeled within the easement. These easements shall be granted in favor of the party responsible for enforcing the stormwater program under which the SCMs were approved.

Complies. A note is included on the plan cover sheet indicating a non-exclusive Stormwater Management Maintenance & Access easement across all open space to allow for access & maintenance of the stormwater management system. A corresponding note on the Final Subdivision Plat shall be recorded prior to final certification of the system.

GENERAL MDC 10: SINGLE FAMILY RESIDENTIAL LOTS.

Plats for residential lots that contain an SCM shall include:

- (a) the specific location of the SCM on the lot;*
- (b) a typical detail for SCM to be used; and*
- (c) a note that the SCM on the property has been required to meet stormwater regulations and that the property owner may be subject to enforcement actions if the SCM is removed, relocated, or altered without prior approval.*

Does not apply. SCM's will all be located within project Open Space and will be located within a drainage easement for access & maintenance.

GENERAL MDC 11: OPERATION AND MAINTENANCE AGREEMENT.

The owner of the SCMs shall enter into a binding Operation and Maintenance (O&M) Agreement with the party responsible for implementing the stormwater program under which the SCMs were approved. The O&M Agreement shall require the owner to maintain, repair, or reconstruct the SCMs in accordance with the approved design plans and the O&M Plan. The O&M Agreement shall be referenced on the final plat and shall be recorded with the county Register of Deeds upon final plat approval. If no subdivision plat is recorded for the site, then the O&M Agreement shall be recorded with the county Register of Deeds so as to appear in the chain of title of all subsequent purchasers.

Complies. An O&M EZ form specific to this project, is included with the stormwater permit application package. The requirements outlined on the form will be incorporated into the recorded community documents.

GENERAL MDC 12: OPERATION AND MAINTENANCE PLAN.

There shall be an O&M Plan for every project subject to this Rule. The O&M Plan shall specify all operation and maintenance work necessary for the function of all SCM components, including the stormwater conveyance system, perimeter of the device, inlet(s), pretreatment measures, main treatment area, outlet, vegetation, and discharge point. The O&M plan shall specify methods to be used to maintain or restore the SCMs to design specifications in the event of failure. O&M plans shall be signed by the owner and notarized. The owner shall keep maintenance records and these shall be available upon request by the party responsible for enforcing the stormwater program under which the SCMs were approved.

Complies. An O&M EZ form specific to this project, is included with the stormwater permit application package. The requirements outlined on the form will be incorporated into the recorded community documents.

GENERAL MDC 13: SCM SPECIFIC MINIMUM DESIGN CRITERIA (MDC).

Every SCM shall follow the applicable device specific MDC pursuant to Rules .1051 through .1062 of this Section.

Complies. Wet Pond MDC's have been complied with and an analysis of that compliance is included as a part of this Narrative.

GENERAL MDC 14: SCM DESIGNER QUALIFICATIONS FOR THE FAST-TRACK PERMITTING PROCESS.

For the fast-track permitting process as set forth in Rules .1043 and .1044 of this Section, SCMs and components of SCMs shall be designed by persons licensed under Chapters 89A, 89C, 89E, or 89F of the General Statutes.

Complies. All SCM's have been designed by a Licensed North Carolina Professional Engineer.

Compliance Analysis: Wet Pond MDC's

MDC 1. MAIN POOL SURFACE AREA AND VOLUME.

The main pool of the wet pond shall be sized using either:

- (a) The Hydraulic Retention Time (HRT) Method; or*
- (b) The SA/DA and Average Depth Method.*

Complies. Hydraulic Retention Time (HRT) Method was utilized.

MDC 2: MAIN POOL DEPTH.

The average depth of the main pool shall be three to eight feet below the permanent pool elevation. The applicant shall have the option of excluding the submerged portion of the vegetated shelf from the calculation of average depth.

Complies. Actual calculated Average Depth (excluding the vegetated shelf) is included in the tabulation in Appendix I.

MDC 3: SEDIMENT STORAGE.

The forebay and main pool shall have a minimum sediment storage depth of six inches.

Complies. Forebay and main pool are being constructed with a sediment storage depth of 0.5' - 1.0'

MDC 4: LOCATION OF INLET(S) AND OUTLET.

The inlet(s) and outlet shall be located in a manner that avoids short circuiting.

Complies. WQ Volume outlets will be located remote to the bulk of the incoming runoff. All concentrated runoff will enter the ponds via forebay protected inlets.

MDC 5: FOREBAY.

A forebay that meets the following specifications shall be included:

- (a) Forebay volume shall be 15 to 20 percent of the volume in the main pool;*
- (b) The forebay entrance shall be deeper than the forebay exit;*
- (c) The water flowing over or through the structure that separates the forebay from the main pool shall flow at a nonerosive velocity; and*
- (d) If sediment accumulates in the forebay in a manner that reduces its depth to less than 75 percent of its design depth, then the forebay shall be cleaned out and returned to its design state.*

a) Alternate compliance: The forebay is sized as a component of the theoretical ideal pond (3:1 length to width ratio, sized according to NCDEQ requirements). Forebay is not sized relative to the actual pond volume due to the fact that the actual ponds are oversized to meet Currituck County Peak Flow Mitigation requirements.

b) Complies. See detail, Sheet 23

c) Complies. See Calculations.

d) Complies. This requirement is addressed in the O&M Agreement.

MDC 6: VEGETATED SHELF.

The main pool shall be equipped with a vegetative shelf around its perimeter. The minimum width of the vegetated shelf shall be six feet and the slope shall be no steeper than 6:1 (horizontal to vertical).

Alternate compliance: The vegetated shelf length is sized as a component of the theoretical ideal pond (3:1 length to width ratio, sized according to NCDEQ requirements). Vegetated shelf does not encompass the entirety of the pond due to the fact that the actual ponds are oversized to meet Currituck County Peak Flow Mitigation requirements.

MDC 7: DRAWDOWN TIME.

The design volume shall draw down to the permanent pool level between two and five days.

Alternate compliance: Please see the “System Drawdown” analysis on page 7 of this narrative for an explanation of “dry-period permanent pool” and “wet period permanent pool”. The system capacity to capture and treat a 1.5 inch rainfall event is restored within 5 days of recurring events.

MDC 8: PROTECTION OF THE RECEIVING STREAM.

The wet pond shall discharge the runoff from the one-year, 24-hour storm in a manner that minimizes hydrologic impacts to the receiving channel.

Complies. Flows to the outfalls from the system are reduced in the post-construction condition.

MDC 9: FOUNTAINS.

If fountains are proposed, then documentation shall be provided that they will not resuspend sediment or cause erosion in the pond.

Does not apply. No fountain is proposed.

MDC 10: TRASH RACK.

A trash rack or other device shall be provided to prevent large debris from entering the outlet system.

Complies. See details sheet (Sheet 23).

MDC 11: VEGETATION.

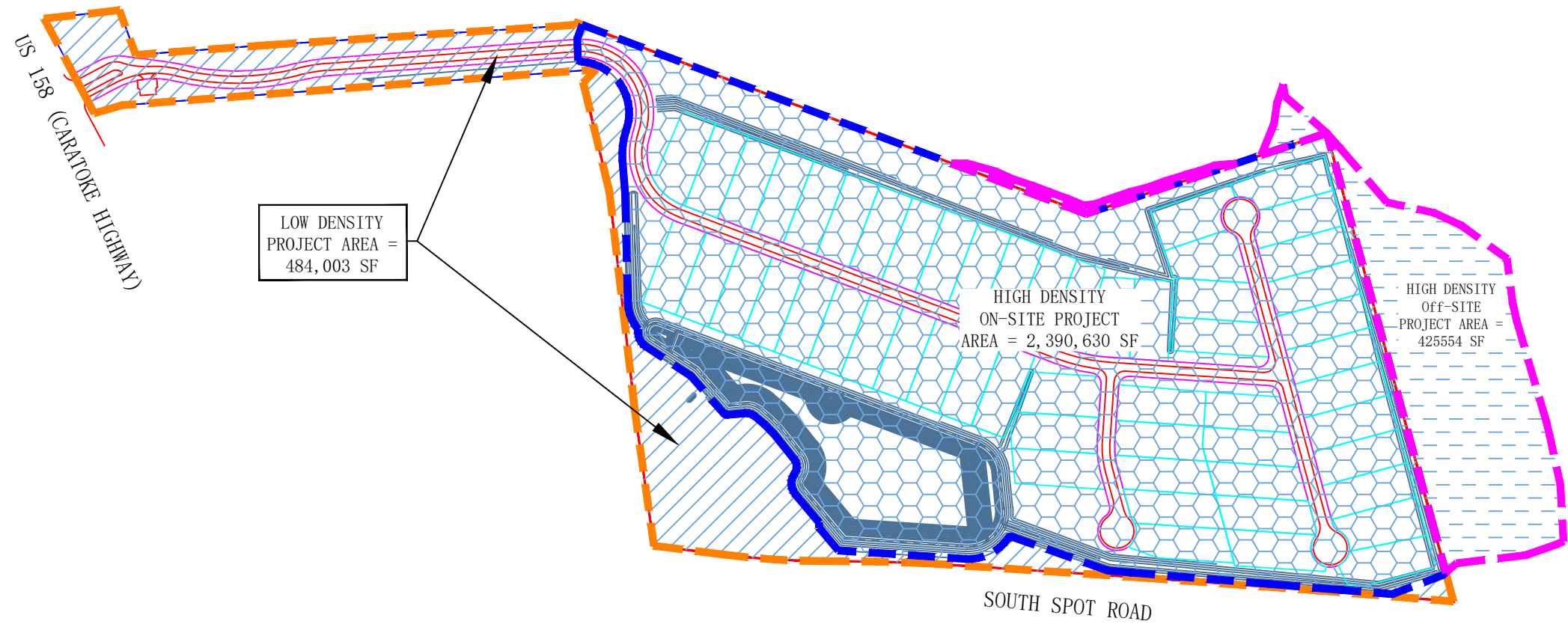
The following criteria apply to vegetation in and around the wet pond:

- (a) The dam structure, including front and back embankment slopes, of the pond shall be vegetated with non-clumping turf grass; trees and woody shrubs shall not be allowed;*
and
- (b) The vegetated shelf shall be planted with a minimum of three diverse species of herbaceous, native vegetation at a minimum density of 50 plants per 200 square feet of shelf area.*

- a) Complies. Pond embankments will be seeded and maintained in grass.
- b) Complies. Vegetated shelf to be planted in accordance with planting schedule on the plans.

APPENDIX A

Drainage Area Tabulations & Table of Allowable Coverage



Seaside Meadows**High & Low Density Project Areas**

Coverage Table

3/5/2026

Basin Information	DA 1 (Infil. Basin)	Low Density Project Area	Total Project(HD & LD)
Receiving Stream Name	Currituck Sound	Currituck Sound	Currituck Sound
Stream Class	SC	SC	SC
Stream Index Number	30-1	30-1	30-1
Total Drainage Area (sf)	2,816,184	484,003	3,300,187
On-site Drainage Area (sf)	2,390,630	484,003	2,874,633
Off-site Drainage Area (sf)	425,554	-	425,554
Proposed Impervious Area (sf)	597,597	50,693	648,290
% Impervious Area (total)	21.2%	10.5%	19.6%

Impervious Surface Area	DA 1 (Infil. Basin)	DA 1 (Infil. Basin)	DA 1 (Infil. Basin)
On-site Buildings / Lots (sf)	420,000	-	420,000
On-site Streets (sf)	122,350	31,940	154,290
On-site Parking (sf)	-	2,596	2,596
On-site Sidewalks (sf)	40,199	10,807	51,006
Other on-site (sf)	8,000	350	8,350 (Misc Amenities)
Future (sf)	-	5,000	5,000
Off-site (sf)	7,048	-	7,048
Existing BUA (sf)	-	-	-
Total (sf):	597,597	50,693	648,290

On-site Project Area:	2,874,633
On-Site Proposed BUA (total):	641,242
On-Site % BUA:	22.31%

LOT NO.	LOT AREA (ft ²)	Max. Allowable Built-Up Area (BUA)(ft ²)
1	25,000	7,500
2	25,000	7,500
3	25,000	7,500
4	25,000	7,500
5	25,000	7,500
6	25,000	7,500
7	25,000	7,500
8	25,000	7,500
9	25,000	7,500
10	25,000	7,500
11	25,000	7,500
12	25,000	7,500
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46	25,000	7,500
47	25,000	7,500
48	25,000	7,500
49	25,000	7,500
50	25,000	7,500
51	25,000	7,500
52	25,000	7,500
53	25,000	7,500
54	25,000	7,500
55	25,000	7,500
56	25,000	7,500
Total	1,400,000	420,000

<u>Property Area Data:</u>	Area (sf)	Area (Ac)
Prop. Subdivision High Density Project Area:	2,390,630	54.88

<u>Project Area Data:</u>	Area (sf)	Area (Ac)
Proposed Lot Area:	1,400,000	32.14
Proposed Right-of-Way Area:	213,674	4.91
Proposed Common Area:	776,956	17.84
Total Project Area:	2,390,630	54.88

<u>Project Built-Up Area Data:</u>	Area (sf)	Area (Ac)
Residential Lot Coverage:	420,000	9.64
Roadway Coverage:	122,350	2.81
Parking Coverage:	0	0.00
Sidewalk Coverage:	40,199	0.92
Misc. Amenity Coverage:	8,000	0.18
Total Built-Up Area:	590,549	13.56

Percentage Built-Up Area: 24.70%

Property Area Data:	Area (sf)	Area (Ac)
Proposed Subdivision Property Area:	484,003	11.11

Project Area Data:	Area (sf)	Area (Ac)
Proposed Right-of-Way Area:	78,465	1.80
Proposed Common Area:	405,538	9.31

Total Project Area:	484,003	11.11
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Project Built-Up Area Data:	Area (sf)	Area (Ac)
Roadway Coverage:	31,940	0.73
Parking Coverage:	2,596	0.06
Sidewalk Coverage:	10,807	0.25
Misc. Amenity Coverage:	350	0.01
Future Coverage:	5,000	0.11

Total Built-Up Area:	50,693	1.16
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Percentage Built-Up Area: 10.47%

APPENDIX B

Aerial Imagery - GIS



APPENDIX C

Soils Map & SCS Data



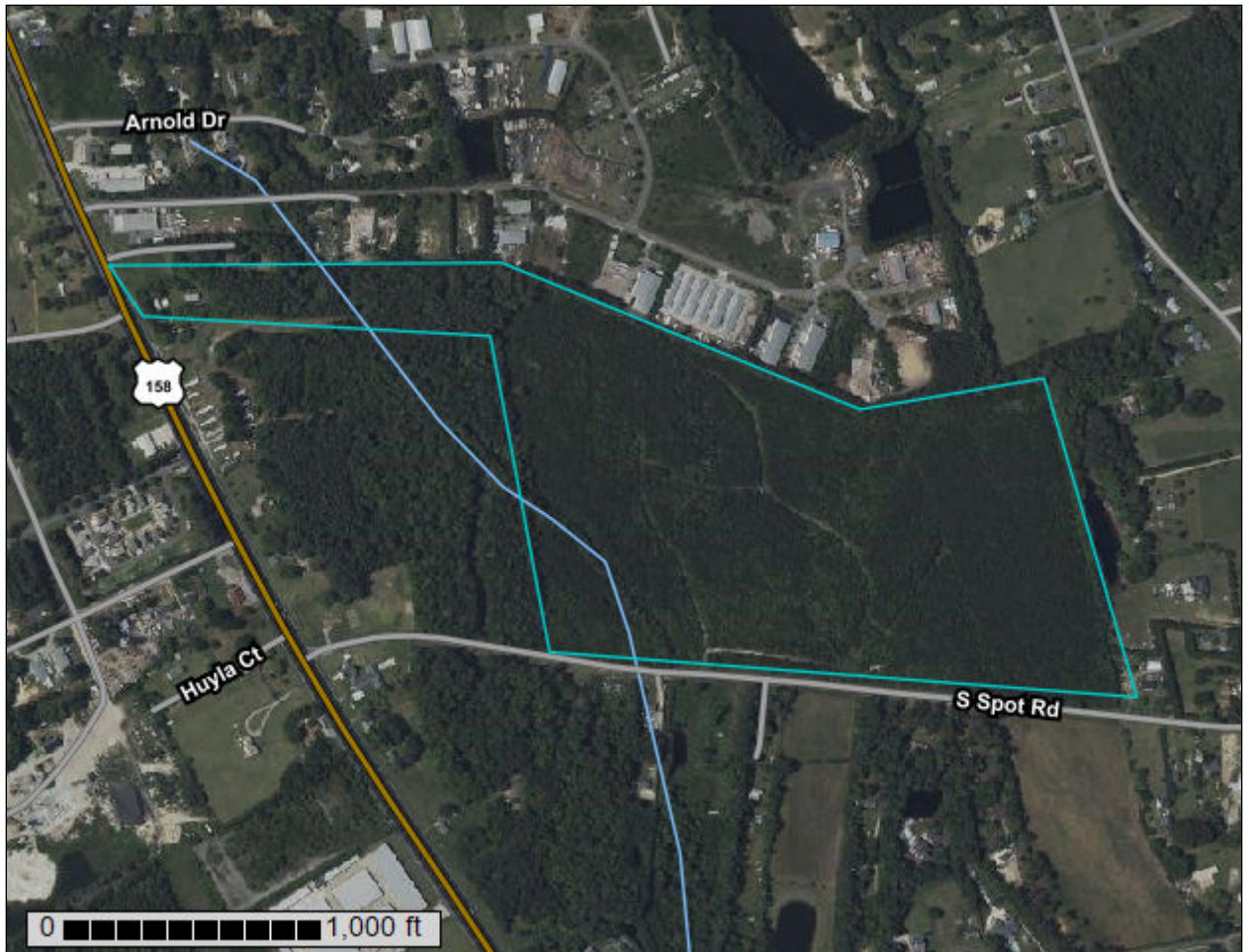
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Currituck County, North Carolina



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

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scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

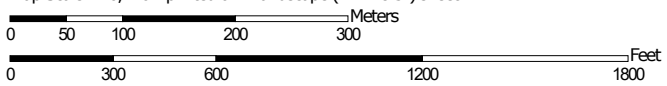
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map




Map Scale: 1:6,710 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84


MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)




















Soils







 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Currituck County, North Carolina
 Survey Area Data: Version 25, Sep 2, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 18, 2022—May 31, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BoA	Bojac loamy sand, 0 to 3 percent slopes	2.1	3.0%
Cb	Conaby muck	1.6	2.3%
CnA	Conetoe loamy sand, 0 to 3 percent slopes	0.3	0.4%
Ds	Dragston loamy fine sand	21.6	30.6%
Mu	Munden loamy sand	1.0	1.5%
Pt	Portsmouth fine sandy loam	43.9	62.2%
Totals for Area of Interest		70.5	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Currituck County, North Carolina

BoA—Bojac loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 3rnb
Landscape: Coastal plains
Elevation: 0 to 30 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Bojac and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bojac

Setting

Landscape: Coastal plains
Landform: Low ridges on marine terraces
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy and sandy fluviomarine deposits

Typical profile

Ap - 0 to 8 inches: loamy fine sand
Bt - 8 to 47 inches: fine sandy loam
C - 47 to 85 inches: loamy fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F153BY030NC - Dry Loamy Rises and Flats
Hydric soil rating: No

Minor Components

Conetoe

Percent of map unit: 4 percent
Landscape: Coastal plains

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Landform: Low ridges on stream terraces, Low ridges on marine terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F153BY030NC - Dry Loamy Rises and Flats
Hydric soil rating: No

Seabrook

Percent of map unit: 3 percent
Landscape: Coastal plains
Landform: Depressions on marine terraces
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F153BY020NC - Moist Sands
Hydric soil rating: No

Munden

Percent of map unit: 3 percent
Landscape: Coastal plains
Landform: Marine terraces
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F153BY040NC - Moist Loamy Rises and Flats
Hydric soil rating: No

Cb—Conaby muck

Map Unit Setting

National map unit symbol: 3rd
Landscape: Coastal plains
Elevation: 0 to 20 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Conaby, drained, and similar soils: 80 percent
Conaby, undrained, and similar soils: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Conaby, Drained

Setting

Landscape: Coastal plains
Landform: Depressions, Pocosins
Down-slope shape: Linear
Across-slope shape: Linear

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Parent material: Woody and herbaceous organic material over sandy and loamy fluviomarine deposits

Typical profile

Oa - 0 to 13 inches: muck
A - 13 to 21 inches: sand
Bg - 21 to 33 inches: sandy loam
Cg - 33 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions
Hydric soil rating: Yes

Description of Conaby, Undrained

Setting

Landscape: Coastal plains
Landform: Depressions, Pocosins
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Woody and herbaceous organic material over sandy and loamy fluviomarine deposits

Typical profile

Oa - 0 to 13 inches: muck
A - 13 to 21 inches: sand
Bg - 21 to 33 inches: sandy loam
Cg - 33 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

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Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B/D
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions
Hydric soil rating: Yes

CnA—Conetoe loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 3rnf
Landscape: Coastal plains
Elevation: 0 to 20 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Conetoe and similar soils: 85 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Conetoe

Setting

Landscape: Coastal plains
Landform: Low ridges on stream terraces, Low ridges on marine terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

Ap - 0 to 8 inches: loamy sand
E - 8 to 22 inches: loamy sand
Bt - 22 to 40 inches: sandy loam
BC - 40 to 46 inches: loamy sand
C - 46 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

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Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: A

Ecological site: F153AY030NC - Dry Loamy Rises and Flats, F153BY030NC - Dry Loamy Rises and Flats

Hydric soil rating: No

Minor Components

Leon

Percent of map unit: 5 percent

Landscape: Coastal plains

Landform: Flats on marine terraces

Down-slope shape: Linear

Across-slope shape: Concave

Ecological site: F153AY070NC - Wet Spodosol Flats and Depressions, F153BY070NC - Wet Spodosol Flats and Depressions

Hydric soil rating: Yes

Ds—Dragston loamy fine sand

Map Unit Setting

National map unit symbol: 3nm

Landscape: Coastal plains

Elevation: 0 to 20 feet

Mean annual precipitation: 42 to 58 inches

Mean annual air temperature: 61 to 64 degrees F

Frost-free period: 190 to 270 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Dragston, drained, and similar soils: 45 percent

Dragston, undrained, and similar soils: 40 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dragston, Drained

Setting

Landscape: Coastal plains

Landform: Marine terraces

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

A - 0 to 6 inches: loamy fine sand

E - 6 to 10 inches: loamy fine sand

Bt - 10 to 42 inches: sandy loam

Custom Soil Resource Report

2Cg - 42 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: About 12 to 30 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: A/D

Ecological site: F153AY040NC - Moist Loamy Rises and Flats, F153BY040NC - Moist Loamy Rises and Flats, F133AY410NC - Summits, Loamy and Clayey, Seasonally Wet

Hydric soil rating: No

Description of Dragston, Undrained

Setting

Landscape: Coastal plains

Landform: Marine terraces

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

A - 0 to 6 inches: loamy fine sand

E - 6 to 10 inches: loamy fine sand

Bt - 10 to 42 inches: sandy loam

2Cg - 42 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: About 12 to 30 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: A/D

Ecological site: F153AY040NC - Moist Loamy Rises and Flats, F153BY040NC - Moist Loamy Rises and Flats, F133AY410NC - Summits, Loamy and Clayey, Seasonally Wet

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Hydric soil rating: No

Minor Components

Portsmouth, undrained

Percent of map unit: 3 percent

Landscape: Coastal plains

Landform: Depressions on marine terraces, Flats on marine terraces

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: F153AY060NC - Wet Loamy Flats and Depressions,
F153BY060NC - Wet Loamy Flats and Depressions, F133AY320NC - Upland
Depressions, Flats, and Carolina Bays

Hydric soil rating: Yes

Nimmo, undrained

Percent of map unit: 2 percent

Landscape: Coastal plains

Landform: Flats on marine terraces, Depressions on marine terraces

Down-slope shape: Concave

Across-slope shape: Linear

Ecological site: F153AY060NC - Wet Loamy Flats and Depressions,
F153BY060NC - Wet Loamy Flats and Depressions, F133AY320NC - Upland
Depressions, Flats, and Carolina Bays

Hydric soil rating: Yes

Mu—Munden loamy sand

Map Unit Setting

National map unit symbol: 3mr

Landscape: Coastal plains

Elevation: 0 to 20 feet

Mean annual precipitation: 42 to 58 inches

Mean annual air temperature: 61 to 64 degrees F

Frost-free period: 190 to 270 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Munden and similar soils: 85 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Munden

Setting

Landscape: Coastal plains

Landform: Low ridges on marine terraces

Down-slope shape: Linear

Across-slope shape: Linear

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Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

A - 0 to 9 inches: loamy sand
Bt - 9 to 37 inches: fine sandy loam
C - 37 to 72 inches: loamy fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F153BY040NC - Moist Loamy Rises and Flats
Hydric soil rating: No

Minor Components

Nimmo, undrained

Percent of map unit: 5 percent
Landscape: Coastal plains
Landform: Flats on marine terraces, Depressions on marine terraces
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions
Hydric soil rating: Yes

Pt—Portsmouth fine sandy loam

Map Unit Setting

National map unit symbol: 3rp0
Landscape: Coastal plains
Elevation: 0 to 30 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Portsmouth, drained, and similar soils: 75 percent
Portsmouth, undrained, and similar soils: 10 percent

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Minor components: 7 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Portsmouth, Drained

Setting

Landscape: Coastal plains

Landform: Flats on marine terraces, Depressions on marine terraces

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Loamy fluviomarine deposits over sandy fluviomarine deposits

Typical profile

Ap - 0 to 12 inches: fine sandy loam

Eg - 12 to 19 inches: fine sandy loam

Btg - 19 to 35 inches: sandy clay loam

BCg - 35 to 38 inches: sandy loam

2Cg - 38 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification

Drainage class: Very poorly drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: About 0 to 12 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: B/D

Ecological site: F153BY060NC - Wet Loamy Flats and Depressions

Hydric soil rating: Yes

Description of Portsmouth, Undrained

Setting

Landscape: Coastal plains

Landform: Depressions on marine terraces, Flats on marine terraces

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Loamy fluviomarine deposits over sandy fluviomarine deposits

Typical profile

A - 0 to 12 inches: fine sandy loam

Eg - 12 to 19 inches: fine sandy loam

Btg - 19 to 35 inches: sandy clay loam

BCg - 35 to 38 inches: sandy loam

2Cg - 38 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent

Custom Soil Resource Report

Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification

Drainage class: Very poorly drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: About 0 to 12 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6w

Hydrologic Soil Group: B/D

Ecological site: F153BY060NC - Wet Loamy Flats and Depressions

Hydric soil rating: Yes

Minor Components

Cape lookout, undrained

Percent of map unit: 4 percent

Landscape: Coastal plains

Landform: Flats, Depressions, Pocosins

Down-slope shape: Linear

Across-slope shape: Concave

Ecological site: F153BY065NC - Wet Clay Flats and Depressions

Hydric soil rating: Yes

Portsmouth, undrained

Percent of map unit: 3 percent

Landscape: Coastal plains

Landform: Depressions on marine terraces, Flats on marine terraces

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: F153BY060NC - Wet Loamy Flats and Depressions

Hydric soil rating: Yes

References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
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- Federal Register. September 18, 2002. Hydric soils of the United States.
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- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Custom Soil Resource Report

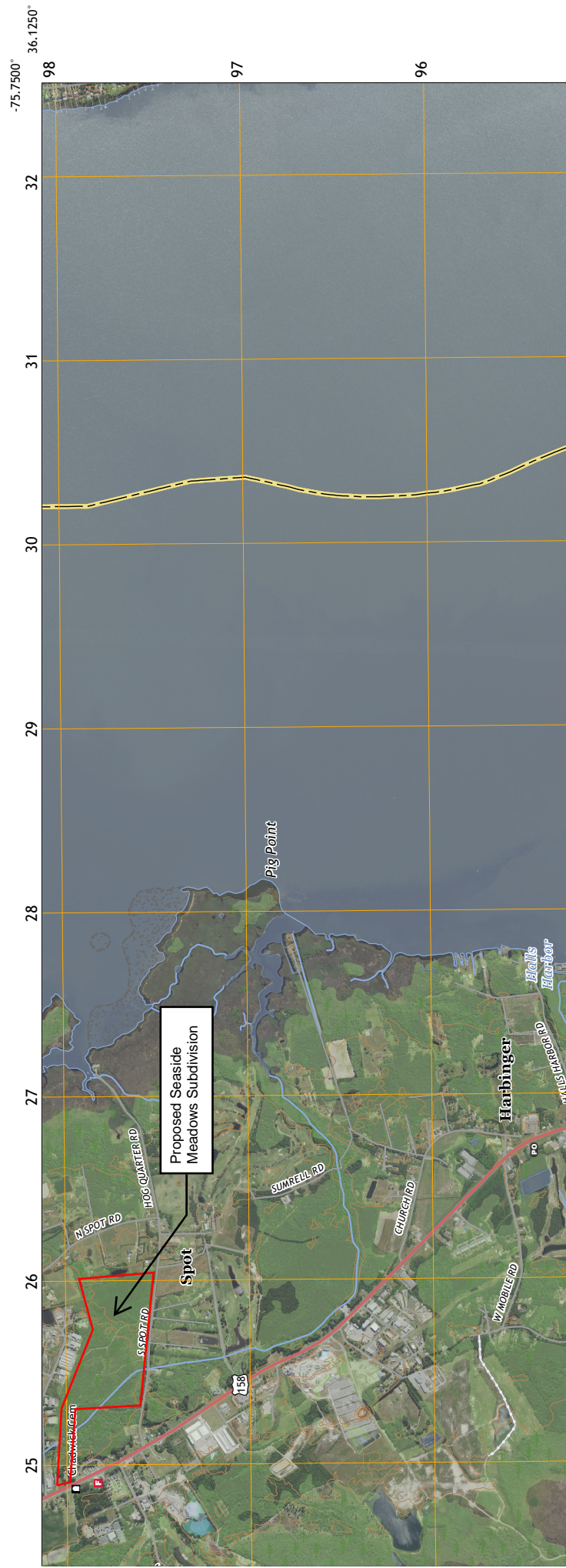
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

APPENDIX D

USGS Map Excerpt



QUADRANGLE LOCATION

1	2	3
4	5	8
6	7	8

ADJOINING QUADRANGLES

- 1 Camden Point
- 2 Jarvisburg
- 3 Martin Point
- 4 Abemarle Sound 2 (All Water)
- 5 Kitty Hawk
- 6 East Lake
- 7 Manns Harbor
- 8 Mantee

ROAD CLASSIFICATION

- Expressway
- Secondary Hwy
- Ramp
- Interstate Route
- US Route
- State Route
- Local Connector
- Local Road
- 4WD

APPENDIX E

Property Deeds

DB 1390, PG 684 (MA Shoes, LLC)

DB 1720, PG 292 (MA Shoes, LLC)

DB 1010, PG 343 (South Spot, LLC)

UNOFFICIAL Document



Doc ID: 001989240004 Type: CRP
Recorded: 06/29/2007 at 04:41:37 PM
Fee Amt: \$26,423.00 Page 1 of 4
Excise Tax: \$4,400.00
Currituck County, NC
Charlene Y Dowdy Register of Deeds

778

BK 1010 PG 343-346

Land Transfer No: _____ Recording Time, Book and Page _____
Excise Tax: ~~\$4,200.00~~ 4400.00
Land Transfer Tax: \$21,000.00

NORTH CAROLINA GENERAL WARRANTY DEED

Tax Lot No. _____ Parcel Identifier No. **0124-000-0028-0000**
Verified by _____ County on the _____ day of _____
by _____

Mail after recording to: **Christopher L. Seawell, Esquire, Aldridge, Seawell, Spence & Felthousen, PO Box 339, Manteo, NC 27954.**

This instrument was prepared by: **Vandeventer Black LLP, a licensed North Carolina attorney. Delinquent taxes, if any, to be paid by Daniel D. Khoury, the closing attorney to the county tax collector upon disbursement of closing proceeds. File Number 32341-0010AB**

Brief Description for the index



THIS DEED made this 26th day of June, 2007

GRANTOR

GRANTEE

GRIGGS INVESTMENTS, LLC
A North Carolina limited liability company

SOUTH SPOT, LLC
a North Carolina limited liability company

60 Roseland Avenue
Caldwell, NJ 07006

Enter in appropriate block for each party: name, address, and, if appropriate, character of entity, e.g., corporation or partnership.

The designation Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine or neuter as required by context.

WITNESSETH, that the Grantor, for a valuable consideration paid by the Grantee, the receipt of which is hereby acknowledged, has and by these presents does grant, bargain, sell and convey unto the Grantee in fee simple, all that certain lot or parcel of land situated in Poplar Branch Township, Currituck County, North Carolina and more particularly described as follows:

Please see attached Exhibit A.

TRANSFER TAX AMOUNT 22000.00 W
DATE/COLLECTOR 6/29/2007 dg

EXHIBIT "A"

BEGINNING at an existing iron rod or other marker located in the North margin or right-of-way of South Spot Road, said road having a right-of-way of 60 feet at this point, said point of beginning being also located in the Southeast corner of property now or formerly owned by Joseph H. Dzwonek, said point being also located South 83 deg. 00 min. 41 sec. East 1,131.99 feet from N.C.G.S. Monument "Point" thence from said point of beginning along the East line of said Dzwonek property North 07 deg. 57 min. 08 sec. West 391.81 feet to an existing iron rod; thence continuing along the aforesaid Dzwonek property North 06 deg. 39 min. 16 sec. West 626.06 feet to a calculated point; thence continuing along the aforesaid Dzwonek property North 13 deg. 29 min. 59 sec. West 318.55 feet to an existing iron rod; thence North 43 deg. 45 min. 33 sec. East 52.95 feet to an existing iron rod located in the West line of property now or formerly owned by Beverly T. J. Parker; thence along the aforesaid Parker property North 26 deg. 31 min. 38 sec. West 141.05 feet to an existing iron rod; thence North 01 deg. 08 min. 33 sec. East 9.28 feet to a point located in the South line of property now or formerly owned by Chiselbrook Enterprises, LLC, said point being also located in the South line of the Freedom Business Park Phase 2 Subdivision, as duly recorded in Plat Cabinet C2, Slide 323; thence along the South line of the aforesaid Freedom Business Park Phase 2 Subdivision South 69 deg. 29 min. 41 sec. East 1,558.48 feet to an existing iron rod; thence continuing along the South line of the aforesaid Freedom Business Park Phase 2 Subdivision and a Northeast extension thereof North 71 deg. 26 min. 36 sec. East 723.08 feet to an existing iron rod located in the West line of property now or formerly owned by Gloria P. Maruskin; thence along the West line of the aforesaid Maruskin property, and property now or formerly owned by David Robert Parker and Roger L. Sargent South 15 deg. 08 min. 40 sec. East 1,151.07 feet to an existing iron rod located in the Northwest corner of property now or formerly owned by Grace Hemingway; thence along the aforesaid Hemingway property South 15 deg. 02 min. 52 sec. East 231.59 feet to a concrete monument located in the North margin or right-of-way of the aforesaid South Spot Road; thence along the North margin or right-of-way of the aforesaid South Spot

Road North 85 deg. 23 min. 00 sec. West 389.18 feet to a calculated point; thence continuing along the aforesaid North margin or right-of-way of South Spot Road North 85 deg. 49 min. 34 sec. West 481.05 feet to a calculated point; thence continuing along the aforesaid North margin or right-of-way of South Spot Road North 86 deg. 10 min. 41 sec. West 635.06 feet to a calculated point; thence continuing along the aforesaid North margin or right-of-way of South Spot Road along a curve to the left with a radius of 6,729.41 feet, an arc distance of 292.76 feet to a calculated point; thence continuing along the aforesaid North margin or right-of-way of South Spot Road along a curve to the right with a radius of 2,077.95 feet, an arc distance of 285.10 feet to a calculated point; thence continuing along the aforesaid North margin or right-of-way of South Spot Road North 82 deg. 54 min. 07 sec. West 201.55 feet to the point and place of beginning.

This being that certain property designated as "N/F Idella P. Owens DB 555/319 61.58 AC. =/-" as shown on that certain plat entitled "Owens Property D.B. 555, PG. 319", prepared by James Wesley Huggins, Registered Surveyor with Bissell Professional Group, dated June 28, 2007, which map or plat is incorporated herein by reference.

UNOFFICIAL

DOCUMENT

Official Document

Unofficial Document

The property hereinabove described was acquired by Grantor by instrument recorded in Book ____, Page ____, Currituck County Registry.

A map showing the above described property is recorded in Deed Book 47, Page 380, Currituck County Registry.

TO HAVE AND TO HOLD the aforesaid lot or parcel of land and all privileges and appurtenances thereto belonging to the Grantee in fee simple

And the Grantor covenants with the Grantee, that Grantor is seized of the premises in fee simple, has the right to convey the same in fee simple, that title is marketable and free and clear of all encumbrances, and that Grantor will warrant and defend the title against the lawful claims of all persons whomsoever except for the exceptions hereinafter stated.

Title to the property hereinabove described is subject to the following exceptions:

Restrictive covenants, reservations, retrictions, easements, right of way agreements and any other reservations applicable thereto of record in Currituck County Registry.

All zoning ordinances and other land regulations applicable thereto.

2007 Ad Valorem taxes.

IN WITNESS WHEREOF, the Grantor has hereunto set his hand, or if corporate, has caused this instrument to be signed in its corporate name by its duly authorized officers by authority of its Board of Directors, the day and year first above written.

Griggs Investments, LLC
A North Carolina limited liability company

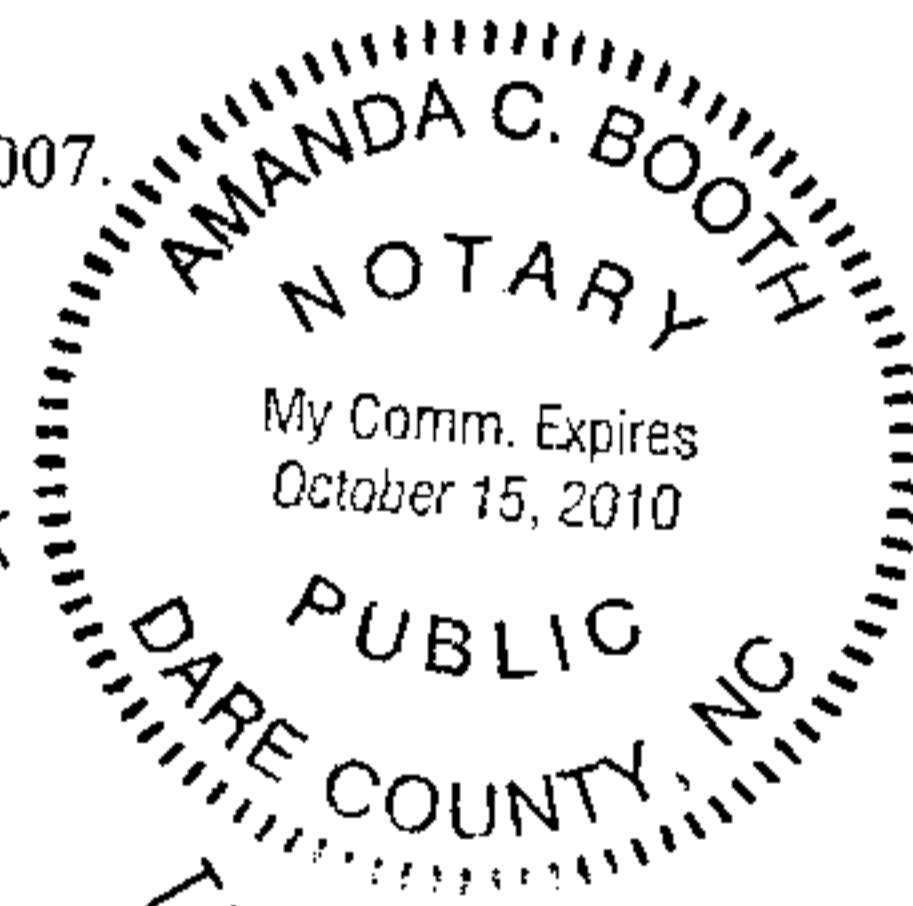
By: Minnie S. Griggs (SEAL)
Minnie S. Griggs, Manager

STATE OF NORTH CAROLINA
COUNTY OF DARE

I, the undersigned, a Notary Public of the County and State aforesaid, certify that Minnie S. Griggs personally came before me this day and acknowledged that she is the Manager of Griggs Investments, LLC, a North Carolina limited liability company, and that she as Manager, being authorized to do so, executed the foregoing on behalf of the company.

Witness my hand and official stamp or seal this the 29 day of June, 2007.

[Signature]
Notary Public



My commission expires: _____

UNOFFICIAL Document

Unofficial Document

Doc No: 326194
Recorded: 12/15/2016 01:29:31 PM
Fee Amt: \$26.00 Page 1 of 2
Excise Tax: \$400.00
Currituck County North Carolina
Denise A. Hall, Register of Deeds
BK 1390 PG 684 - 685 (2)

TRANSFER TAX AMOUNT 2000.00 (e.)
DATE/COLLECTOR 12-15-2016 TRF

**NORTH CAROLINA
GENERAL WARRANTY DEED**

Excise Tax: Recording Time, Book and Page
Tax Map No. Parcel Identifier No. 0124000036B0000 & 0124000036A0000

Mail after recording to: Evans & Meads, PLLC, 106-A Ascension Drive, Kitty Hawk, NC 27949

This instrument was prepared by: Laura F. Meads, Attorney at Law

THIS DEED made this 14th day of December, 2016 by and between

GRANTOR

Robert W. Halstead and wife, Audrey Jo Whitlock

475 Riverdale Drive
Merriott Island, FL 32953

GRANTEE

M.A. Shoes, LLC

PO Box 633
Nags Head, NC 27959

The designation Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine or neuter as required by context.

WITNESSETH, that the Grantor, for a valuable consideration paid by the Grantee, the receipt of which is hereby acknowledged, has and by these presents does grant, bargain, sell and convey unto the Grantee in fee simple, all that certain lot or parcel of land situated in Poplar Branch Township, Currituck County, North Carolina more particularly described as follows:

PARCEL 1: Being Lot 1 as shown and delineated on that plat entitled "Fort Parker" prepared by Styons Surveying Services on October 10, 1990 and recorded in Plat Cabinet D, Slide 300 of the Currituck Registry. This property is subject to a twenty foot (20') wide easement for ingress and egress running along the Northern boundary of the aforementioned property to Lot #2.

PARCEL 2: Being Lot 2 as shown and delineated on that plat entitled "Fort Parker" prepared by Styons Surveying Services on October 10, 1990 and recorded in Plat Cabinet D, Slide 300 of the Currituck Registry, including a twenty foot (20') wide easement for ingress from Highway 158 to the subject property as shown on said plat.

This instrument prepared by Laura Meads, a licensed North Carolina attorney. Delinquent taxes, if any, to be paid by the closing attorney to the county tax collector upon disbursement of closing proceeds

Unofficial Document

All or a portion of the property hereinabove described was acquired by Grantor by instrument recorded in Book 564, Page 698 and Book 1312, Page 481 of the Currituck County Registry.

A map showing the above described property is recorded in Plat Cabinet D, Slide 300, and referenced within this instrument.

The above described property does does not include the primary residence of the Grantor.

TO HAVE AND TO HOLD the aforesaid lot or parcel of land and all privileges and appurtenances thereto belonging to the Grantee in fee simple.

And the Grantor covenants with the Grantee, that Grantor is seized of the premises in fee simple, has the right to convey the same in fee simple, that title is marketable and free and clear of all encumbrances, and that Grantor will warrant and defend the title against the lawful claims of all persons whomsoever except for the exceptions hereinafter stated.

Title to the property hereinabove described is subject to the following exceptions:

Restrictive Covenants and Easements of record.

IN WITNESS WHEREOF, the Grantor has hereunto set his hand and seal, or if corporate, has caused this instrument to be signed in its corporate name by its duly authorized officer(s), the day and year first above written.

(ENTITY NAME)

Robert W. Halstead (SEAL)
Robert W. Halstead

Audrey Jo Whitlock (SEAL)
Audrey Jo Whitlock

STATE OF North Carolina
COUNTY OF Dare

I certify that the following person(s) personally appeared before me this day, each acknowledging to me that he or she signed the foregoing document Robert W. Halstead Witness my hand and official stamp or seal, this the 14th day of December, 2016.

My Commission Expires: 10/15/17

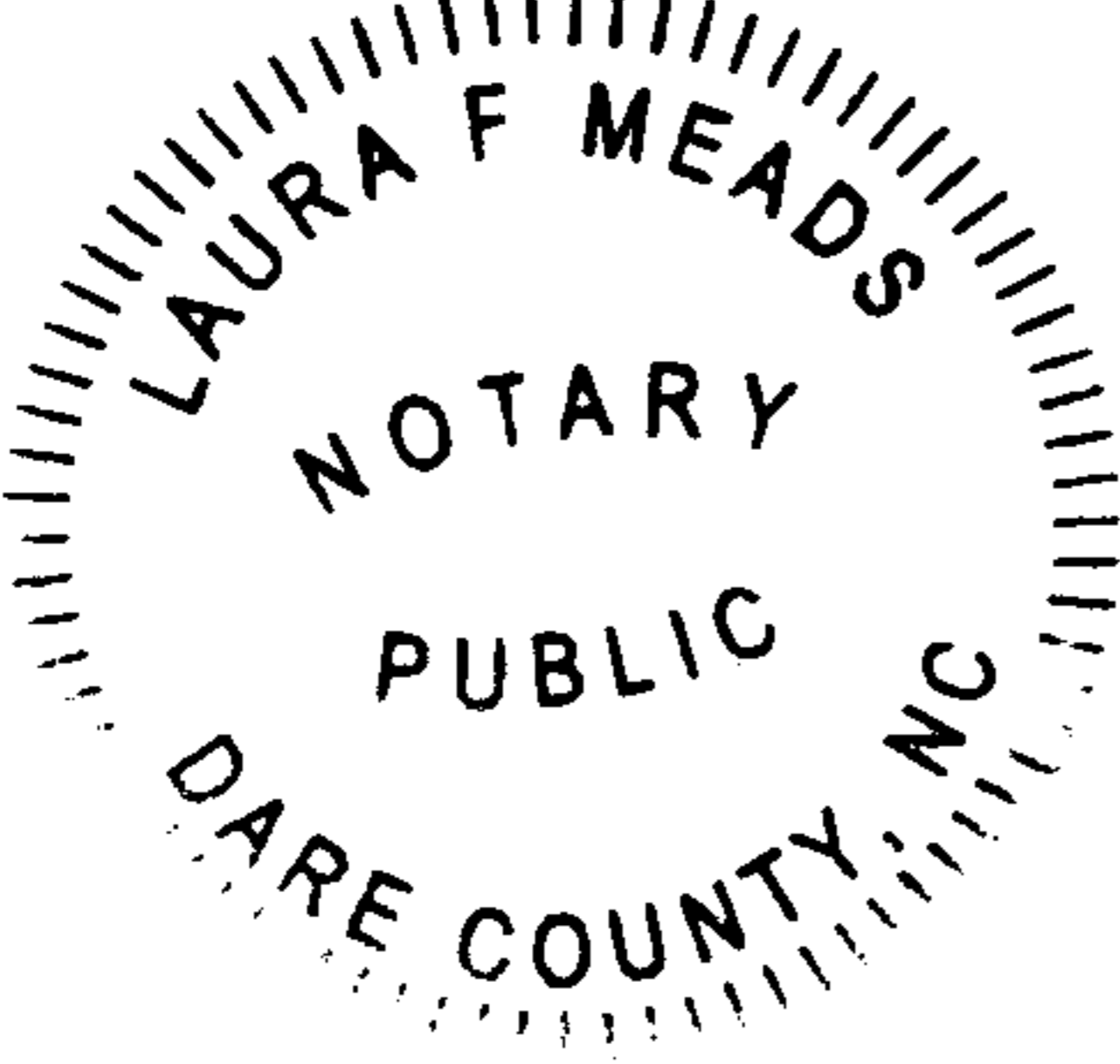
Laura F. Meads
Notary Public
Print Notary Name: Laura F. Meads

STATE OF North Carolina
COUNTY OF Dare

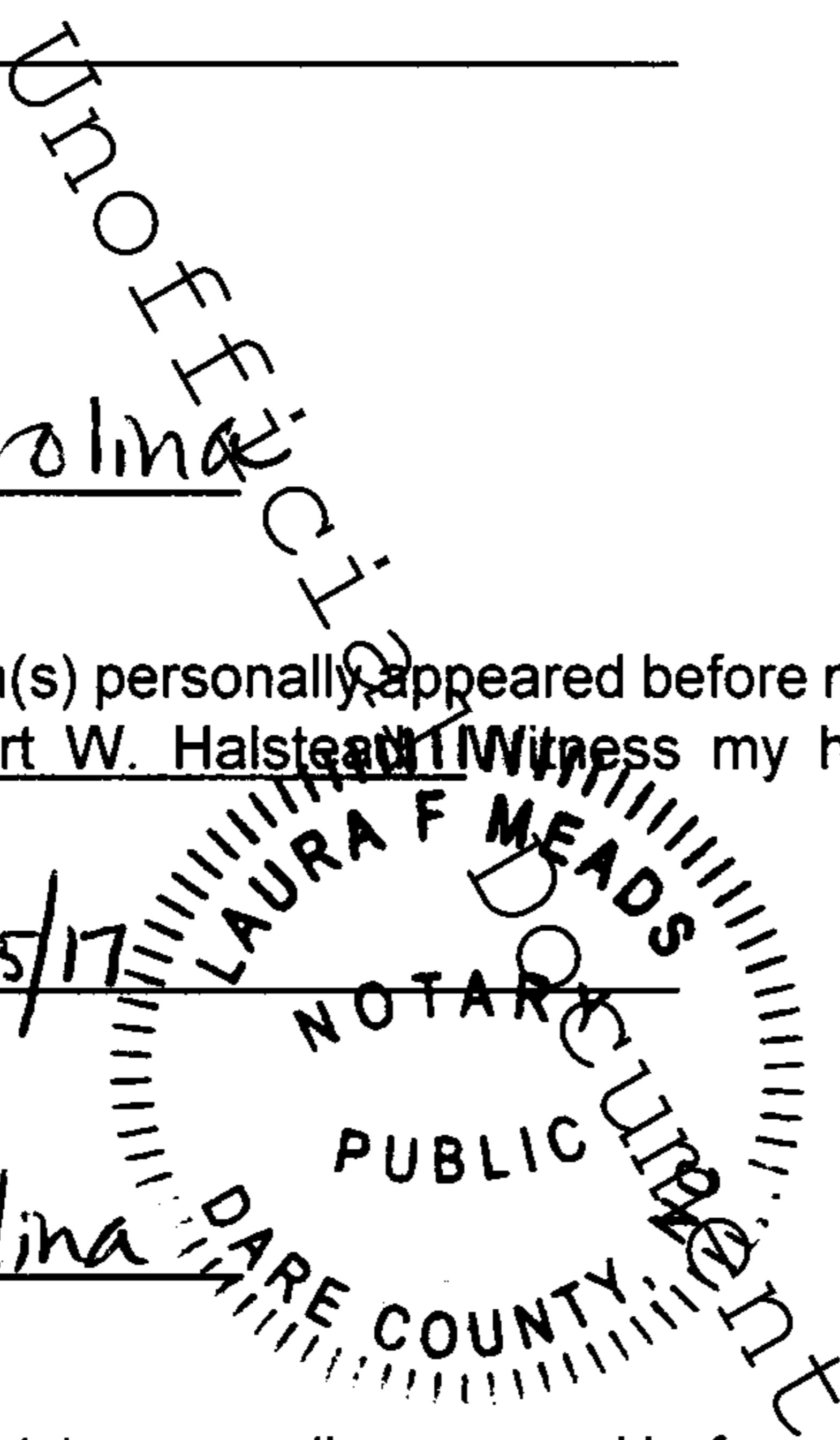
I certify that the following person(s) personally appeared before me this day, each acknowledging to me that he or she signed the foregoing document Audrey Jo Whitlock Witness my hand and official stamp or seal, this the 14th day of December, 2016.

My Commission Expires: 10/15/17

Laura F. Meads
Notary Public
Print Notary Name: Laura F. Meads



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Currituck County Land Transfer Tax: 720.00 County Excise Tax: 1985 Sessions Law Chapter 670 (HB 215)

NORTH CAROLINA GENERAL WARRANTY DEED

Excise Tax: \$144.00
Land Transfer Tax:

Parcel Identifier No.: 0124-000-0037-0000
Land Transfer Tax No.:

Mail after recording to: Mann, McGibney, & Jordan,

This instrument was prepared by: Mann, McGibney, & Jordan, 5595 North Croatan Highway, Kitty Hawk, NC 27949

Brief Description from the Index: MB, Powells Point, 8315 Caratoke Highway

THIS DEED made this 7 day of Dec, 2022 by and between

GRANTOR
Gay S. Kuntz, widowed and not remarried
326 North Spot Road
Powells Point, NC 27966

GRANTEE
M.A. Shoes, LLC, a North Carolina Limited Liability Company
2522 South Croatan Highway
STE 1C
Nags Head, NC 27959

The designation Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine or neuter as required by context.

WITNESSETH, that the Grantor, for a valuable consideration paid by the Grantee, the receipt of which is hereby acknowledged, has and by these presents does grant, bargain, sell and convey unto the Grantee in fee simple, all that certain lot or parcel of land situated in or near the City/Town of Powells Point, Currituck County, North Carolina and more particularly described as follows:

Beginning in the eastern right of way line of U.S. Highway #158, at the intersection of the dividing line between the property herein conveyed and the lands of E.H. Banks, formerly Peter Gordon Tract; thence eastwardly along said Banks line 250 feet to a point, an angle in the said Banks line; thence southwardly along the said Banks line (now McBride) a distance of 137 feet to a point in the line of Herbert A. Begaw and wife; thence at right angles westwardly along the line of the Begaw property a distance of 217 feet to a point in the Eastern right of way line of U.S. Highway #158, said point being located 221 feet southwardly from the point of beginning measured along the eastern right of way line of said highway; thence northwardly along the eastern right of way line of said Highway #158 a distance of 221 feet to the point of beginning and being the same property which was conveyed by Wiley B. McBride and wife, to Floyd G. Harris and wife by deed dated May 5, 1956 and recorded in Deed Book

UNOFFICIAL DOCUMENT

88, Page 194, in the office of the Register of Deeds of Currituck County.

The Grantors predecessors in title hereby excepted from the above conveyance and reserved unto their heirs and assigns a perpetual easement 30 foot in width along the northern most line of the property above described said 30 foot easement extends from the eastern right of way line of U.S. Highway #158 along the northern line of the property herein described for a distance of 250 feet, more or less, to a point situate in the western line of the "Second Tract" of that Deed of record in Deed Book 175 at Page 881. The easement herein excepted and reserved shall be appurtenant to and run with the land described as "Second Tract" in the Deed recorded in Deed Book 175 at Page 881.

Property Address: 8315 Caratoke Highway, Powells Point, NC 27966

The property herein described is or is not the primary residence of the Grantors.

The property herein described was acquired by Grantor by instrument recorded in Book 671, Page 633, Currituck County Registry. Since said conveyance, Michael Kuntz has passed away, leaving the named Grantor herein as sole vested owner of the lands hereinabove described.

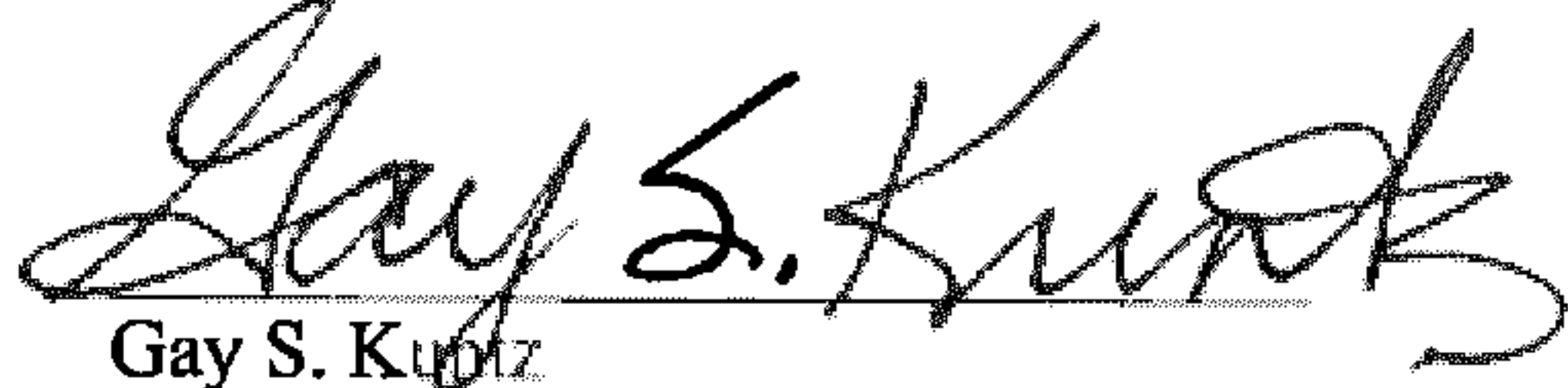
TO HAVE AND TO HOLD the aforesaid lot or parcel of land and all privileges and appurtenances thereto belonging to the Grantee in fee simple.

And the Grantor covenants with the Grantee, that Grantor is seized of the premises in fee simple, has the right to convey the same in fee simple, that title is marketable and free and clear of all encumbrances, and that Grantor will warrant and defend the title against the lawful claims of all persons whomsoever except for the exceptions hereinafter stated.

Title to the property hereinabove described is subject to the following exceptions:

Easements, Restrictions and Rights of Way of record.
Property taxes for current and subsequent years.

IN WITNESS WHEREOF, the Grantor has hereunto set his hand, or if corporate, has caused this to be signed in its corporate name by its duly authorized officers by authority of its Board of Directors, the day and year first above written.


Gay S. Kuntz

UNOFFICIAL Document

STATE OF NORTH CAROLINA
COUNTY OF DARE

I, Ashton Harrell, Notary Public, do hereby certify that Gay S. Kuntz personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witness my hand and official seal this 7 day of Dec., 2022.

Ashton Harrell

Official Signature of Notary
Printed or typed name of Notary

My Commission Expires:



UNOFFICIAL Document

UNOFFICIAL Document

APPENDIX F

MA Shoes, LLC Corporation Information (seller)
South Spot, LLC Corporation Information (Owner & Applicant)

[Home](#) [Business Registration](#) [Search](#) [Limited Liability Company](#)

Limited Liability Company

Actions

- [File an Annual Report/Amend an Annual Report](#)
- [Online Filing](#)
- [Order a Document Online](#)
- [Add Entity to My Email Notification List](#)
- [View Filings](#)
- [Print a Pre-Populated Annual Report form](#)
- [Print an Amended a Annual Report form](#)

Legal name: M.A. Shoes, LLC

Secretary of State Identification Number (SOSID): 1158067

Status: Current-Active

Citizenship: Domestic

Date formed: 7/9/2010

Registered agent: [Desiree Anderson](#)

Principal Office address

2522 S Croatan Hwy Ste 1c
Nags Head, NC 27959

Registered Office address

2522 S Croatan Hwy Ste 1c
Nags Head, NC 27959

Mailing address

PO Box 749

Kill Devil Hills, NC 27948

Registered Mailing address

PO Box 749

Kill Devil Hills, NC 27948

Company officials

All LLCs are managed by their managers pursuant to N.C.G.S. 57D-3-20.

- **Secretary**

[Desiree Anderson](#)

2522 S Croatan Hwy Ste 1c

Nags Head NC 27959

- **Manager**

[Peter E Kauffman](#)

PO Box 633

Nags Head NC 27959

[Return to top](#)

Other Agencies

[NC Gov](#)

[State Board of Elections](#)

[North Carolina Birth Certificate Information](#)

[North Carolina State Bar](#)

[North Carolina Department of Commerce](#)

[North Carolina Department of Revenue](#)

[All North Carolina Government Organizations](#)

Links of Interest

[National Association of Secretaries of State](#)

[Intellectual Property](#)

[NASAA - North American Securities Administrators Association](#)

[North Carolina Consular Corps](#)

[Secretary of State Disclaimer & Privacy](#)

Hours of Operation Monday - Friday 8:00 am - 5:00 pm

[Home](#) [Business Registration](#) [Search](#) [Limited Liability Company](#)

Limited Liability Company

Actions

- [File an Annual Report/Amend an Annual Report](#)
- [Online Filing](#)
- [Order a Document Online](#)
- [Add Entity to My Email Notification List](#)
- [View Filings](#)
- [Print a Pre-Populated Annual Report form](#)
- [Print an Amended a Annual Report form](#)

Legal name: South Spot, LLC

Secretary of State Identification Number (SOSID): 0923635

Status: Current-Active

Citizenship: Domestic

Date formed: 6/20/2007

Registered agent: [E. Crouse Gray Jr.](#)

Mailing address

2522 S Croatan Hwy Ste 1c
Nags Head, NC 27954

Principal Office address

2522 S Croatan Hwy Ste 1c
Nags Head, NC 27954

Registered Office address

3120 N Croatan Highway, Suite 101

Kill Devil Hills, NC 27948

Registered Mailing address

3120 N Croatan Highway, Suite 101

Kill Devil Hills, NC 27948

Company officials

All LLCs are managed by their managers pursuant to N.C.G.S. 57D-3-20.

- **Manager**

[Acme Property Management LLC](#)

4300 Us Highway 1, Suite 203-346

Jupiter FL 33477

- **Secretary**

[Desiree Anderson](#)

PO Box 370

Kill Devil Hills NC 27948

- **Manager**

[Peter Kauffman](#)

PO Box 633

Nags Head NC 27959

[Return to top](#)

Other Agencies

[NC Gov](#)

[State Board of Elections](#)

[North Carolina Birth Certificate Information](#)

[North Carolina State Bar](#)

[North Carolina Department of Commerce](#)

[North Carolina Department of Revenue](#)

Links of Interest

[National Association of Secretaries of State](#)

[Intellectual Property](#)

[NASAA - North American Securities Administrators Association](#)

[North Carolina Consular Corps](#)

[Secretary of State Disclaimer & Privacy](#)

APPENDIX G

Pond Stage vs Time Curves
And System Draw-Down
(EPA SWMM Model Results)

Pond Stage vs Storage

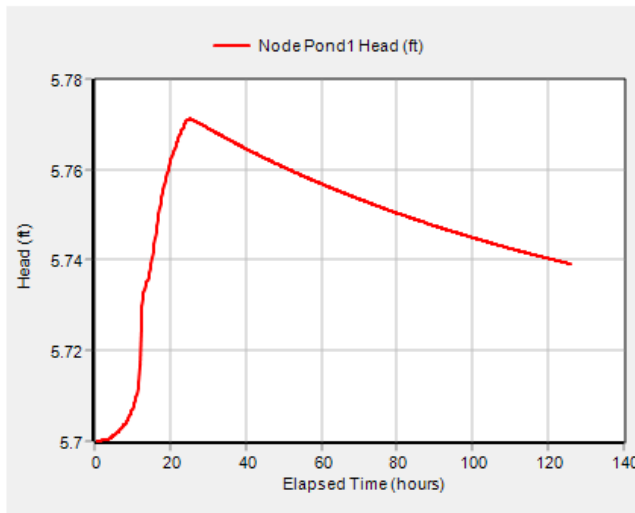
1.5” Rainfall Event

Seaside Meadows Subdivision

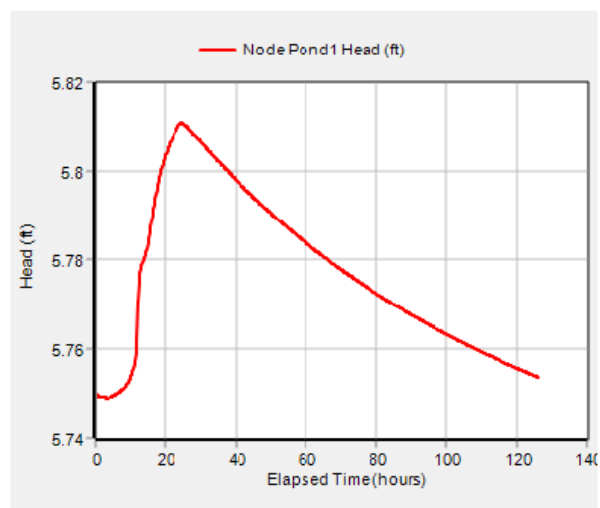
System Drawdown

Outflow of the water quality volume is controlled via an orifice in the outlet control structure located adjacent to (and discharging to) Tig-Ma-Tar Ditch. Per the EPA SWMM model constructed for the entire system, the water quality volume for the entire system is achieved at a water surface elevation of 5.77’ (permanent pool is at elevation 5.7’). The proposed pond system is also utilized to meet peak flow requirements for the 2-yr, 10-yr, and 100-yr rainfall events. Therefore, the system is significantly oversized when compared to NCDEQ requirements. The result is a very shallow (low-head) storage depth for the WQV, which causes difficulty in getting the pond system to drawdown completely to its original permanent pool elevation of 5.7’ within five days after a storm. The actual 5-day drawdown is to an elevation of 5.74’.

To address this, the overflow weir above the WQV storage was set at an elevation of 6.8’, providing additional storage within the system for multiple WQV events. Multiple EPA SWMM Models were then run: The first model established that after five days, the pond system would draw-down to an elevation of 5.74’. Then a second model was run which applied a new 1.5” rainfall event on top of the “wet-period permanent pool” of 5.74’. This model showed storage within the system up to an elevation of 5.80’ (still below the overflow elevation), and then a draw-down back to a new “wet-period permanent pool” of 5.75’. Next a third model was run which applied a new 1.5” rainfall event on top of the new “wet-period permanent pool” of 5.75’. This model showed storage within the system up to an elevation of 5.81’ (still below the overflow elevation), and then a draw-down back to the new “wet-period permanent pool” of 5.75’.



“Dry-Period Permanent Pool” = 5.7’



“Wet-Period Permanent Pool” = 5.75’

The higher head of the third stored event brings the system into equilibrium where it can store, treat, and discharge an endless number of back-to-back 1.5” rainfall events spaced five days apart. Based on this analysis, the pond system meets the requirement for draw-down of the water quality volume within 5 days after a rainfall event.

APPENDIX H

Calculations



Seaside Meadows Subdivision Calculations

Initial overall sizing of the wet pond is based on the Currituck County peak flow mitigation requirements and results in a pond that is over-sized relative to NCDEQ requirements. In order to “retrofit” NCDEQ Wet Pond elements onto this oversized pond, a theoretical pond was calculated, having a 3:1 length to width ratio and then forebay and vegetated shelf elements were sized based on this “ideal” pond. These elements were then incorporated into the design of the oversized pond.

The calculations were set-up in an excel spreadsheet for each pond. A detailed breakdown of how these calculations were made is as follows:

Calculate Impervious Fraction:

$$I_A = \text{Impervious Area} / \text{Drainage Area}$$

Calculate Design Volume (Simple Method):

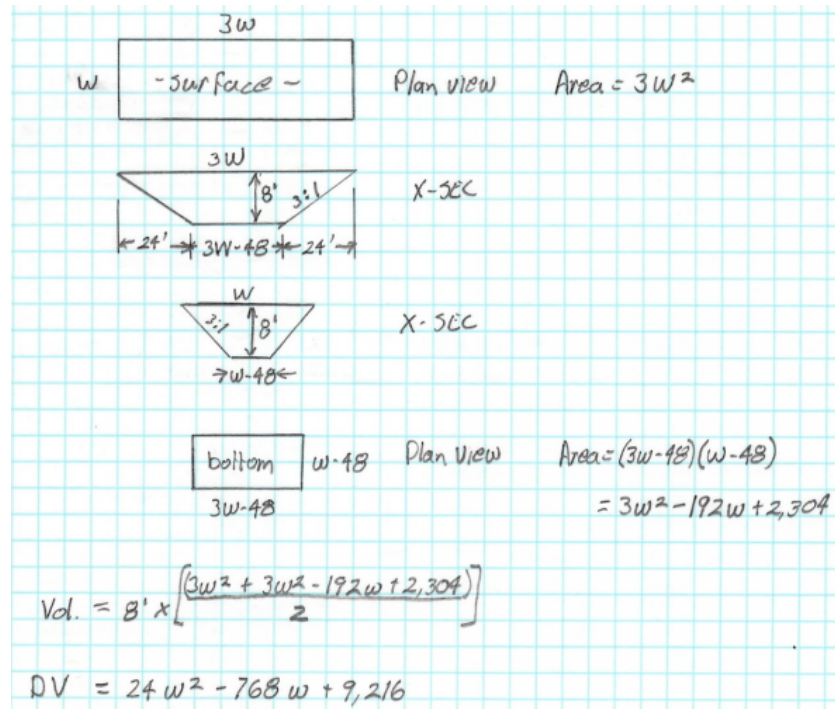
$$\begin{aligned} DV &= \text{Design Volume (cf)} = 3630 \times R_D \times R_V \times A \\ R_V &= 0.05 + 0.9I_A \\ R_D &= 1.5 \text{ in.} \\ A &= \text{Drainage Area (ac.)} \end{aligned}$$

Calculate Minimum Volume of Main Pool (HRT Method):

$$\begin{aligned} V_{MP} &= 0.87 \times \text{HRT}/T_s \times DV \\ \text{HRT} &= 14 \text{ days} \\ T_s &= 5 \text{ days} \\ DV &= \text{Design Volume} \end{aligned}$$

Size Theoretical Minimum Main Pool:

Actual Main Pool will be much larger than what is required. Assume theoretical minimum pool shape w/in larger pond to have a footprint with a 3:1 length to width ratio:



To solve for Theoretical Pool Width (W), the calculated Minimum Design Volume was entered into the equation for DV derived above and the resulting quadratic formula was solved utilizing a quadratic equation calculator.

Calculate Average Depth for Theoretical Main Pool:

$$D_{\text{avg}} = \frac{V_{\text{MP}}}{A_{\text{MP}}}$$

$$A_{\text{MP}} = 3W^2$$

Calculate Min. Veg Shelf Length:

$$\text{Min. Veg Shelf Length} = \text{Length of Perimeter of Theoretical Minimum Pool} = 8W$$

Calculate Min Forebay Volume:

$$\text{Min Forebay Vol.} = 0.175 \times V_{\text{MP}}$$

The following Pond Calculation spreadsheets were created based on the above calculation methodology:

Meadows Subdivision
 High Density Wet pond Calculations
 2/12/2026

DA 1

	(sf)	(ac)
Drainage Area, A	2,816,184	64.65
Impervious Area, Imp	597,597	13.72

Total project Area:	2816184
On-site:	2390630
Off-Site:	425554

Calculate Design Volume:

Impervious Fraction, Ia	0.212	(Imp/A)
Runoff Coefficient Rv	0.241	(0.05+0.9*Ia)
Rainfall Depth Rd	1.5	(in)
Design Volume Dv (cf)	84,831	(3630*Rd*Rv*A)
Temp Storage Vol Provided	284,249	ok

Total Imp Area:	597597
On-Site:	590549
Off-Site:	7048

Calculate Minimum Volume of Main Pool using Hydraulic Retention Time (HRT)

HRT (days)	14	
TS (days)	5	
Design Volume Dv	84,831	
Min Volume Main Pool	206,648	(0.87*HRT/TS*Dv)
MP Volume Provided	1,630,606	ok

Calculate Theoretical Pond Dims for Minimum Pond Volume

**Actual Pond Volume is much larger than what is required. A theoretical pond, based on the Minimum Pond Volume required, is calculated assuming a 3:1 length to width ratio in order to calculate Minimum Forebay size and length of vegetated shelf required.

Main Pool Width	w
Main Pool Length	3w
Min. MP Surface Area:	3w ²
Min. MP Bottom Area	3w ² -192w+2304
Main pool Volume	24w ² -768w+9216 (8' Depth)
Values for Quadratic Equation	
Solution:	
a	24
b	-768
c	(197,432)
Main Pool Width w	108.1 (from quadratic eqn calculator)
Main Pool Length	324.3

Calculate Min. Veg Shelf Length

Min. Veg Shelf Length (ft)	865	(Perimeter of Min Surface Area)
Veg Shelf Provided (ft)	865	

Calculate Avg Depth for Min Pool

Min Vol Perm Pool Vpp (cf)	206,648	
Min Area Perm Pool App (sf)	35,057	
Average Depth Davg (ft)	5.89	
Actual Perm Pool Vol (cf)	1,681,391	
Actual Perm Pool Area (sf)	249,664	
Actual Average Depth (ft)	6.73	ok

Calculate Min. Forebay Volume

Min. Forebay Volume (cf) 36,163 (0.175*Min Vmp)
 Forebay Volume Provided 50,785 ok

Calculate Individual Forebays:

Total DA to Forebays: 2,252,984 sf
 Total Forebay Vol Req'd: 36,163 cf

Forebay #1 DA: 439,675 sf

Forebay #1 Min Vol Req'd:	7,057 cf
Forebay #1 Volume Provided:	9,307 cf
Forebay #1 Min Veg. Shelf:	169 lf

Forebay #2 DA: 76,148 sf

Forebay #2 Min Vol Req'd:	1,222 cf
Forebay #2 Volume Provided:	4,361 cf
Forebay #2 Min Veg. Shelf:	29 lf

Forebay #3 DA: 1,737,161 sf

Forebay #3 Min Vol Req'd:	27,884 cf
Forebay #3 Volume Provided:	37,114 cf
Forebay #3 Min Veg. Shelf:	667 lf

Pond Volume Tabulations

Meadows

2/12/2026

DA 1

Main Bay Volume

Perm Pool @: 5.7

Sed Storage Elev: -2.0

Bottom Pond @: -3.0

<u>Elev:</u>	<u>Area (sf)</u>	<u>Avg Area</u>	<u>Vol</u>	<u>Sum Vol (cf)</u>
-3.0	155119			0
		178759	1197682	
3.7	202398			1197682
		216462	432924	
5.7	230526			1630606 (Total)

Forebay Volume (Aggregate - all three forebays)

Perm Pool @: 5.7

Sed Storage Elev: 0.5

Bottom Forebay@: 0.0

<u>Elev:</u>	<u>Area (sf)</u>	<u>Avg Area</u>	<u>Vol</u>	<u>Sum Vol (cf)</u>
0.5	3510			0
		6761	21635	
3.7	10012			21635
		14575	29150	
5.7	19138			50785 (Total)

Temporary Storage Volume

Perm Pool @: 3.0'

Top Storage @: 6.3

<u>Elev:</u>	<u>Area (sf)</u>	<u>Avg Area</u>	<u>Vol</u>	<u>Sum Vol (cf)</u>
5.7	249664			0
		252039	75612	
6.0	254414			75612
		260797	208638	
6.8	267180			284249 (Total)

Forebay Volume Tabulations

Meadows

2/12/2026

DA 1

Forebay 1 Volume

Perm Pool @: 5.7

Sed Storage Elev: 0.5

Bottom Forebay@: 0.0

<u>Elev:</u>	<u>Area (sf)</u>	<u>Avg Area</u>	<u>Vol</u>	<u>Sum Vol (cf)</u>
0.5	432			0
		1090	3488	
3.7	1748			3488
		2910	5819	
5.7	4071			9307 (Total)

Forebay 2 Volume

Perm Pool @: 5.7

Sed Storage Elev: 0.5

Bottom Forebay@: 0.0

<u>Elev:</u>	<u>Area (sf)</u>	<u>Avg Area</u>	<u>Vol</u>	<u>Sum Vol (cf)</u>
0.5	103			0
		462	1478	
3.7	821			1478
		1442	2883	
5.7	2062			4361 (Total)

Forebay 3 Volume

Perm Pool @: 5.7
Sed Storage Elev: 0.5
Bottom Forebay@: 0.0

<u>Elev:</u>	<u>Area (sf)</u>	<u>Avg Area</u>	<u>Vol</u>	<u>Sum Vol (cf)</u>
0.5	2975			0
		5209	16667	
3.7	7442			16667
		10224	20447	
5.7	13005			37114 (Total)

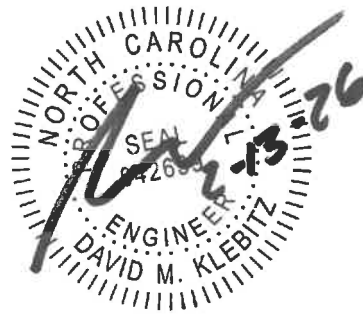
APPENDIX I

Swale Calcs & E&S Calcs

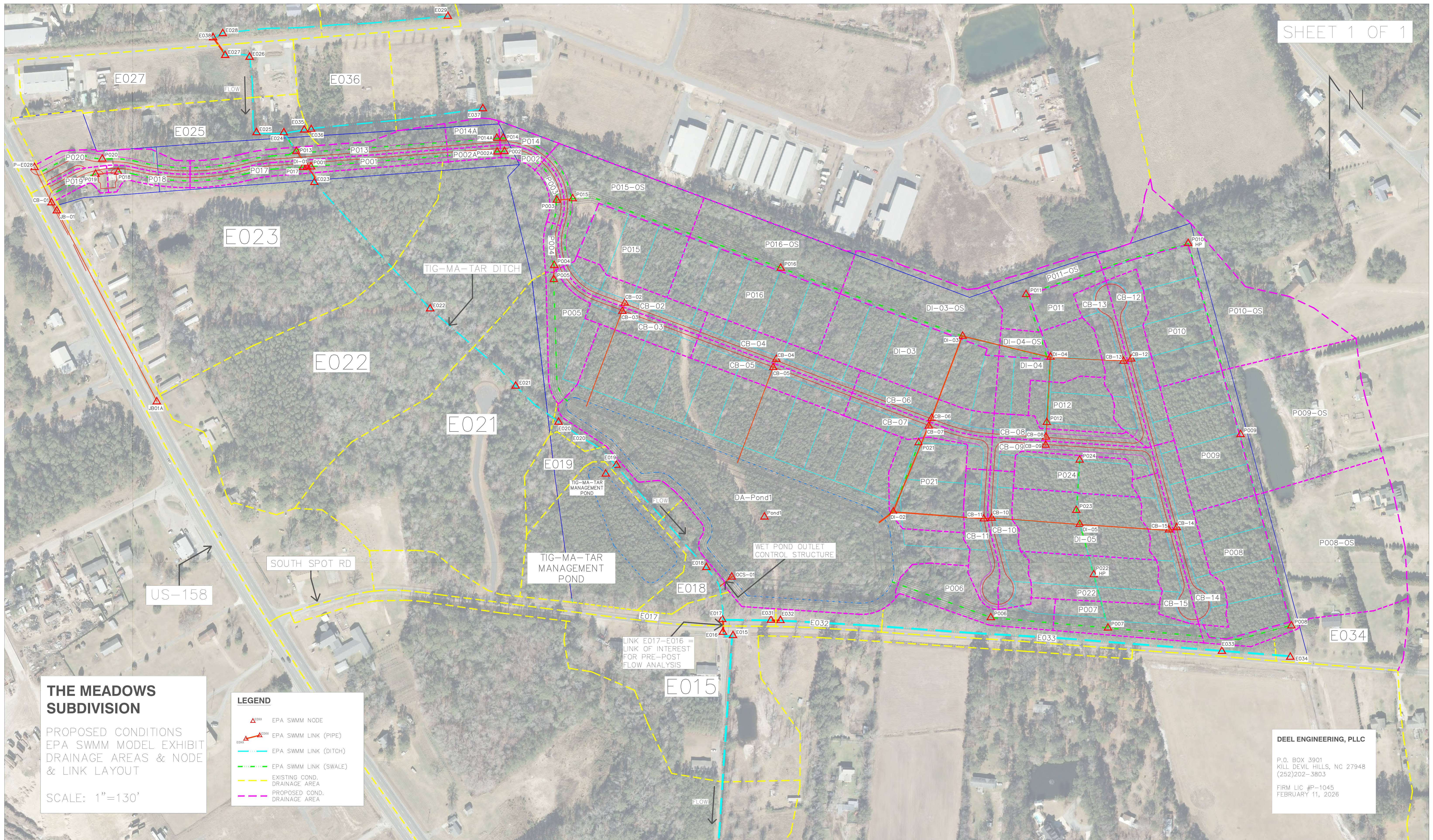
APPENDIX — SEDIMENTATION & EROSION CONTROL CALCULATIONS

Calculations Include the Following:

- EPA SWMM -POST DEVELOPMENT - LINK & NODE MAP
- DISTURBED DRAINAGE AREA MAP
- EROSION VELOCITY CHECKS
- SEDIMENT BASIN CALCULATIONS
- EROSION CONTROL SKIMMER CALCULATIONS



EPA SWMM -POST DEVELOPMENT - LINK & NODE MAP



THE MEADOWS SUBDIVISION

PROPOSED CONDITIONS
EPA SWMM MODEL EXHIBIT
DRAINAGE AREAS & NODE
& LINK LAYOUT

SCALE: 1"=130'

LEGEND

- ▲ EPA SWMM NODE
- ▲— EPA SWMM LINK (PIPE)
- EPA SWMM LINK (DITCH)
- EPA SWMM LINK (SWALE)
- EXISTING COND. DRAINAGE AREA
- PROPOSED COND. DRAINAGE AREA

LINK E017-E016 =
LINK OF INTEREST
FOR PRE-POST
FLOW ANALYSIS

DEEL ENGINEERING, PLLC

P.O. BOX 3901
KILL DEVIL HILLS, NC 27948
(252)202-3803

FIRM LIC #P-1045
FEBRUARY 11, 2026

DISTURBED DRAINAGE AREA MAP

- DA #1 ≈ 51 AC. - SED. BASIN 1
- DA #2 ≈ 0.60 AC. - TEMP. CHECK DAM
- DA #3 ≈ 0.85 AC. - TEMP. CHECK DAM
- DA #4 ≈ 0.86 AC. - TEMP. CHECK DAM
- DA #5 ≈ 0.54 AC. - TEMP. CHECK DAM



BRASSIEL
 Engineers, Planners, Surveyors

DEVELOPMENT OVERVIEW
 AND PHASING PLAN

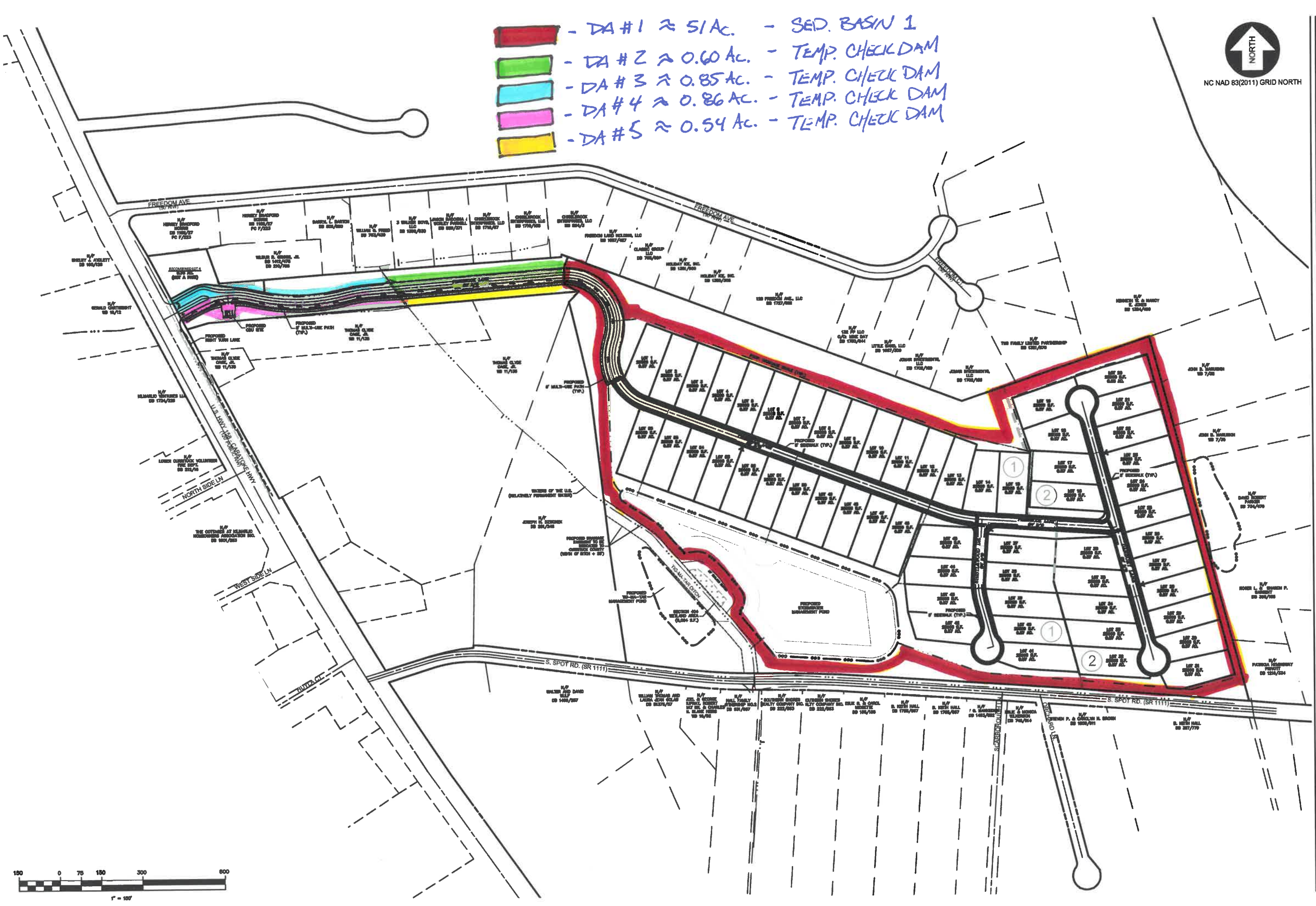
SEASIDE MEADOWS
 CURRITUCK COUNTY, NORTH CAROLINA
 CONSTRUCTION DRAWINGS

PROJECT: POPLAR BRANCH TOWNSHIP

NO.	DATE	DESCRIPTION
1	12-24-25	ISSUED FOR PERMIT

PRELIMINARY
 DO NOT USE FOR CONSTRUCTION

DATE: 12-24-25 SCALE: 1" = 1'
 CHECKED: BPG MSE
 DMK BPG
 SHEET: 4 OF 21
 CAD FILE: 430400B1
 PROJECT NO: 4304



EROSIVE VELOCITY CHECK

Calculations Include the Following:

- 2 Year, Bare Soil Condition; 2 fps Max Velocity
- 10 Year, Vegetated Condition; 4 fps Max Velocity

Note:

This check is performed by highlighting respective summaries of conveyances that exceed maximum permissible velocities as determined by EPA SWMM modeling performed by Deel Engineering, PLLC.

Link Flow and Velocity - 2yr				Velocity Check
Link	Type	Flow (cfs)	Velocity (fps)	Bare Soil > 2 fps
CB01-PE028	CONDUIT	0	0	ok
CB02-CB03	CONDUIT	0.44	1.72	ok
CB03-Pond1	CONDUIT	0.78	0.71	ok
CB04-CB05	CONDUIT	0.5	1.66	ok
CB05-Pond1	CONDUIT	0.98	0.88	ok
CB06-CB07	CONDUIT	2.71	0.41	ok
CB07-DI02	CONDUIT	3.16	0.47	ok
CB08-DI04	CONDUIT	0.93	1.48	ok
CB09-CB08	CONDUIT	0.55	1.68	ok
CB10-CB11	CONDUIT	1.73	0.40	ok
CB11-DI02	CONDUIT	2.27	0.39	ok
CB12-CB13	CONDUIT	0.62	1.69	ok
CB13-DI04	CONDUIT	1.26	1.95	ok
CB14-CB15	CONDUIT	0.63	1.85	ok
CB15-DI05	CONDUIT	1.2	1.06	ok
D101-E023	CONDUIT	1.04	0.44	ok
DI02-Pond1	CONDUIT	5.38	0.47	ok
DI02-Pond1-Swale	Swale	0	0	ok
DI03-CB06	CONDUIT	2.34	0.36	ok
DI04-DI03Ditch	Swale	0	0	ok
DI04-DI03Pipe	CONDUIT	2.32	0.97	ok
DI05-CB10	CONDUIT	1.21	0.41	ok
JB01A-JB01	CONDUIT	0	0	ok
JB01-CB01	CONDUIT	0	0	ok
OCS01-E018	CONDUIT	0.52	2.61	ok, culvert
P001-DI01	CONDUIT	0.15	1.00	ok
P002A-P001	Swale	0.02	0.32	ok
P002-P003	Swale	0.05	0.11	ok
P003-P004	Swale	1.35	0.93	ok
P004-P005	CONDUIT	1.33	2.17	ok, culvert
P005-Pond1	Swale	1.28	0.85	ok
P006-Pond1	Swale	0.03	0.05	ok
P007-P006	Swale	0	0	ok
P008-P007	Swale	0	0	ok
P009-P008	Swale	0	0	ok
P010-P009	Swale	0	0	ok
P010-P011	Swale	0	0	ok
P011-DI04	Swale	0	0	ok
P012-DI04	Swale	0	0	ok
P013-DI01	CONDUIT	0.84	0.38	ok
P014A-P013	Swale	0	0.28	ok
P014-P015	Swale	0.01	0.09	ok
P015-P003	CONDUIT	1.28	1.67	ok

P016-DI03	Swale	0.08	0.17	ok
P016-P015	Swale	0.88	0.5	ok
P017-DI01	CONDUIT	0.2	0.56	ok
P018-P017	Swale	0.13	1.3	ok
P019-P018	CONDUIT	0.1	2.17	ok, culvert
P020-P013	Swale	0.21	0.78	ok
P021-DI02	Swale	0.3	0.69	ok
P022-D105	Swale	0	0	ok
P022-P007	Swale	0	0	ok
P023-DI05	Swale	0	0	ok
P024-P023	Swale	0	0	ok
WestPond-E019	CONDUIT	0	0	ok

*Estimated peak flows and velocities per EPA SWMM calculations prepared by Deel Engineering, PLLC.

Link Flow and Velocity -10yr				Velocity Check
Link	Type	Flow (cfs)	Velocity (fps)	Vegetated > 4 fps
CB01-PE028	CONDUIT	0.55	0.96	ok
CB02-CB03	CONDUIT	2.47	2.50	ok
CB03-Pond1	CONDUIT	4.39	2.99	ok
CB04-CB05	CONDUIT	2.73	2.39	ok
CB05-Pond1	CONDUIT	5.26	3.32	ok
CB06-CB07	CONDUIT	8.51	1.20	ok
CB07-DI02	CONDUIT	9.51	1.35	ok
CB08-DI04	CONDUIT	1.43	1.65	ok
CB09-CB08	CONDUIT	0.85	1.87	ok
CB10-CB11	CONDUIT	2.64	0.55	ok
CB11-DI02	CONDUIT	3.44	0.56	ok
CB12-CB13	CONDUIT	0.95	1.89	ok
CB13-DI04	CONDUIT	1.93	2.18	ok
CB14-CB15	CONDUIT	0.97	2.07	ok
CB15-DI05	CONDUIT	1.84	1.55	ok
D101-E023	CONDUIT	6.82	1.44	ok
DI02-Pond1	CONDUIT	13.97	1.20	ok
DI02-Pond1-Swale	Swale	0	0	ok
DI03-CB06	CONDUIT	6.63	0.94	ok
DI04-DI03Ditch	Swale	0	0	ok
DI04-DI03Pipe	CONDUIT	3.25	1.26	ok
DI05-CB10	CONDUIT	1.85	0.60	ok
JB01A-JB01	CONDUIT	0.55	0.98	ok
JB01-CB01	CONDUIT	0.55	0.78	ok
OCS01-E018	CONDUIT	1.27	2.95	ok
P001-DI01	CONDUIT	1.33	4.26	ok, culvert
P002A-P001	Swale	0.21	0.60	ok
P002-P003	Swale	0.35	0.45	ok
P003-P004	Swale	5.18	1.24	ok
P004-P005	CONDUIT	5.26	3.59	ok
P005-Pond1	Swale	5.92	1.33	ok
P006-Pond1	Swale	0.73	0.51	ok
P007-P006	Swale	0.53	0.28	ok
P008-P007	Swale	0.44	0.49	ok
P009-P008	Swale	0.27	0.37	ok
P010-P009	Swale	0.09	0.33	ok
P010-P011	Swale	0.08	0.46	ok
P011-DI04	Swale	0.09	0.44	ok
P012-DI04	Swale	0.04	0.35	ok
P013-DI01	CONDUIT	6.09	0.81	ok
P014A-P013	Swale	0.09	0.44	ok
P014-P015	Swale	0.17	0.18	ok
P015-P003	CONDUIT	4.97	2.47	ok

P016-DI03	Swale	0.43	0.29	ok
P016-P015	Swale	3.04	0.54	ok
P017-DI01	CONDUIT	1.75	2.30	ok
P018-P017	Swale	1.06	1.25	ok
P019-P018	CONDUIT	0.71	2.61	ok
P020-P013	Swale	1.27	1.23	ok
P021-DI02	Swale	2.65	1.27	ok
P022-D105	Swale	0.03	0.35	ok
P022-P007	Swale	0.11	0.37	ok
P023-DI05	Swale	0.05	0.44	ok
P024-P023	Swale	0.05	0.26	ok
WestPond-E019	CONDUIT	2.25	0.61	ok

*Estimated peak flows and velocities per EPA SWMM calculations prepared by Deel Engineering, PLLC.

SEDIMENT BASIN CALCULATIONS

Sediment Basin 1

Requirements

Tributary Disturbed Area*	51.00 acres	
Min. Required Storage Volume	91,800 ft ³	(1,800 ft ³ /acre)
Estimated 10 year peak inflow**	63.35 cfs	
Min. Required Surface Area	27,557 ft ²	(435 ft ² /cfs)

Design

Choose Avg. Storage Depth	3.50 ft	
Necessary Storage Surface Area	26,229 ft ²	
Is Necessary Surface Area > Required	NO	
Choose Storage Width	120 ft	
Choose Storage Length	240 ft	
Length to Width Ratio	2.0	OK
Surface Area Provided	28,800 ft ²	1.0 times required
Is Surface Area Provided > Required	YES	
Storage Volume Provided	92,323 ft ³	
Is Storage Volume Provided > Required	YES	1.0 times required

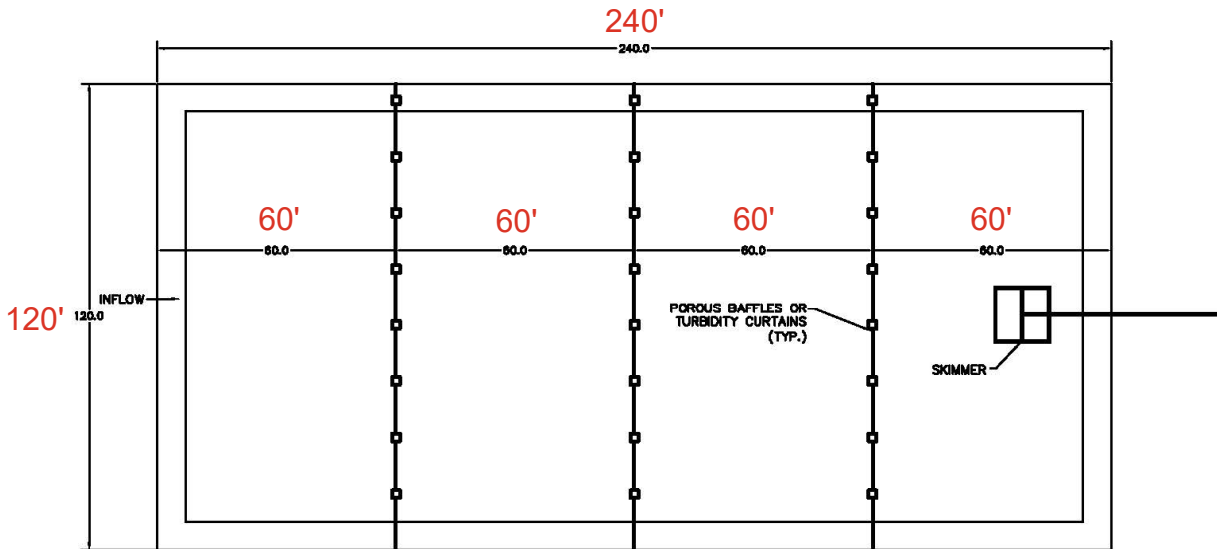
The above calculations determine minimum required sediment basin dimensions as detailed below. During construction, the stormwater management pond will be used as an oversized sediment basin providing the following actual area and volume:

Actual Pond Surface Area Provided	249,665 ft ²	9.1 times required
Actual Pond Volume Provided	2,848,827 ft ³	31.0 times required

Porous Baffles or Turbidity Curtains shall be installed within the stormwater pond at the spacing dimensioned below and as illustrated on the Erosion and Sediment Control Plan

* Tributary Disturbed Area from Autocad

** Estimated 10 year peak flows per EPA SWMM calculations prepared by Deel Engineering, PLLC.



Typical Sediment Basin Detail and Minimum Dimensions

EROSION CONTROL SKIMMER CALCULATIONS

Sediment Basin A - Skimmer A

Drawdown Period [t_d]	2.00	days	
*Drawdown Volume [V]	92,323	ft^3	
Drawdown Discharge Rate [Q_d]	46,162	ft^3/day	0.53 cfs
Choose Skimmer Body Diameter	6.0	in.	2.72 fps
Head on Orifice from Table [H]	0.417	ft.	
Resulting Orifice Diameter [D]	5.6	in.	
Is Orifice Diameter < Skimmer Body Diameter	YES		

Head on orifice of various skimmer sizes

Skimmer Size (in.)	Head on Orifice (ft.)
1.5	0.125
2	0.167
2.5	0.208
3	0.250
4	0.333
5	0.333
6	0.417
8	0.500

Table 6.64a NC Erosion Control Manual

Equations:

$$Q_d = V / t_d \text{ (ft}^3\text{/day)}$$

$$D = \sqrt{Q_d / (2310 * \sqrt{H})} \text{ (inches)}$$

*Drawdown volume based on combined min. required volumes per separate Sediment Basin Calculations.