



Messick & Associates  
Consulting Engineers,  
Planners, Surveyors  
& Landscape Architects  
*"Designing Success Since 1951"*

April 8, 2024  
Ms. Sterling Seay, Zoning Administrator  
Anne Arundel County  
Planning & Zoning  
2664 Riva Road  
Annapolis, MD 21401

Re: Variance Application: Katz Property (2023-0153-V)  
343 Kingsberry Drive, Annapolis Maryland 21409 (the "Property")  
Tax Map 46, Grid 3, Parcel 384, Lot 19  
Explanation Letter

Dear Ms. Seay:

Attached for your review and processing is a revised variance application for the above referenced Property. The Property is in the St. Margarets Farm subdivision on the east side of Kingsberry Drive approximately 250' south of the intersection with Bantry Court in St. Margarets, Annapolis, Anne Arundel County. St. Margaret's Farm is a subdivision created in the early 1970's, with roughly 33 single family residences, most of which sit on a lot of at least 2 acres. The Property is one of the few in the subdivision where most of the land area is in the Chesapeake Bay Critical Area (both the Intense Development Area and the Resource Conservation Area overlay zones). The Property consists of 2.0 acres (87,289 sq.ft.) of land zoned RLD and OS and the lot is served by private well and septic utilities.

The applicant's original variance application (submitted 7/7/23) proposed the demolition of the existing structure and reconstructing a significantly larger house on the property. In an effort to minimize their variance request, they are adding a partial second story addition and renovating the existing structure instead of demolishing and reconstructing a new one. The existing dwelling has been left vacant for nearly 27 years and is uninhabitable, having been cited for its unsafety by the County on multiple occasions prior to the applicant's ownership.

Specifically, the applicant is requesting the following variances:

1. A variance of 5 feet to the 50' front yard setback in the RLD zone (Article 18-4-401(a)(1)).
2. A variance to reconstruct/renovate a principal structure within 50' of the crest of "steep slopes" (Article 18-4-401(b)).
3. A variance to allow disturbance within the 100' Chesapeake Bay Critical Area Expanded Buffer (Article 18-13-104(b)(1)).

Based on the ongoing, more than 27-year deterioration of the existing residence, a renovation of the existing dwelling is required. The condition of the existing home is viewed as a blight on the community and attracted unsafe conditions. More importantly, the proposed reconstructed structure is consistent with the character of the community and the variances being requested are the minimum necessary to afford relief, as further outlined below.

We believe the proposed variance meets all applicable criteria in accordance with the Anne Arundel County Code. Specifically:



Requirements for critical area variances (Art. 18-16-305):

- (b)(1) *Because of certain unique physical conditions, such as exceptional topographical conditions peculiar to and inherent in the particular lot or irregularity, narrowness, or shallowness of lot size and shape, strict implementation of the County's critical area program would result in unwarranted hardship.*

The Property is a legally buildable grandfathered irregular lot with exceptional topographic conditions including steep slopes, steep slope buffers, a perennial stream and stream buffer and existing drainage easements with an existing, unoccupiable dwelling which does not meet the current front yard setback or slope setback (resulting from the zoning of the Property being changed from R-1 to RLD since original subdivision was platted and the enactment of the Critical Area Legislation after same). Currently, the Property is a legally buildable RLD/OS zoned grandfathered lot but it is unable to be improved in strict conformance with the County's Critical Area and Zoning regulations that were enacted after its creation. Without a variance, the Applicant will not be able to obtain permits required in accordance with reasonable and significant use of the Property (a single-family detached residential house consistent with the neighborhood as permitted in the RLD zone by right) which in turn will deny reasonable use of the Property. Perhaps most importantly, the Applicant has a family of 5 dependents, and the real estate market in Anne Arundel County, Maryland and Nationally, is extremely limited for affordable, sizable residences for such similar sized family. Housing inventory is at an historical low, with pricing and financing costs at a 40-year high. As a result, requested variances, especially those requesting relief, which was once permitted for the existing lot, should be given significant deference by the County in its review.

- (b)(2) *A literal interpretation of the County's critical area program and related ordinances will deprive the applicant of rights commonly enjoyed by other properties in similar areas.*

The Property is a legally buildable grandfathered lot in the Chesapeake Bay Critical Area and a literal interpretation of the critical area program would deny the Applicant reasonable and significant use of the Property consistent with the character of the neighborhood.

- (b)(3) *The granting of a variance will not confer on an applicant any special privilege that would be denied by the County's critical area program to other lands or structures within the County critical area.*

Granting of a variance to allow the improvement of the Property for residential purposes will not grant any special privileges that are not enjoyed by all residential lot owners within the neighborhood and the critical area. Most importantly, reconstruction of the existing dwelling will result in the removal of the existing septic system within the expanded steep slope buffer, which system will be replaced by a BAT septic system, which will be located outside of the expanded buffer. This will result in a much more favorable environmental condition than currently exists and advance the environmental goals and agendas of the County in removing these old systems from buffers related to the Critical Area.



- (b)(4) *The variance request is not based on conditions or circumstances that are the result of the actions by the applicant, including the commencement of development before an application for a variance was filed and does not arise from any condition relating to land or building use on any neighboring property.*

The conditions and circumstances that gave rise to this variance application are the result of the existing lot configuration, the existing environmental constraints, the rezoning of the Property and existing house location. They are not in any way based on actions caused by the Applicant, and do not arise from conditions relating to land or building use on any neighboring property. Moreover, the requests outlined herein are consistent with the character of the neighborhood in that most, if not all of the homes, would require similar variances given that each was developed under the previous, applicable R1 bulk regulation standards.

- (b)(5) *The granting of a variance will not adversely affect water quality or adversely impact fish, wildlife, or plant habitat within the County's critical area and will be in harmony with the spirit and intent of the County's critical area program.*

The Applicant proposes a single-family residential house, which is similar to and typical of the existing houses within the neighborhood. The storm water management ESD requirement is being provided with rooftop and non-rooftop disconnect credits, sheet flow to buffer areas and additional buffer plantings are being proposed on-site in addition to the ESD water quality improvements; therefore, the variance will have no adverse impact to water quality or fish, wildlife, or plant habitat. It is also in harmony with the spirit and intent of the critical area program to allow reasonable use of a legally buildable grandfathered lot in the critical area that predate the critical area law and regulations (Plat approved 11/22/1974). If fact, the requested variance will confer a positive benefit on water quality in that the reconstruction of the existing dwelling will result in the removal of the existing septic system within the expanded steep slope buffer, which system will be replaced by a BAT septic system, which will be located outside of the expanded buffer. This will result in a much more favorable environmental condition that currently exists and advance the environmental goals and agendas of the County in removing these old systems from buffers related to the Critical Area.

- (b)(6) *The applicant for a variance to allow development in the 100-foot upland buffer has maximized the distance between the bog and each structure.*

Nearly the entire lot is located in the critical area expanded buffer and the existing house is being reconstructed within the existing cleared area on site (no clearing is required). The proposed development envelope is reasonably small for a lot within this community and the distance between the steep slopes and the proposed house is maximized in so far as possible given the location of the existing cleared areas on-site and Health Department setbacks.

- (b)(7) *The applicant, by competent and substantial evidence, has overcome the presumption contained in Natural Resources Article, § 8-1808.*

For reasons set forth herein and the evidence presented in the attached application, the Applicant has overcome the presumption contained in Natural Resources Article § 8-1808.



(b)(8) *The applicant has evaluated and implemented site-planning alternatives.*

The applicant's original variance application (submitted 7/7/23) proposed the demolition of the existing structure and reconstructing a significantly larger house on the property. In an effort to minimize their variance request, they are adding a partial second story addition and renovating the existing structure instead of demolishing and reconstructing a new one. Therefore, site planning alternatives have been considered and the variance requests have been minimized in so far as possible; however, reasonable and significant development of the site is impossible in strict conformance with the zoning and critical area criteria. The applicant is proposing a house which is consistent with the other houses in the neighborhood.

Requirements for all variances:

(c)(1) *The variance is the minimum variance necessary to afford relief.*

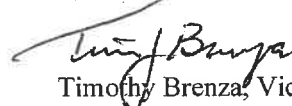
The site is a legally buildable, grandfathered single-family residential lot that predates the Chesapeake Bay Critical Area regulations and the zoning was down zoned from R-1 to RLD. The proposed house footprint is typical for the neighborhood and the variance is the minimum necessary to afford relief. The Applicant is only seeking reasonable use of the lot for residential purposes.

(c)(2) *The granting of a variance will not (i) alter the essential character of the neighborhood or district in which it is located; (ii) substantially impair the appropriate use or development of adjacent property; (iii) reduce forest cover in the limited development and resource conservation areas of the critical area; (iv) be contrary to acceptable clearing and replanting practices required for development in the critical area; nor (v) be detrimental to the public welfare.*

Granting of the variance will allow the Property to be used in a manner that is consistent with similar surrounding properties in the neighborhood. It will have no impact on the use or development of adjacent properties. Storm water management is achieved by rooftop and non-rooftop disconnect credits, sheet flow to buffer areas and additional plantings are proposed so it will have no impact on forest cover or be contrary to acceptable clearing and replanting practices. Granting of the variance will not be detrimental to the public health, safety, or welfare.

If there are any questions concerning this application, please do not hesitate to contact me.

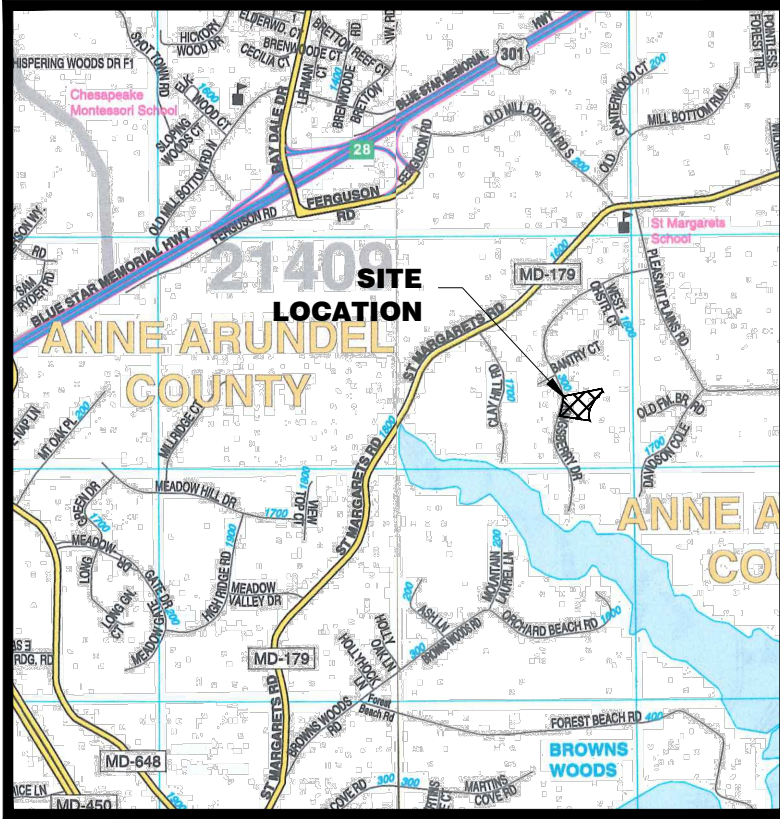
Sincerely,  
MESSICK GROUP, INC.  
T/A MESSICK & ASSOCIATES

  
Timothy Brenza, Vice President



LEGEND

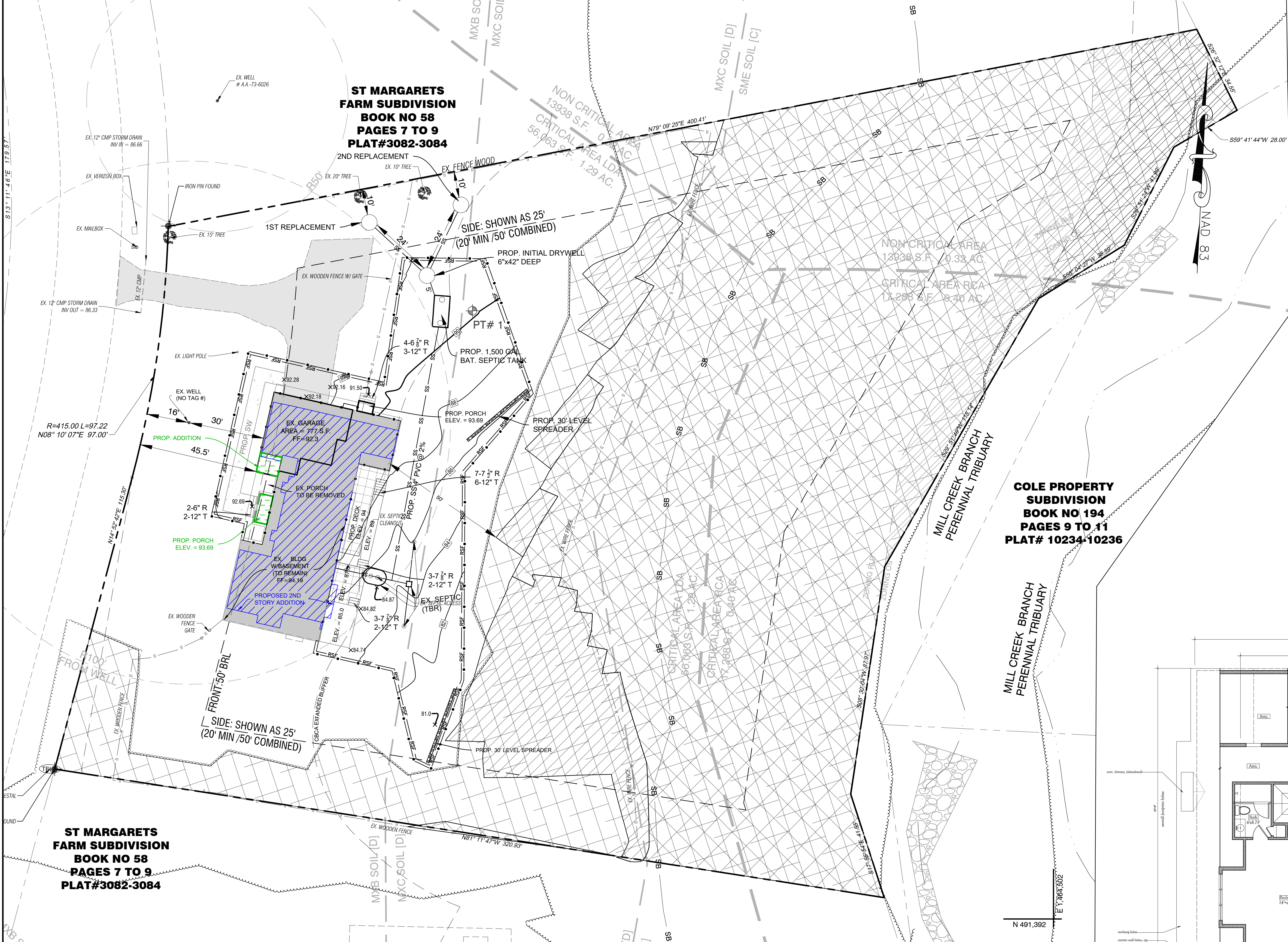
- PROP PAVEMENT
- ENVIRONMENT STEEP SLOPES  
BETWEEN 15% AND 25%
- ENVIRONMENT STEEP SLOPES  
GREATER THAN 25%
- EXISTING STORM WATER  
MANAGEMENT EASEMENT
- PROPERTY LINE
- EXISTING CONTOUR
- PROP CONTOUR
- 25-FT STEEP SLOPE SETBACK  
TREE LINE
- CRITICAL AREA LINE  
CRITICAL AREA DESIGNATION
- SOIL TYPE  
SOIL AREA  
SOIL TYPE
- LIMITS OF DISTURBANCE (LOD)
- 100-FT STREAM BUFFER
- SILT FENCE WITH TREE PROTECTION
- EXISTING WATER
- EXISTING SEWER
- EXISTING STORM DRAINAGE
- EXISTING TREES
- ESD DEVICE: MICRO BIO
- ESD DEVICE: BIO SWALE
- RIP-RAP AREA
- PROP STORM DRAINAGE
- PROP STORMWATER STRUCTURES
- EXISTING HOUSE FOUNDATION  
FOOTPRINT
- PROPOSED 2ND STORY ADDITIONS
- EXPANSION (NEW) FOUNDATION  
FOOTPRINT



ADC PERMITTED USE NUMBER 21003176  
VICINITY MAP  
SCALE: 1"=2,000'

SITE DATA

PROPERTY ADDRESS:		ST MARGARETS FARM SUBDIVISION, LOT 19 343 KINGSBERRY DRIVE ANNAPOLIS, MD 21409	
OWNER ADDRESS:		1831 PENDENNIS DR ANNAPOLIS, MD 21409	
TAX MAP: 46	GRID: 3	PARCEL: 384 LOT 19	DEED L: 38681, F: 137
ASSESSMENT DISTRICT:		3RD	
TAX ACCOUNT NUMBER:		03-737-07969691	
EXISTING ZONING:	R/LDOS	PROPOSED ZONING:	NO CHANGE R/LDOS
ALL EXISTING AND PROPOSED DEVELOPMENT IS WITHIN THE R/LDOS ZONING.			
SETBACK:	FRONT 50 FEET	REAR: 40 FEET	SIDES: 20 FEET/50 FEET
BUILDING HEIGHT:	PROPOSED: 25'-9"	PERMITTED: 45'	
BUILDING STORIES:	EXISTING: 1 STORY W/ BASEMENT	PROPOSED: 2 STORY W/ BASEMENT	
FEMA RATE MAP NUMBER:	24003C0189F	DATED 02/18/2015	ZONE X
CRITICAL AREA MAP:	LDA/CA		
ALL EXISTING AND PROPOSED DEVELOPMENT IS WITHIN LDA AREA			
PREDOMINANT SOIL TYPES:			
MXB	D	MATTAPEX/BUTLERTOWN COMPLEX, 2% TO 5% SLOPE	
MXC	D	MATTAPEX/BUTLERTOWN COMPLEX, 5% TO 10% SLOPE	
SME	C	SASSAPRAS AND CROOM SOILS, 15% TO 20% SLOPES.	
EXISTING USE:	DEVELOPED SINGLE FAMILY DWELLING		
PROPOSED USE:	REDEVELOPED SINGLE FAMILY DWELLING		
WATERSHED AREA:	SEVERN RIVER		
TOTAL SITE AREA:	87,289 S.F.	~2.00 AC.	
PROPOSED CLEARING:	0 S.F.	~0.00 AC.	
EXISTING IMPERVIOUS AREA:	5,864 S.F.	~0.13 AC.	
PROPOSED IMPERVIOUS AREA:	6,611 S.F.	~0.15 AC.	
TOTAL DISTURBED AREA:	9,513 S.F.	~0.22 AC.	
AREA VEG. STABILIZED:	2,902 SF	~0.07 AC.	
AREA STRUCT. STABILIZED:	6,611 SF	~0.15 AC.	
CUT:	350 CY.	CONTRACTOR IS ADVISED TO CHECK QUANTITIES	
FILL:	25 CY.		
BORROW:	325 CY.		



SITE PLAN  
SCALE: 1"=20'

IMPERVIOUS AREA

	EXISTING	PROPOSED
DRIVEWAY	2,024 S.F.	2,024 S.F.
SIDEWALK	283 S.F.	300 S.F.
WALKOUT	50 S.F.	191 S.F.
PORCH	191 S.F.	79 S.F.
BUILDING	3,315 S.F.	3,378 S.F.
DECK		639 S.F.
TOTAL	5,864 S.F.	6,611 S.F.

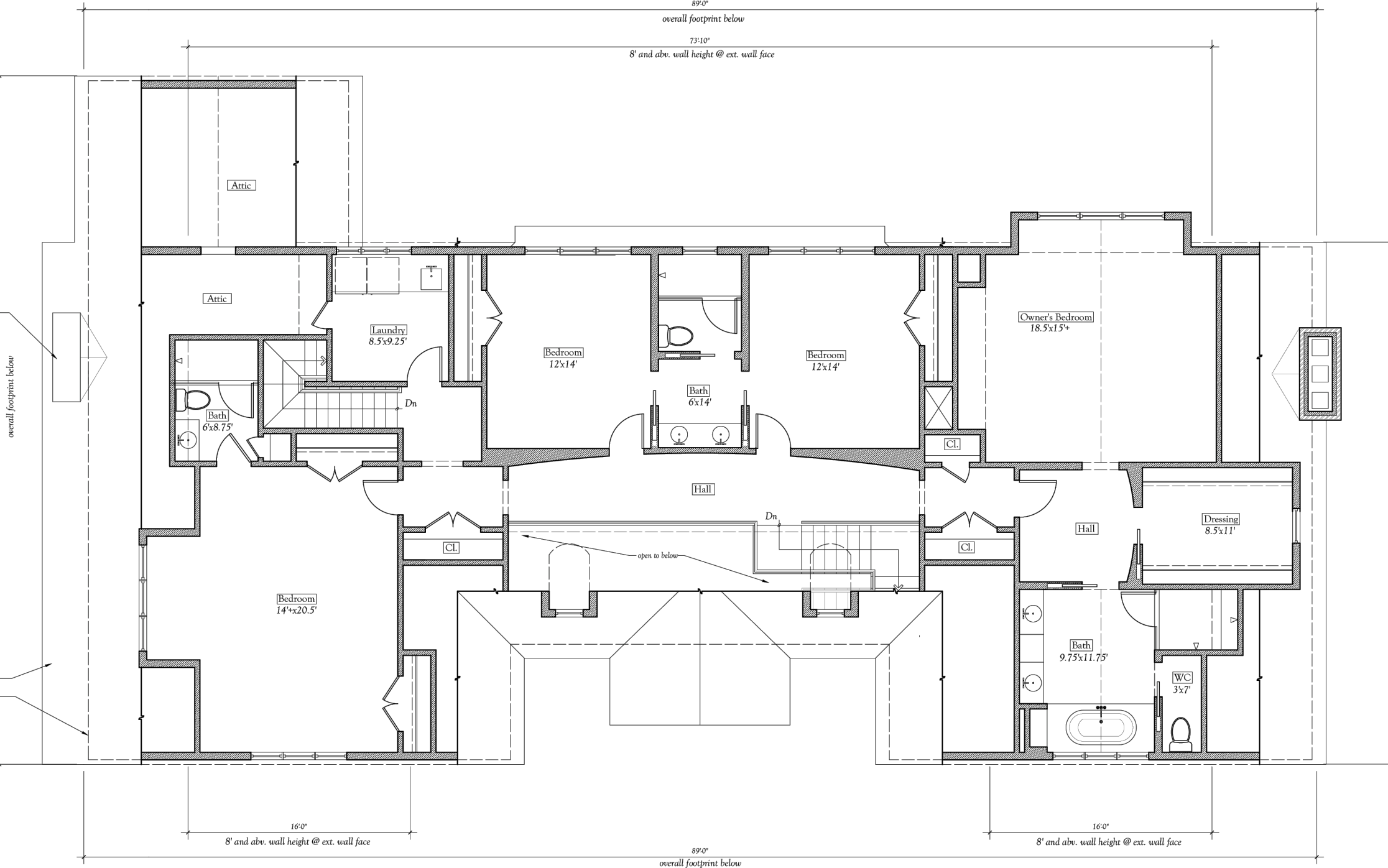
REVISION	DESCRIPTION	BY	DATE

**MESSICK & ASSOCIATES \***

CONSULTING ENGINEERS,  
PLANNERS AND SURVEYORS

7 OLD SOLOMONS ISLAND ROAD, SUITE 202  
ANNAPOLIS, MARYLAND 21401  
(410) 266-3212 \* FAX (410) 266-3502  
email: engr@messickandassociates.com

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED AND APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 621, EXPIRATION DATE: 5/14/25.



PROPOSED SECOND STORY ADDITION DIMENSIONS  
(NTS)

G02019	
VARIANCE SITE PLAN	
KATZ PROPERTY ST MARGARET'S FARM SUBDIVISION SINGLE FAMILY DWELLING VARIANCE PLAN LOT 19, 343 KINGSBERRY DRIVE ANNAPOLIS, MD 21409	
TAX MAP: 46 GRID: 3 PARCELS: 384 THIRD ASSESSMENT DISTRICT SCALE: AS SHOWN	TAX ACCOUNT: 03-737-07969691 ZONING: RDL/OS ANN ARUNDEL COUNTY, MARYLAND 21409 DATE: MAY 2024 SHEET: 1 OF 1



**Critical Area Narrative Statement**  
**For: 343 Kingsberry Drive**  
**Annapolis, Md. 21409**  
**AACo. Tax Map 46, Grid 3, Parcel 384, Lot 19**

August 17, 2023  
(Revised April 8th, 2024)

PREPARED BY:  
MESSICK AND ASSOCIATES.  
7 OLD SOLOMONS ISLAND ROAD, SUITE 202  
ANNAPOLIS, MARYLAND 21401  
410-266-3212

PREPARED FOR:  
DAVID AND JOANNE KATZ  
1931 PENDENNIS DRIVE  
ANNAPOLIS, MD 21409



In accordance with the Anne Arundel County's Critical Area Report Criteria for a variance application, attached is a description of the subject property, proposed use, description of existing vegetation, proposed development, mitigation requirements, impervious area calculation and description of the habitat protection areas on-site.

**A. Project Location, Use and Relevant History:**

The site is located on the east side of Kingsberry Drive approximately 250' south of the intersection with Bantry Court in central Anne Arundel County. Most of the site is located in the Chesapeake Bay Critical Area (both the Intense Development Area and Resource Conservation overlay zones). The site consists of 2.00 acres (87,289 sq.ft.) of land zoned RLD and OS and the lot is served by private well and septic utilities. The site is legally buildable grandfathered lot in the Critical Area. The existing site is improved with a 1-story/with basement single family residential structure which has a non-conforming front yard or RLD setback to 15% slopes (as a result of the property being changed from R-1 to RLD since it was originally platted in 1976 before the Chesapeake Bay Critical Area Regulations were created). The applicant is seeking a permit to demolish the existing single-family detached residential dwelling and reconstruct a new single-family dwelling on the property.

**B. Description of Vegetative & Proposed Disturbance:**

Approximately 55,218 sq.ft. of the site is vegetated by aerial extent (75.3% of the critical area portion of the property). The existing vegetation consists primarily of deciduous hardwood species typical of the Tulip Poplar Forest association. Soils on site consist primarily of Mattapex-Butlertown soils (MxB, MxC) with an area of Sassafras and Croom soils on the east side of the site. These soils are not hydric or highly erodible. The existing house is located on a small ridgeline with the front yard draining to Kingsberry Drive and the rear yard draining toward a tributary stream off Mill Creek.

The proposed disturbance is limited the minimum area necessary to remove and re-construct the existing house on-site so it is in consistent with the character of the neighborhood. Storm water management is being provided by providing ESD rooftop and non-rooftop disconnect credits, and sheet flow to wooded buffer areas.

**C. Potential Impacts and Mitigation:**

The proposed rooftop disconnect credits, non-rooftop disconnect credits and sheet flow to wooded buffer credits exceed the ESD to the MEP storm water management requirements for the proposed redevelopment of the property. Native trees and shrubs are proposed within the 50' buffer to steep slopes in addition to the minimum storm water management requirement.

**D. Site Data and Critical Area Coverage and Clearing:**

The following data apply to the Critical Area Portion of the site:

CBCA/Limited Development Area:	56,063 sq.ft. (1.287 ac.)
CBCA/Resource Conservation Area:	17,288 sq.ft. (0.397 ac.)
Total CBCA Site Area:	73,351 sq.ft. (1.684 ac)

**Existing Conditions:**

Total existing coverage=	5,865 sq.ft. (8.00% of the CBCA)
Existing wooded area=	55,218 sq.ft. (75.3%% of the CBCA)

**Proposed Conditions:**

Total existing coverage=	6,612sq.ft. (9.01% of the CBCA)
Existing wooded area=	55,218 sq.ft. (75.3% of the CBCA) (i.e., no clearing proposed)

**E. Description of Habitat Protection Areas:**

The majority of the site is located within the Critical Area Expanded Buffer. The eastern portion of the site abuts a tributary stream off Mill Creek and the abutting slopes are in excess of 15%. Therefore, the CBCA expanded buffer includes the 100' buffer to the tributary stream, adjacent 15% contiguous slopes and 15' from the top of the steep slopes. The Chesapeake Bay Critical Area Project Notification Application Form, Site Plan, Topographic map and associated supporting documents are attached. The attached narrative statement was prepared by Timothy Brenza, RLA of Messick and Associates on May 10, 2023.

CRITICAL AREA COMMISSION  
CHESAPEAKE AND ATLANTIC COASTAL BAYS  
1804 WEST STREET, SUITE 100  
ANNAPOLIS, MD 21401

PROJECT NOTIFICATION APPLICATION

GENERAL PROJECT INFORMATION

Jurisdiction: ANNE ARUNDEL COUNTY MARYLAND Date: MAY 2023

Tax Map #	Parcel #	Block #	Lot #	Section
<u>46</u>	<u>384</u>	<u>3</u>	<u>19</u>	<u>N/A</u>

Tax ID: 3-737-07969691

FOR RESUBMITTAL ONLY

Corrections ☐  
Redesign ☐  
No Change ☐  
Non-Critical Area ☐

\*Complete Only Page 1  
General Project Information

Project Name (site name, subdivision name, or other) KATZ PROPERTY

Project location/Address 343 KINGSBERRY DRIVE

City ANNAPOLIS, MARYLAND Zip 21409

Local case number

Applicant: Last name KATZ First name DAVID & LEANNE

Company (N/A)

Application Type (check all that apply):

Building Permit ☐  
Buffer Management Plan ☐  
Conditional Use ☐  
Consistency Report ☐  
Disturbance > 5,000 sq ft ☐  
Grading Permit ☒

Variance ☒  
Rezoning ☐  
Site Plan ☐  
Special Exception ☐  
Subdivision ☐  
Other ☐

Local Jurisdiction Contact Information:

Last name \_\_\_\_\_ First name \_\_\_\_\_

Phone # \_\_\_\_\_ Response from Commission Required By \_\_\_\_\_

Fax # \_\_\_\_\_ Hearing date \_\_\_\_\_

# SPECIFIC PROJECT INFORMATION

Describe Proposed use of project site: RECONSTRUCT EXISTING RESIDENTIAL

DWELLING AND CONSTRUCT NEW STORM WATER MANAGEMENT  
P&D DEVICES, PRIVATE UTILITIES AND ASSOCIATED GRADING IN THE CRITICAL AREA

Intra-Family Transfer ☐  
Grandfathered Lot ☒

Growth Allocation ☐  
Buffer Exemption Area ☐

## Project Type (check all that apply)

Commercial ☐  
Consistency Report ☐  
Industrial ☐  
Institutional ☐  
Mixed Use ☐  
Other ☐

Recreational ☐  
Redevelopment ☒  
Residential ☒  
Shore Erosion Control ☐  
Water-Dependent Facility ☐

## SITE INVENTORY (Enter acres or square feet)

	Acres	Sq Ft
IDA Area	- 0 -	- 0 -
LDA Area	1.287 ac	56,063
RCA Area	0.397 ac	17,288
Total Area	1.684 ac	73,351

Total Disturbed Area 0.526 Acres 22982 Sq Ft

# of Lots Created

	Acres	Sq Ft		Acres	Sq Ft
Existing Forest/Woodland/Trees	1.208	55,218	Existing Lot Coverage	0.135	5865
Created Forest/Woodland/Trees	0	0	New Lot Coverage	0.017	747
Removed Forest/Woodland/Trees	0	0	Removed Lot Coverage	- 0 -	0
			Total Lot Coverage	0.152	6612

## VARIANCE INFORMATION (Check all that apply)

	Acres	Sq Ft		Acres	Sq Ft
Buffer Disturbance	0.196	8,520	Buffer Forest Clearing	0	0
Non-Buffer Disturbance	0.330	14,380	Mitigation		

### Variance Type

Buffer ☒  
Forest Clearing ☐  
HPA Impact ☐  
Lot Coverage ☐  
Expanded Buffer ☒  
Nontidal Wetlands ☐  
Setback ☐  
Steep Slopes ☒  
Other ☐

### Structure

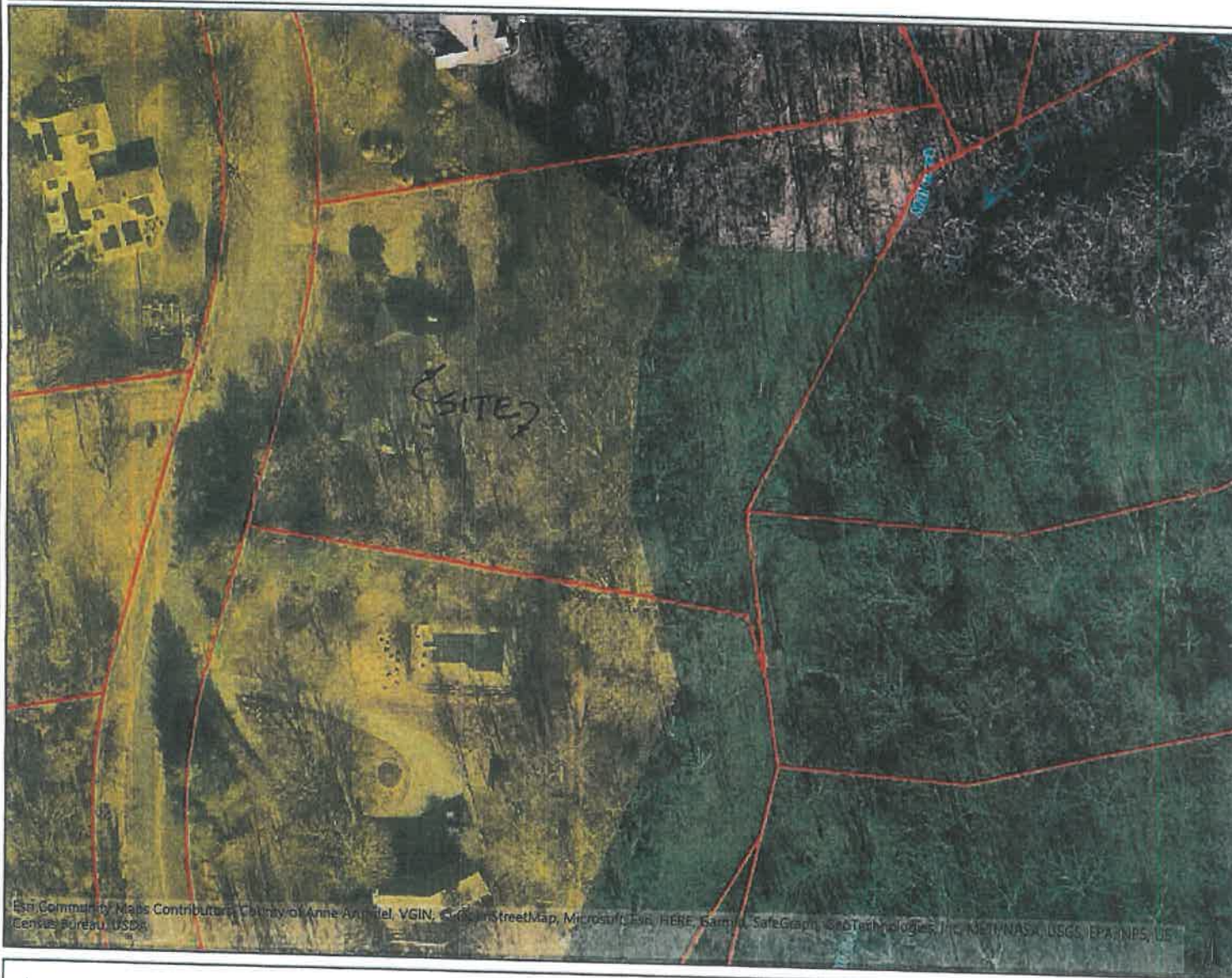
Acc. Structure Addition ☐  
Barn ☐  
Deck ☒  
Dwelling ☒  
Dwelling Addition ☐  
Garage ☐  
Gazebo ☐  
Patio ☐  
Pool ☐  
Shed ☐  
Other ☒

SCREENED PORCH/TERRACE





# Critical Area Map

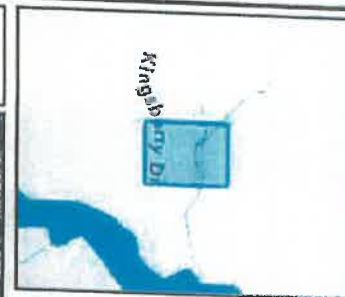


Esri, Community Maps Contributors, County of Anne Arundel, VGIN, Google, StreetMap, Microsoft, HERE, Garmin, SafeGraph, GeoTechnologies, Inc., NOAA, USGS, EPA, NPS, US Census Bureau, USDA



This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION



## Legend

Foundation  
Addressing

Parcels



City of Annapolis Parcels



Planning

Planning

IDA - Intensely  
Developed Area

LDA - Limited  
Development Area

RCA - Resource  
Conservation Area

FED - Federal Land

Labeling

Basemap Label

## Notes



## **CRITICAL AREA REPORT CRITERIA**

If your property is located within the Chesapeake Bay Critical Area, you will need to provide the Zoning Office with more information in order to process your request. In reviewing your application, the Office of Planning and Zoning must determine the impact your proposal will have on stormwater management and plant and animal habitat in conformance with Critical Area Law.

You are responsible for submitting 4 copies of a Critical Area Report with your Zoning Application. Each copy of the Critical Area Report should include:

1. Project Notification Application Form
2. A Site Plan – The site plan of the property should be drawn to an engineers scale (1"=20', 30' or 40') showing the applicable features of the subject property; steep slopes, existing tree line, wetlands (tidal and non-tidal), mean high water line, floodplain, proposed landscaping, all buffers, and all existing structures.
3. A topographic map to scale (available in the mapping office on the 4<sup>th</sup> floor of building 2664 Riva Rd)
4. A narrative statement (a paragraph or less) on a separate sheet addressing each point listed below:
  - A. Describe the proposed use of the subject property and include if the project is residential, commercial, industrial, or maritime.
  - B. Describe the type of predominant trees and shrubs on the subject property. Include a statement addressing the square footage of the property that is vegetated with trees and shrubs, how much of the property will be disturbed by the proposed development, and how the disturbance will be mitigated.
  - C. Describe the methods to minimize impacts on water quality and habitat from proposed construction (i.e. stormwater management, sediment control, and silt fence).
  - D. Calculate the impervious surface before and after construction, including all structures, gravel areas, driveways, and concrete areas.
  - E. If applicable, describe any habitat protection areas on the subject property including expanded buffers, steep slopes of 15% or greater, rare and endangered species, anadromous fish propagation waters, colonial water bird nesting sites, historic waterfowl staging and concentration areas, riparian forests, natural heritage areas, and plant and wildlife habitats of local significance.



**GRADING & SEDIMENT CONTROL PLAN**  
**STORMWATER MANAGEMENT REPORT**

For

**343 Kingsberry Drive**  
**ANNAPOLIS, MARYLAND**  
**21409**

**May 8, 2024**

**Developer:**

**David and Leanne Katz**  
**1931 Pendennis Drive**  
**Annapolis, Maryland 21409**

**Engineering Firm:**

**Messick Group, Inc.**  
**T/A Messick and Associates**  
**7 Old Solomons Island Road**  
**Suite 202**  
**Annapolis, Maryland 21401**

"Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional Landscape Architect under the laws of the State of Maryland, License No. 621, Expiration Date: 9/14/25."



*Lucy Bunge* 6/8/24

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**343 KINGSBERRY DRIVE  
GRADING & SEDIMENT CONTROL PLAN  
STORMWATER MANAGEMENT REPORT**

**INTRODUCTION**

The total site area consists of 2.00 acres and is zoned RLD & Open Space. The site is partially located within the Chesapeake Bay Critical Area (both LDA and RCA classifications on the eastern half of the site). The site is developed with a one story house, a garage, and a paved driveway. The remaining ground cover is lawn in good condition. Site frontage and access is located on Kingsberry Road (a County owned public local road) which abuts the site to the west. There are developed single family detached residential lots adjacent to the site to the north and south and a Floodplain to the east. The purpose of this plan is to add a small addition and add a second story to the existing house and in its current location.

The site drains from the Northwest corner of the property to the southeast and into the Mill Creek Floodplain. The slopes on the western portion of the site generally average 2-10% slopes. And there are steep (15% or greater) slopes located on the eastern half of the property.

The majority of soils on site consist of Downer-Hammonton Urban Land Complex Soils (DwB) and Patapsco-Evesboro-Fort Mott Complex soils with a hydrologic soil classification "D" and "C" respectively. These soils generally consist of loam soils of the uplands and are not considered hydric or susceptible to accelerated erosion ("K" factor greater than 0.35).

This report is to provide information and documentation to the review agency to show that the stormwater management is feasible at the site and the proposed improvements will not cause any adverse impacts to the surrounding environment. This report and design calculations were compiled utilizing approved methodologies as found in the following publications listed below:

- 1) Stormwater Management Practices and Procedures Manual, Nov. 2010, Anne Arundel County.
- 2) 2000 Maryland Stormwater Design Manual, Volumes I and II, Maryland Department of the Environment and supplement 1 (ESD Design).
- 3) Urban Hydrology for Small Watersheds (TR-55), June 1986, USDA, NRCS.

*Proposed Conditions/Protection of Natural Resources*

The property owners plan to add a small addition and add a second story to the existing house in its current location. There are no areas of non-tidal or tidal wetlands located on the site. A small area of non-tidal floodplain is located along the eastern property line. The site is not located in the FEMA floodplain.

### Site Imperviousness/minimization

The impervious footprint of the proposed house is typical for similar single family detached homes in the area. The existing house, garage and existing asphalt driveway will remain in the existing location and a small addition and second story will be added to the existing house as required to minimize additional impervious areas. Rooftop Disconnect & Non-Rooftop Disconnect credits, and sheet flow to buffer areas will be utilized to provide the required water quality treatment for the proposed house and site improvements.

### **SITE DRAINAGE DESIGN METHODOLOGY**

Runoff generated within the project area will be conveyed to the outfall using overland sheet flow. The use of storm drain pipe is not proposed.

### **STORMWATER MANAGEMENT DESIGN METHODOLOGY**

Stormwater management must be provided for this project. It is required that, in accordance with code, stormwater management for each project shall be based on the five unified sizing criteria (water quality, recharge, channel protection, overbank flood protection, and extreme flood protection). The five criteria can either be reduced or eliminated by implementing environmental site design (ESD) techniques. These techniques will reduce runoff by promoting infiltration in the subsoils. Below is a step by step process.

1. Provide Layout of Proposed Improvements
2. Determine Applicable Environmental Site Design Practices.
  - a. Alternative Surfaces
    - i. Porous Pavement
    - ii. Reinforced Turf
  - b. Non-Structural Practices
    - i. Rooftop Disconnect
    - ii. Non-Rooftop Disconnect
    - iii. Sheet Flow to Conservation Area
  - c. Micro-scale Practices
    - i. Rain Harvesting (Rain Barrels)
    - ii. Infiltration Berms
    - iii. Drywells
    - iv. Micro-bioretentions
    - v. Swales
3. Determine Reduced Runoff Curve Number (if applicable)
4. Determine Hydrologic Data (TR-55 Data)
5. Compute 5 Unified Sizing Criteria using any applicable reductions.
6. Design BMP Practices if required

### Environmental Site Design

ESD techniques are broken down into three distinct categories: Alternative Surfaces, Non-structural Practices, and Micro-scale Practices. These practices were evaluated for this project, see below.

Alternative Surfaces		
Practice Type	Description	Applicable (Y/N)
Green Roofs	The typical asphalt shingle roof will be used. Therefore, green roofs will not be applied.	N
Pervious Concrete	Pervious Concrete will not be utilized for any non-heavy load bearing areas (i.e. sidewalks, driveways, and driveway aprons)	N
Reinforced Turf	Will not be applied.	N

Non-Structural Practices		
Practice Type	Description	Applicable (Y/N)
Rooftop Disconnect	All rooftops will receive this credit in accordance with the flow path length. Downspouts are limited to drain 1000 square feet of rooftop.	Y
Non-Rooftop Disconnect	Non-rooftop area disconnection is proposed.	Y
Sheet Flow to Conservation Area	This proposed impervious areas does drain to the existing woodland on-site. Therefore, this credit can be used.	Y

Micro-scale Practices		
Practice Type	Description	Applicable (Y/N)
Rainwater Harvesting	Can be utilized, but the ESD Volume is met without them.	Y
Submerged Gravel Wetlands	The site is terrain is too steep to use this method.	N
Landscape Infiltration	Landscape infiltration will not be used based on infiltration rate.	N
Infiltration Berm	Primarily used as pretreatment.	N
Drywells	This micro-scale practice will not be used based on soil type.	N
Micro-Bioretenention	This micro scale practice will not be used as the primary ESD practice.	N
Rain Gardens	A Rain Garden will not be used as the ESD Practice for this site because the site topography is too steep.	N
Swales	Grass-swales will not be utilized to convey runoff in the road side ditches. Overland Sheet Flow will convey runoff.	N
Enhanced Filter	Primarily utilized in commercial and multi-residential applications. Therefore, was not utilized in this subdivision.	N

Based on drainage patterns and the use of ESD practices to the maximum extent possible, the site was evaluated to determine the comprehensive effect of ESD practices on the total parcel. The results of the sizing criteria analysis are found on the next page. All calculations are located in the appendices.

### PROPOSED BMPs

As stated above, ESDs were utilized to maximum extent possible. Physical feasibility, topography, environmental, watershed, community and stormwater treatment suitability factors were considered in determining the type and location of the best management practice to store and treat storm runoff for the improvements proposed on this site. However, the soils are not conducive for infiltration. According to the Natural Resource Conservation Service, formerly the Soil Conservation Service, the soils are primarily classified as type "C" and "D" soils.

Given design factors and the soil types, rooftop & non-rooftop disconnect credits and sheet flow to buffer areas are proposed as the Environmental Site Design methods for this project.

## ENVIRONMENTAL SITE DESIGN

### ESD Design Summary

ESD was utilized to the maximum extent possible throughout the site. Data/analysis is included in the appendices. However, please find below a summary of the results.

Outfall Area ID	Total Area (sq. ft.)	Total Impervious (sq. ft.)	% Impervious	Required		Provided		Reduced RCN
				ESDv (cu. ft.)	Pe (in.)	ESDv (cu. ft.)	Pe (in.)	
Site Outfall	87,289	6,611	7.57	860	1.0	870	1.00	74

Since ESD volume provided exceeds the ESD volume required for the outfall the design provides the necessary water quality, recharge, and channel protection volumes.

Since ESD volume provided exceeds the ESD volume required for the site outfall, the design provides the necessary water quality, recharge, and channel protection volumes is achieved.

### Peak Flow Design Summary

Existing RCN	Existing Q10 (cfs)	Proposed RCN	Proposed Q10 (cfs)	Reduced RCN	Reduced RCN Q10 (cfs)
76	5.27	76	5.27	70	4.12

Peak Management is provided by reducing the Proposed Q10 to a rate below the pre-development level.

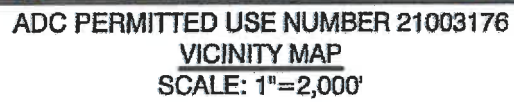
## **CONCLUSION**

### **PRIVATE SYSTEM**

Based on the design provided in this report, the proposed ESD will provide the required management to satisfy groundwater recharge, water quality, and channel protection stormwater management sizing criteria. Of the 860 cubic feet of ESD volume required to be treated, 870 cubic feet of actual ESD volume is designed to be treated by rooftop disconnect & non-rooftop disconnect credits, sheet flow to buffer credits. Overbank Flood Control Volume is provided by reducing the Proposed Q10 to a rate at or below the pre-development level.

**APPENDIX A  
VICINTY MAP**







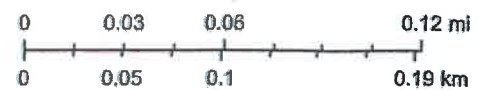
**APPENDIX B**  
**FEMA FIRMETTE & FIRM MAP**







# FEMA Flood Map



8/16/2023, 1:38:46 PM

1:4,514



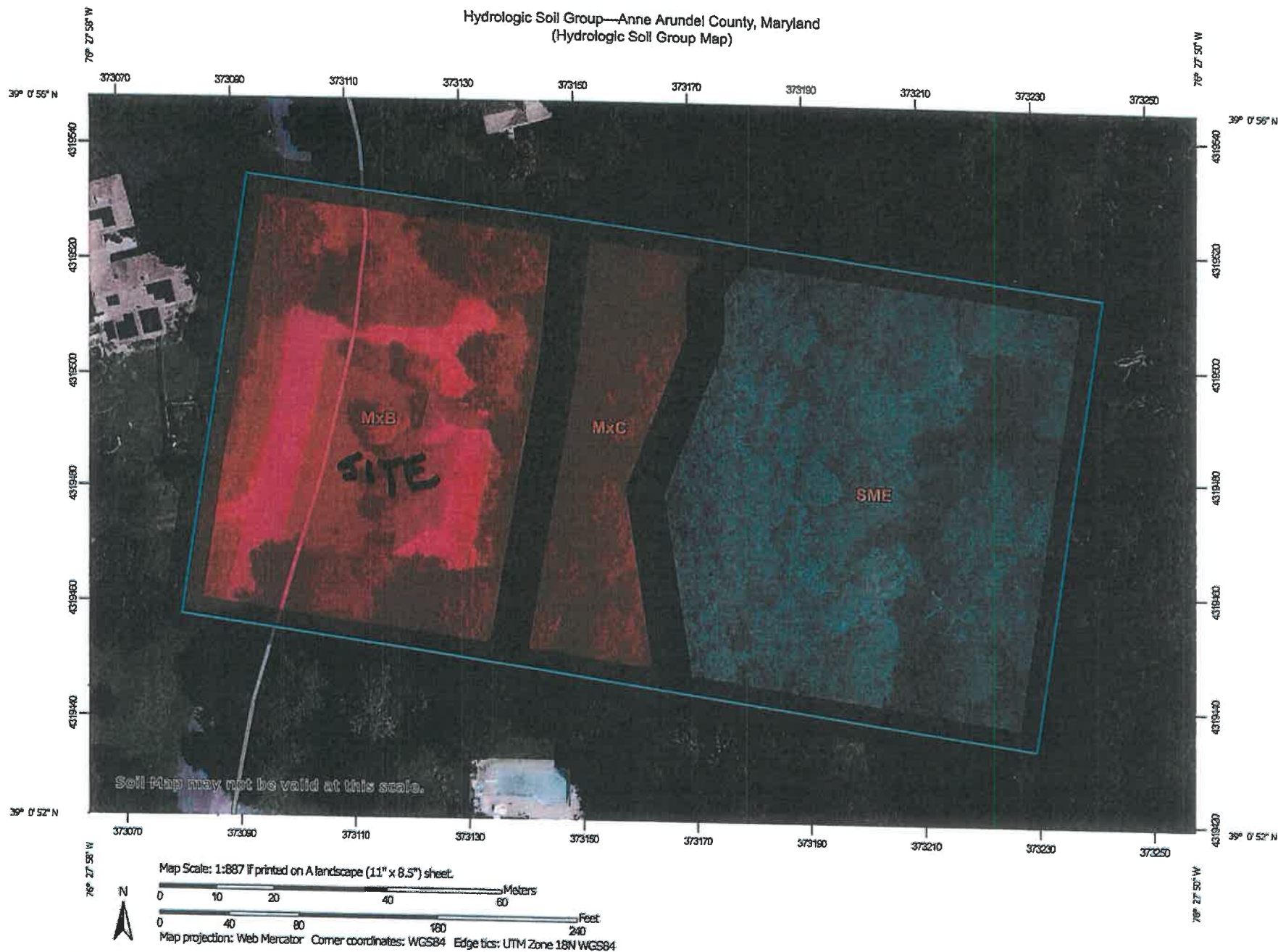
- |   |   |
|---|---|
| Local Road Label  |  Green: Green                  |
| Streams Label   |  Blue: Blue                    |
|  County Boundary |  Parcels                       |
| Orthophoto 2021   | FEMA Floodplain 2015  |
|  Red: Red        |  1% Annual Chance Flood Hazard |

Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Esri Community Maps Contributors, County of Anne Arundel, VGIN, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS,

**APPENDIX C**  
**SOILS SURVEY**



# Hydrologic Soil Group—Anne Arundel County, Maryland (Hydrologic Soil Group Map)



Natural Resources  
Conservation Service

Web Soil Survey  
National Cooperative Soil Survey

Hydrologic Soil Group—Anne Arundel County, Maryland  
(Hydrologic Soil Group Map)

## MAP LEGEND

### Area of Interest (AOI)









 Area of Interest (AOI)

### Soils

#### Soil Rating Polygons





 A  
 A/D  
 B  
 B/D  
 C  
 C/D  
 D  
 Not rated or not available

#### Soil Rating Lines

 A  
 A/D  
 B  
 B/D  
 C  
 C/D  
 D  
 Not rated or not available

#### Soil Rating Points

 A  
 A/D  
 B  
 B/D

 C  
 C/D  
 D  
 Not rated or not available

### 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 1:12,000.

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: Anne Arundel County, Maryland  
Survey Area Data: Version 21, Sep 14, 2022

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

Date(s) aerial images were photographed: Jun 20, 2022—Aug 13, 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.

## Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
MxB	Matlapex-Buttertown complex, 2 to 5 percent slopes	D	1.1	38.0%
MxC	Matlapex-Buttertown complex, 5 to 10 percent slopes	D	0.5	15.7%
SME	Sassafras and Croom soils, 15 to 25 percent slopes	C	1.4	46.3%
Totals for Area of Interest			3.0	100.0%

## Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher

**APPENDIX D**  
**STORMWATER MANAGEMENT COMPUTATIONS**



## **ENVIRONMENTAL SITE DESIGN**

STEP 1: Determine Stormwater Management Requirements (Overall Site)

Initial Site Data: 343 Kingsberry Drive Annapolis, Md.

Existing Conditions:

Total Drainage Area, (sf): 87,289 sf 2.00 {ac}

Land use: Residential

Soil Types	HSG	Area (sf)	
	A	0 sf	← A <sub>A</sub>
	B	0 sf	← A <sub>B</sub>
	C	38,961 sf	← A <sub>C</sub>
	D	48,328 sf	← A <sub>D</sub>
	Total	87,289 sf	

Proposed Layout

Total Impervious Coverage, (sf):

Item/HSG	A	B	C	D	Totals
Buildings				3,378 sf	3,378 sf
Driveways				2,024 sf	2,024 sf
Patio/pool/walks				1,209 sf	1,209 sf
				0 sf	0 sf
				0 sf	0 sf
Total	0 sf	0 s.f.	0 sf	6,611 sf	6,611 sf

Determine RCN for Wooded Condition:

The goal for implementing ESD on all new development projects is to mimic forested runoff characteristics. Therefore, calculated the RCN for "Woods in Good Condition" for the the project.

$$RCN_{\text{wooded}} = \frac{(A_A \times 38) + (A_B \times 55) + (A_C \times 70) + (A_D \times 77)}{A_{\text{Total}}}$$

$$RCN_{\text{wooded}} = \frac{(0 \text{ sf} \times 38) + (0 \text{ sf} \times 55) + (38961 \text{ sf} \times 70) + (48328 \text{ sf} \times 77)}{87,289 \text{ sf}}$$

$$RCN_{\text{wooded}} = 74$$

Determine Environmental Site Design (ESD) Targets:

Compute Percent Imperviousness

$$I = \frac{\text{Impervious Area (sf)}}{\text{Total Area (sf)}} \times 100\% = \frac{6,611 \text{ sf}}{87,289 \text{ sf}} \times 100\% = 7.57\%$$

Use: 8%

Compute Target Pe using Table 5.3 of the State Manual.

HSG	5%	10%		Pe	
A	0.0"	0.0"	→→→	0.0"	← Pe <sub>A</sub>
B	0.0"	0.0"	→→→	0.0"	← Pe <sub>B</sub>
C	1.0"	1.0"	→→→	1.0"	← Pe <sub>C</sub>
D	1.0"	1.0"	→→→	1.0"	← Pe <sub>D</sub>

$$Pe = \frac{(A_A \times Pe_A) + (A_B \times Pe_B) + (A_C \times Pe_C) + (A_D \times Pe_D)}{A_{\text{Total}}}$$

$$Pe = \frac{(0 \text{ sf} \times 0) + (0 \text{ sf} \times 0) + (38961 \text{ sf} \times 1) + (48328 \text{ sf} \times 1)}{87,289 \text{ sf}}$$

$$Pe = 1.0"$$

Compute Target Runoff Depth, Q<sub>e</sub>.

$$Q_e = Pe \times R_v$$

Where: Pe = 1.0"

R<sub>v</sub> = 0.05 + {0.009}i; where i = 7.57%

R<sub>v</sub> = 0.05 + {0.009}i = 0.05 + {0.009 × 8}

R<sub>v</sub> = 0.12

Then

$$Q_e = 1 \times 0.12 = 0.12"$$

The Environment Site Design (ESD) Targets for this project are:

Pe = 1 in.

Q<sub>e</sub> = 0.12 in.

By using ESD practices that meet these targets, WQv, Rev, & Cpv requirements will be satisfied.

Determine the ESDv required for the project:

$$ESD_v = \frac{(Pe)(R_v)(A)}{12} = \frac{(1 \text{ in.})(0.12)(87289 \text{ sf})}{12} = 860 \text{ cf}$$

## Step 2 - Preliminary ESD Options

"ESD requirements must be addressed for the entire site area (87,289 s.f.). This corresponds to an ESDv of 962 cubic feet of runoff that must be captured and treated. A combination of non-structural techniques, and/ or micro-scale practices may be used to treat the runoff from 1.0 inch of rainfall over the entire site. Below is a evaluation of each ESD with respect to this project."

Alternate Surfaces		
Item	Applicable	Comment
Green Roofs	N	The typical house will have a sloped roof, therefore, green roofs are not an option.
Permeable Pavements	N	Soils on site are HSG "D" soils and are not suitable for infiltration practices.
Reinforced Turf	N	Primarily used for overflow parking for commercial applications.

Nonstructural Practices		
Item	Applicable	Comment
Disconnection of Rooftop Runoff	Y	Disconnection of rooftop runoff works well in residential settings. All rooftop downspouts will be disconnected in so far as possible to comply with the design criteria in the State Manual.
Disconnection of Non-Rooftop Runoff	Y	Disconnection of non-rooftop runoff works well in residential settings. All runoff from driveways and sidewalks will be disconnected in so far as possible to comply with the design criteria in the State Manual.
Sheetflow to Conservation Areas	Y	The proposed impervious areas drains toward the existing forested area on-site.

Micro-Scale Practices		
Item	Applicable	Comment
Rainwater Harvesting ( Rain barrels)	Y	Rain barrels can be utilized, but the ESD volume is met without the implementation of rain barrels
Submerged Gravel Wetlands	N	Primarily used on flat sites, less than 2% slope. This site exceeds that slope constraint
Landscape Infiltration	N	Landscape infiltration works well in residential settings but the soils on site are HSG "D" soils not suitable for landscape infiltration.
Infiltration Berms	N	Primarily used as pretreatment. Therefore, was not utilized on this project.
Dry Wells	N	Implementation of this Device is necessary as all required volumes beyond those being treated by disconnects are being managed herein
Micro-bioretenention	N	Implementation of this Device is not necessary as all required volumes have been accounted for in the above practices.
Rain Gardens	N	Implementation of this Device is appropriate for residential settings but soils on site are HSG "D" soils and are not suitable for rain gardens.
Swales (Bio, Grass, & Wet)	Y	Implementation of this Device can be used, but are not necessary as all required volumes have been accounted for in the above practices.
Enhanced Filters	N	Implementation of this Device is not necessary as all required volumes have been accounted for in the above practices.

Non-structural techniques like disconnection of rooftop and non-rooftop runoff work well in residential settings, as well as sheet flow to buffer areas. Additional micro-scale practices may be utilized in combination with the non-structural techniques to address the ESD requirements. As seen above, the micro-scale practices that provide the most benefit for this residential application are rain barrels and swales (bio, grass, or wet). For this design, treatment will be provided using a combination of disconnection of rooftop and rooftop runoff, and sheet flow to buffer areas.

Drainage Area ID: 343 Kingsbury Drive

#### Drainage Area Description:

The drainage area includes the entire development area.

#### Site Data:

Total Drainage Area, (sf): 87,289 sf = 2.00 ac.

Land use: Residential

Soil Types:	HSG	Area (sf)	
	A	0 sf	← A <sub>A</sub>
	B	0 sf	← A <sub>B</sub>
	C	38,961 sf	← A <sub>C</sub>
	D	48,328 sf	← A <sub>D</sub>
	Total	87,289 sf	

#### Proposed Layout

Total Impervious Coverage, (sf):

Item/HSG	A	B	C	D	Totals
House				3,378 sf	3,378 sf 0.08 ac.
Driveways				2,024 sf	2,024 sf 0.05 ac.
Patio/Pool/Walks				1,209 sf	1,209 sf 0.03 ac.
					0.00 ac.
					0 sf 0.00 ac.
Total	0 sf	0 sf	0 sf	6,611 sf	6,611 sf 0.15 ac.

#### Determine RCN for Wooded Condition:

The goal for implementing ESD on all new development projects is to mimic forested runoff characteristics. Therefore, calculated the RCN for "Woods in Good Condition" for the project.

$$RCN_{wood} = \frac{(A_A \times 38) + (A_B \times 55) + (A_C \times 70) + (A_D \times 77)}{A_{Total}}$$

$$RCN_{wood} = \frac{(0 \text{ sf} \times 38) + (0 \text{ sf} \times 55) + (38961 \text{ sf} \times 70) + (48328 \text{ sf} \times 77)}{87,289 \text{ sf}}$$

$$RCN_{wood} = 74$$

#### Determine Environmental Site Design (ESD) Targets:

##### Compute Percent Imperviousness

$$I = \frac{\text{Impervious Area (sf)}}{\text{Total Area (sf)}} \times 100\% = \frac{6,611 \text{ sf}}{87,289 \text{ sf}} \times 100\% = 7.57\%$$

Use: 8%

##### Compute Target Pe using Table S.3 of the State Manual.

HSG	5%	10%		Pe
A	0.0"	0.0"	→ → →	0.0" ← Pe <sub>A</sub>
B	0.0"	0.0"	→ → →	0.0" ← Pe <sub>B</sub>
C	1.0"	1.0"	→ → →	1.0" ← Pe <sub>C</sub>
D	1.0"	1.0"	→ → →	1.0" ← Pe <sub>D</sub>

$$Pe = \frac{(A_A \times Pe_A) + (A_B \times Pe_B) + (A_C \times Pe_C) + (A_D \times Pe_D)}{A_{Total}}$$

$$Pe = \frac{(0 \text{ sf} \times 0) + (0 \text{ sf} \times 0) + (38961 \text{ sf} \times 1) + (48328 \text{ sf} \times 1)}{87,289 \text{ sf}}$$

$$Pe = 1.0"$$

##### Compute Target Rainfall Depth, Q<sub>e</sub>.

$$Q_e = Pe \times R_v$$

Where:  $Pe = 1.0"$   
 $R_v = 0.05 + (0.009)I$ ; where  $I = 7.57\%$   
 $R_v = 0.05 + (0.009)7.57 = 0.05 + (0.009 \times 7.57359198858128)$   
 $R_v = 0.12$

Then

$$Q_e = 1 \times 0.12 = 0.12"$$

##### The Environment Site Design (ESD) Targets for this project are:

$$Pe = 1 \text{ in.}$$

$$Q_e = 0.12 \text{ in.}$$

By using ESD practices that meet these targets, WQv, Rev, & Cpv requirements will be satisfied.

##### Determine the ESDv required for the project:

$$ESD_v = \frac{(Pe)(R_v)(A)}{12} = \frac{(1 \text{ in.})(0.12)(87289 \text{ sf})}{12} = 860 \text{ cf}$$

## Concept Design

### Permeable Pavements (Alternate Surfaces)

Comment:

Enter the Permeable Pavement Area (sf) & Sub-base Thickness (in.) for each HSG group:

Item	Hydrologic Soil Group							
	A				B			
	Area (sf)	Thickness (6", 9", or 12")	ESD <sub>p</sub> /ft <sup>2</sup>	ESD <sub>v</sub>	Area (sf)	Thickness (6", 9", or 12")	ESD <sub>p</sub> /ft <sup>2</sup>	ESD <sub>v</sub>
Roads			0.000	0 cf			0.000	0 cf
Driveways		12"	0.206	0 cf	0 sf	12"	0.196	0 cf
Sidewalks			0.000	0 cf			0.000	0 cf
Others			0.000	0 cf			0.000	0 cf
Totals	0 sf			0 cf	0 sf			0 cf

$$ESD_v = ESD_pA + ESD_pB + ESD_pC = 0 \text{ cf} + 0 \text{ cf} + 0 \text{ cf} = 0 \text{ cf} \quad \leftarrow \text{Total volume of water captured and treated by permeable pavements in this drainage area.}$$

### Rooftop Disconnect (Non-Structural)

Comment:

Enter the following Data

Total Rooftop Area (sf)	Disconnected Rooftop Area (sf)						Average (In.)	P
	Disconnection Lengths					Total Disconnected Rooftop Area (sf)		
	25' - 29' (Pe = 0.2)	30' - 44' (Pe = 0.4)	45' - 59' (Pe = 0.6)	60' - 74' (Pe = 0.8)	75' + (Pe = 1.0)			
3,378 sf			295 sf	544 sf	1,141 sf	1,980 sf	0.89	

$$ESD_v = \frac{(Pe)(Rv)(A)}{12} \quad \text{where:} \quad Rv = 0.05 + (0.009)l; \text{ where } l = 100 \text{ for rooftops}$$

$$Rv = 0.05 + (0.009)l = 0.05 + (0.009 \times 100)$$

$$Rv = 0.95$$

$$ESD_v = \frac{(0.89)(0.95)(1980 \text{ sf})}{12} = 139 \text{ cf} \quad \leftarrow \text{Total volume of runoff treated by rooftop disconnects in this drainage area.}$$

### Non-Rooftop Disconnect (Non-Structural)

Comment:

Enter the following Data

Total Impervious Non-Rooftop Area (sf)	Disconnected Non-rooftop Area (sf)						Average (in.)	Pe
	Ratio of Disconnect Length to Contributing Length					Total Disconnected Area (sf)		
	0.2:1 (Pe = 0.2)	0.4:1 (Pe = 0.4)	0.6:1 (Pe = 0.6)	0.8:1 (Pe = 0.8)	1:1 (Pe = 1.0)			
2,024 sf					2,024 sf	2,024 sf	1.00	

$$ESD_v = \frac{(Pe)(Rv)(A)}{12} \quad \text{where:} \quad Rv = 0.05 + (0.009)l; \text{ where } l = 100 \text{ for Non rooftops}$$

$$Rv = 0.05 + (0.009)l = 0.05 + (0.009 \times 100)$$

$$Rv = 0.95$$

$$ESD_v = \frac{(1)(0.95)(2024 \text{ sf})}{12} = 160 \text{ cf} \quad \leftarrow \text{Total volume of runoff treated by non-rooftop disconnects in this drainage area.}$$

#### Sheetflow to Conservation Area (Non-Structural)

Comment:

Enter the following Data

Area Draining to Conservation Area (sf)	Impervious Area Draining to Conservation Area (sf)	Conservation Area (sf)	Conservation Area Effective Width, ft	Pe
19,257 sf	6,611 sf	46,000 sf	140 ft	1

$$ESD_s = \frac{(Pe)(Rv)(A)}{12} \quad \text{where:} \quad Rv = 0.05 + (0.009)I; \text{ where } I = 34$$

$$Rv = 0.05 + (0.009)(34) = 0.05 + (0.009 \times 34)$$

$$Rv = 0.36$$

$$ESD_s = \frac{(1)(0.36)(19257 \text{ sf})}{12} = 571 \text{ cf} \quad \leftarrow \text{Total volume of runoff treated by sheet flow to conservation area in this drainage area.}$$

#### Rainwater Harvesting (Micro-scale Practice)

Comment:

The typical rain barrel is approximately 55 gals or 7 cf in volume

# of Rain Barrels Provided	Rain Barrel Volume
	7 cf

$$ESD_s = (\# \text{ of Rain Barrels}) \times (7 \text{ cf}) = 0 \text{ cf} \quad \leftarrow \text{Total volume of runoff treated by rain barrels in this drainage area.}$$

#### Drywells (Micro-Scale)

Comment:

Enter the following Data

Total No. of Drywells	Drywell Size			Volume Provided In Drywells
	Length (ft)	Width (ft)	Stone Depth (ft)	
				0 cf

Total No. of Drywells	Drywell Size			Volume Provided In Drywells
	Length (ft)	Width (ft)	Stone Depth (ft)	
				0 cf

Total No. of Drywells	Drywell Size			Volume Provided In Drywells
	Length (ft)	Width (ft)	Stone Depth (ft)	
				0 cf

$$\leftarrow \text{Volume (cf)} = V_{\text{stone}} (\text{cf}) + V_{\text{bottom sand layer}} (\text{cf})$$

$$V_{\text{stone}} = (\text{Length, ft}) \times (\text{Width, ft}) \times (\text{Depth, ft}) \times \text{void ratio (0.4)}$$

$$V_{\text{bottom sand layer}} = (\text{Length, ft}) \times (\text{Width, ft}) \times (1 \text{ ft}) \times \text{void ratio (0.3)}$$

$$\leftarrow \text{Volume (cf)} = V_{\text{stone}} (\text{cf}) + V_{\text{bottom sand layer}} (\text{cf})$$

$$V_{\text{stone}} = (\text{Length, ft}) \times (\text{Width, ft}) \times (\text{Depth, ft}) \times \text{void ratio (0.4)}$$

$$V_{\text{bottom sand layer}} = (\text{Length, ft}) \times (\text{Width, ft}) \times (1 \text{ ft}) \times \text{void ratio (0.3)}$$

$$\leftarrow \text{Volume (cf)} = V_{\text{stone}} (\text{cf}) + V_{\text{bottom sand layer}} (\text{cf})$$

$$V_{\text{stone}} = (\text{Length, ft}) \times (\text{Width, ft}) \times (\text{Depth, ft}) \times \text{void ratio (0.4)}$$

$$V_{\text{bottom sand layer}} = (\text{Length, ft}) \times (\text{Width, ft}) \times (1 \text{ ft}) \times \text{void ratio (0.3)}$$

$$ESD_s = (\# \text{ of Drywells}) \times (0 \text{ cf}) = 0 \text{ cf} \quad \leftarrow \text{Total volume of runoff treated by drywells in this drainage area.}$$

#### Rain Gardens (Micro-scale Practices)

Comment:

Enter the following Data

Total No. of Rain Gardens	Total Rain Garden Area (sf)	Drainage Area to Rain Garden(s) (sf)	Pe
			0.00

$$\text{where:} \quad Rv = 0.05 + (0.009)I; \text{ where } I = 100.00\%$$

$$Rv = 0.05 + (0.009)(100) = 0.05 + (0.009 \times 100)$$

$$Rv = 0.95$$

$$ESD_s = \frac{(L)(W)(D)(VR)(\#RG)}{0.0000004 \times 0.4 \times 0.4} = \quad \leftarrow \text{Total volume of runoff treated by rain gardens in this drainage area.}$$

### Grass, Bio-, or Wet Swales (Micro-scale Practices)

Enter the following Data

Swale Type (Grass, Bio, or Wet)	Swale Filter Area (sf)	Drainage Area to Swale (sf)	Pe
			0.00

$$ESD_v = \frac{(Pe)(Rv)(A)}{12} \quad \text{where:} \quad Rv = 0.05 + (0.009)l; \text{ where } l = 7.57\%$$

$$Rv = 0.05 + (0.009)l = 0.05 + (0.009 \times 7.57)$$

$$Rv = 0.12$$

$$ESD_v = \frac{(0)(0.12)(sf)}{12} = 0 \text{ cf} \quad \leftarrow \text{Total volume of runoff treated by swale flow in this drainage area.}$$

### Landscape Infiltration (Micro-scale Practices)

Enter the following Data

Landscape Area (sf)	Drainage Area to Landscape Area (sf)	Pe
		0.00

$$ESD_v = \frac{(Pe)(Rv)(A)}{12} \quad \text{where:} \quad Rv = 0.05 + (0.009)l; \text{ where } l = 100.00\%$$

$$Rv = 0.05 + (0.009)l = 0.05 + (0.009 \times 100)$$

$$Rv = 0.95$$

$$ESD_v = \frac{(0)(0.95)(sf)}{12} = 0 \text{ cf} \quad \leftarrow \text{Total volume of runoff treated by swale flow in this drainage area.}$$

ESDv Summary for Drainage Area		
Practice Type	Practice	ESDv
Alternate Surfaces	Permeable Pavement	0 cf
	Rooftop Disconnect	139 cf
	Non-Rooftop Disconnect	160 cf
	Sheet Flow to Conservation Area	571 cf
Non-Structural Practices	Rainwater Harvesting	0 cf
	Drywells	0 cf
	Rain Gardens	0 cf
	Swales	0 cf
	Landscape Infiltration	0 cf
Total ESDv (provided)		870 cf

Compute: Pe (provided)

$$ESD_v = \frac{(Pe)(Rv)(A)}{12}$$

Re-arrange:

$$Pe = \frac{12 (ESD_v)}{(Rv)(A)}$$

$$Pe = \frac{12 (870 \text{ cf})}{(0.12)(87289 \text{ sf})}$$

$$Pe = 1.0$$



## 22

Overall Pe	
Compute: Pe (provided)	
ESDv =	$\frac{(Pe)(Rv)(A)}{12}$
Re-arrange:	
Pe =	$\frac{12 (ESDv)}{(Rv)(A)}$
Pe =	$\frac{12 (870 \text{ cf})}{(0.12)(87289\text{sf})}$
Pe =	1.0

Compute Reduced RCN:

$$RCN = \frac{(0 \text{ sf} \times 38) + (0 \text{ sf} \times 55) + (38961 \text{ sf} \times 70) + (48328 \text{ sf} \times 77)}{87,289 \text{ sf}} = 74$$



## HYDROLOGIC DATA

## EXISTING CONDITION

## TR-55 General Input

Answer the following questions for the project. (fill in the blue blanks on each sheet)

1. Enter project designer's initials. TJB

2. Enter the month and year. Aug-23

3. What is the projects name? LOT 19 343 KINGSBERRY DR

4. What city/town and state is the project located? ANNAPOLIS

5. What county is the site located in? ANNE ARUNDEL

6. What type of project? (public or private) PRIVATE

7. What type of development?, choose one of the following: Present

- a. Present
- b. Developed

8. Drainage Area Identification? DA A (Existing)

9. What is the drainage area's total area in acres? 2.00

10. Percentage of area that is a pond or swamp? 0.00 %

11. Fill in the design storm data below.						
Storm Number	1	2	3	4	5	6
Frequency (yr)	WQv	1	2	10	50	100
24-hour Rainfall, P (in)	1.0	2.7	3.3	5.2	6.5	7.4

12. What is the Rainfall Distribution according to Figure B-2 of the TR-55 manual?: II

- a. I (Parts of California and Alaska)
- b. IA (Northwest part of California and the western portions of Oregon and Washington)
- c. II (most of the U.S.)
- d. III ( Parts of the US near the Gulf and most of the Coastal Areas along the Eastern U.S except Maryland and Delaware)

# **Runoff Curve Number and Runoff Worksheet**

Project: LOT 19 343 KINGSBERRY DR  
 Location: ANNAPOLIS  
 County: ANNE ARUNDEL

By: TJB Date: Aug-23  
 Chk'd: \_\_\_\_\_ Date: \_\_\_\_\_

Development Type: Present Drainage Area ID: DA A

## **1. Runoff Curve Number**

Soil Name and Hydrologic Group	Cover Description	CN			Area (Acres)	Product CN x Area
		Tab. 2-2	Fig. 2-3	Fig. 2-4		
Type D	Lawn	80			0.60	48.00
Type D	Impervious	98			0.13	12.74
Type D	Wooded	77			0.38	29.26
						0.00
Type C	wooded	70			0.89	62.30
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
Totals =					2.00	152.30

CN (Weighted) =  $\frac{\text{total Product}}{\text{total area}} = \frac{152.3}{2.00} = 76.15$  **Use CN = 76.00**

## **2. Runoff**

Storm Number	1	2	3	4	5
Frequency.....yr	WQv	1	2	10	50
Rainfall, P (24-hour).....in	1.0	2.7	3.3	5.2	6.5
Runoff, Q.....in	0.04	0.82	1.22	2.70	3.82

# **Time of Concentration (Tc) / Time of Travel (Tt)** **Worksheet**

Project: LOT 19 343 KINGSBERRY DR By: TJB Date: Aug-23  
 Location: ANNAPOLIS Chk'd: \_\_\_\_\_ Date: \_\_\_\_\_  
 County: ANNE ARUNDEL

Development Type: Present Drainage Area ID: DA A  
 Circle One: Tc or Tt through subarea \_\_\_\_\_

## **Sheet Flow**

Segment	A-B		
Surface Description	GRASS		
Mannings Coefficient	0.41		
Flow Length	75		
two-yr 24-hr rainfall	3.3	3.3	3.3
land slope	0.01	0.095	0
time of travel	0.34	0.00	0.00

= 0.339 hr

## **Shallow Concentrated Flow**

Segment	B-C	C-D	E-F
Surface Description	Grass	WOODS	
Flow Length	50	170	
Watercourse Slope	0.12	0.37	
Average Velocity	7.04	12.37	
Time of Travel	0.002	0.004	

6.6 0.006 hr

## **Channel Flow**

Segment			
Channel Type			
Cross Sectional Area			
Wetted Perimter			
Hydraulic Radius	0.00	0.00	0.00
Channel Slope			
Manning's Roughness Coeff			
Velocity (fps)	3.50	3.50	3.50
Flow Length			
Time of Travel	0.00	0.00	0.00

= 0.00 hr

Total = 0.35 hr

# **Graphical Peak Discharge Worksheet**

Project: LOT 19 343 KINGSBERRY DR  
 Location: ANNAPOLIS  
 County: ANNE ARUNDEL

By: TJB  
 Chk'd: \_\_\_\_\_

Date: Aug-23  
 Date: \_\_\_\_\_

Development Present Drainage Area ID: DA A

## Data

Drainage Area.....Am	0.0031	mi <sup>2</sup>	(acres/640)
Runoff Curve Number.....CN	76		
Time of Concentration.....Tc	0.00	hr	
Time of Concentration.....Tc	0.35	hr	
Rainfall Distribution Type.....	II	(I, IA, II, or III)	<input type="text"/>
Pond and Swamp Areas.....Fp	0.00	percent of Am	

Storm Number	1	2	3	4	5	6
Frequency.....yr	WQv	1	2	10	50	100
Rainfall, P (24-hour).....in	1.0	2.7	3.3	5.2	6.5	7.4
Initial Abstraction, Ia.....in	0.632	0.632	0.632	0.632	0.632	0.632
Compute, Ia/P.....	0.63	0.23	0.19	0.12	0.10	0.09
Unit Peak Discharge, qu.....csm/in	275	568	587	624	635	635
Runoff, Q.....in	0.04	0.82	1.22	2.70	3.82	4.62
Pond and Swamp Adjustment Factor, Fp	1.00	1.00	1.00	1.00	1.00	1.00

Peak Discharge, qp.....cfs	0.03	1.45	2.24	5.27	7.57	9.15
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## **PROPOSED CONDITION**

## TR-55 General Input

Answer the following questions for the project. (fill in the blue blanks on each sheet)

1. Enter project designer's initials. TJB

2. Enter the month and year. Aug-23

3. What is the projects name? Lot 19 343 Kingsberry Road

4. What city/town and state is the project located? Annapolis

5. What county is the site located in? ANNE ARUNDEL

6. What type of project? (public or private) PRIVATE

7. What type of development?, choose one of the following: Developed

- a. Present
- b. Developed

8. Drainage Area Identification? DA A Developed

9. What is the drainage area's total area in acres? 2.00

10. Percentage of area that is a pond or swamp? 0.00 %

11. Fill in the design storm data below.

Storm Number	1	2	3	4	5	6
Frequency (yr)	WQv	1	2	10	50	100
24-hour Rainfall, P (in)	1.0	2.7	3.3	5.2	6.5	7.4

12. What is the Rainfall Distribution according to Figure B-2 of the TR-55 manual?: II

- a. I (Parts of California and Alaska)
- b. IA (Northwest part of California and the western portions of Oregon and Washington)
- c. II (most of the U.S.)
- d. III ( Parts of the US near the Gulf and most of the Coastal Areas along the Eastern U.S except Maryland and Delaware)

## Runoff Curve Number and Runoff Worksheet

Project: Lot 19 343 Kingsberry Road  
 Location: Annapolis  
 County: ANNE ARUNDEL

By: TJB Date: Aug-23  
 Chk'd: \_\_\_\_\_ Date: \_\_\_\_\_

Development Type: Developed Drainage Area ID: DA A

### 1. Runoff Curve Number

Soil Name and Hydrologic Group	Cover Description	CN			Area (Acres)	Product CN x Area
		Tab. 2-2	Fig. 2-3	Fig. 2-4		
Type D	Lawn	80			0.58	46.40
Type D	Impervious	98			0.15	14.70
Type D	Woods	77			0.38	29.26
						0.00
Type C	Woods	70			0.89	62.30
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
Totals =					2.00	152.66

CN (Weighted) =  $\frac{\text{total Product}}{\text{total area}} = \frac{152.66}{2.00} = 76.33$  Use CN = **76.00**

### 2. Runoff

Storm Number	1	2	3	4	5
Frequency.....yr	WQv	1	2	10	50
Rainfall, P (24-hour).....in	1.0	2.7	3.3	5.2	6.5
Runoff, Q.....in	0.04	0.82	1.22	2.70	3.82

# **Time of Concentration (Tc) / Time of Travel (Tt) Worksheet**

Project: LOT 19 343 KINGSBERRY DR By: TJB Date: Aug-23  
 Location: ANNAPOLIS Chk'd: \_\_\_\_\_ Date: \_\_\_\_\_  
 County: ANNE ARUNDEL

Development Type: Developed Drainage Area ID: DA A  
 Circle One: Tc or Tt through subarea \_\_\_\_\_

## **Sheet Flow**

Segment	A-B		
Surface Description	GRASS		
Mannings Coefficient	0.41		
Flow Length	75		
two-yr 24-hr rainfall	3.3	3.3	3.3
land slope	0.01	0.095	0
time of travel	0.34	0.00	0.00

= 0.339 hr

## **Shallow Concentrated Flow**

Segment	B-C	C-D	E-F
Surface Description	Grass	WOODS	
Flow Length	50	170	
Watercourse Slope	0.12	0.37	
Average Velocity	7.04	12.37	
Time of Travel	0.002	0.004	

6.6 0.006 hr

## **Channel Flow**

Segment			
Channel Type			
Cross Sectional Area			
Wetted Perimter			
Hydraulic Radius	0.00	0.00	0.00
Channel Slope			
Manning's Roughness Coeff			
Velocity (fps)	3.50	3.50	3.50
Flow Length			
Time of Travel	0.00	0.00	0.00

= 0.00 hr

Total = 0.35 hr

### Graphical Peak Discharge Worksheet

Project: LOT 19 343 KINGSBERRY DR  
 Location: ANNAPOLIS  
 County: ANNE ARUNDEL

By: TJB Date: Aug-23  
 Chk'd: \_\_\_\_\_ Date: \_\_\_\_\_

Development Developed Drainage Area ID: DA A

**Data**

Drainage Area.....Am	0.0031	mi <sup>2</sup>	(acres/640)
Runoff Curve Number.....CN	76		
Time of Concentration.....Tc	0.00	hr	
Time of Concentration.....Tc	0.35	hr	
Rainfall Distribution Type.....	II	(I, IA, II, or III)	<input type="text"/>
Pond and Swamp Areas.....Fp	0.00	percent of Am	

Storm Number	1	2	3	4	5	6
Frequency.....yr	WQv	1	2	10	50	100
Rainfall, P (24-hour).....in	1.0	2.7	3.3	5.2	6.5	7.4
Initial Abstraction, Ia.....in	0.632	0.632	0.632	0.632	0.632	0.632
Compute, Ia/P.....	0.63	0.23	0.19	0.12	0.10	0.09
Unit Peak Discharge, qu.....csm/in	275	568	587	624	635	635
Runoff, Q.....in	0.04	0.82	1.22	2.70	3.82	4.62
Pond and Swamp Adjustment Factor, Fp	1.00	1.00	1.00	1.00	1.00	1.00

Peak Discharge, qp.....cfs	0.03	1.45	2.24	5.27	7.57	9.15
----------------------------	------	------	------	------	------	------

## **REDUCED RCN CONDITION**



# REDUCE RUNOFF CURVE NUMBER

Drainage Area: = 0.44 ac.

TREATED  
Area,  $A_t$  (ft<sup>2</sup>) = 19,257 sq. ft.

TREATED  
Area,  $A_t$  (ac) = 0.44 ac.

Determine the reduced runoff curve number per section 7.2.3 of the County SWM Procedures and Practices Manual based on the storage in the other SWM practices provided.

Enter the total volume of storage (cu. ft.) provided in the SWM practices,  $V_{\text{stored}}$ :

870 cu. ft.

Compute the runoff depth stored in the SWM practices,  $Q_{\text{stored}}$ :

$$Q_{\text{stored}} = \frac{V_{\text{stored}} \times 12}{A_t} = \frac{870 \times 12}{19,257 \text{ sq. ft.}} = 0.54 \text{ in.}$$

Compute the post development runoff depth for the 10-year 24 hour design storm  $Q_{\text{dev}}$ :

$$Q_{\text{dev}} = \frac{[P_{10} - (0.2 \times S)]^2}{[P_{10} + (0.8 \times S)]} \quad \text{Where: } P_{10} = 10\text{-year Rainfall (in.)}$$

$$S = \frac{1,000}{\text{RCNp}} - 10 = \frac{1,000}{77} - 10 = 3.0$$

Enter 10-Year rainfall amount:  $P_{10}$ : 5.20 in.

Enter the post-development RCN before other SWM practices are applied, RCNp: 77

$$Q_{\text{dev}} = \frac{(P_{10} - 0.2 S)^2}{(P_{10} + 0.8 S)} = \frac{[5.2 \text{ in.} - (0.2 \times 2.99)]^2}{[5.2 \text{ in.} + (0.8 \times 2.99)]} = \frac{21.18}{7.592} = 2.79 \text{ in.}$$

Determine the total runoff not being stored,  $Q$ :  $Q = Q_{\text{dev}} - Q_{\text{stored}} = 2.79 \text{ in.} - 0.54 \text{ in.} = 2.25 \text{ in.}$

Compute Reduce RCN:

$$CN_{10} = \frac{200}{[(P_{10} + 2Q + 2) - \text{SQRT}[(5P_{10}Q + 4Q^2)]]}$$

$$CN_{10} = \frac{200}{[(5.2 \text{ in.} + 2 \times 2.25 \text{ in.} + 2) - \text{SQRT}[(5 \times 5.2 \text{ in.} \times 2.25 \text{ in.} + 4 \times 2.25^2)]]}$$

$$CN_{10} = \frac{200}{[(11.7) - (8.87)]} = \frac{200}{2.83} = 70.7$$

CN Reduced: (71)

Use a RCN of 71 for the site area (0.44 ac.).

# Graphical Peak Discharge Worksheet

Project: LOT 19 343 KINGSBERRY DR  
 Location: ANNAPOLIS  
 County: ANNE ARUNDEL

By: TJB  
 Chk'd:

Date: Aug-23  
 Date:

Development Reduced CN Drainage Area ID: DA A

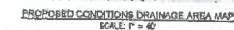
## Data

Drainage Area.....Am	0.0031	mi <sup>2</sup>	(acres/640)
Runoff Curve Number.....CN	71		
Time of Concentration.....Tc	0.00	hr	
Time of Concentration.....Tc	0.34	hr	
Rainfall Distribution Type.....	II	(I, IA, II, or III)	<input type="text"/>
Pond and Swamp Areas.....Fp	0.00	percent of Am	

Storm Number	1	2	3	4	5	6
Frequency.....yr	WQv	1	2	10	50	100
Rainfall, P (24-hour).....in	1.0	2.7	3.3	5.2	6.5	7.4
Initial Abstraction, Ia.....in	0.817	0.817	0.817	0.817	0.817	0.817
Compute, Ia/P.....	0.82	0.30	0.25	0.16	0.13	0.11
Unit Peak Discharge, qu.....csm/in	275	535	563	608	624	624
Runoff, Q.....in	0.01	0.59	0.94	2.27	3.31	4.06
Pond and Swamp Adjustment Factor, Fp	1.00	1.00	1.00	1.00	1.00	1.00

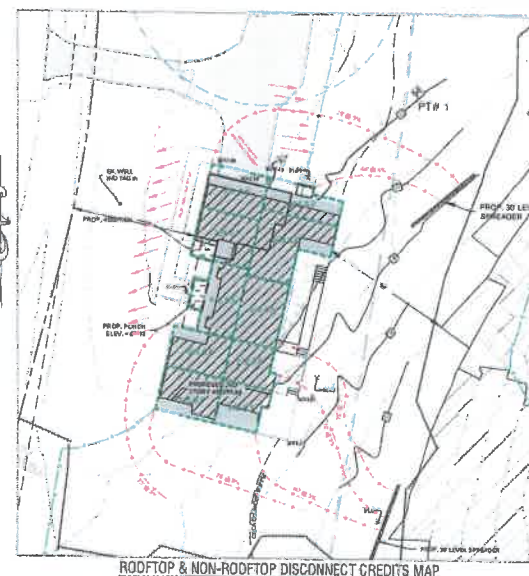
Peak Discharge, qp.....cfs	0.01	0.99	1.65	4.31	6.45	7.92
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**APPENDIX E  
DRAINAGE AREA MAPS**



SOIL TYPES:  
 L&B - MATTAPEX - BUTLER TOWN COMPLEX, 3 TO 5 PERCENT SLOPES.  
 M&C - MATTAPEX - BUTLER TOWN COMPLEX, 5 TO 10 PERCENT SLOPES.  
 S&E - SASSAFRAS AND CROOKED SOILS, 15 TO 25 PERCENT SLOPES.

DESIGN	TYPE	# CARS	LENGTH (FT)	SLOPE (%)
A-B	WHEAT FLOW	341	73	1.00
B-C	SHALLOW FLOW, GRAVELLED - 7.5% SLOPE		60	2.50
C-D	SHALLOW FLOW, WOODS - 12.0% SLOPE		170	3.00



CONC	Type	n	Length (ft)	Stress
A-B	SHEET PILING	0.43	25	14
B-C	SMALLER CO. HORIZONTAL PILEWALL - 7.54 Fps		50	42
C-D	SMALLER CO. HORIZONTAL PILEWALL - 12.57 Fps		100	



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PLANNERS AND SURVEYORS

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ANNAPOLIS, MARYLAND 21401  
(410) 288-3212 • FAX (410) 266-3502  
email: [eb@messickandassociates.com](mailto:eb@messickandassociates.com)

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These persons can be a big help in the  
investigation. They are usually very helpful and  
for a fee they will provide information. They are  
of the type of person who is  
(1) a very good person.  
(2) a very good person.

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JACKSONVILLE, MD 21406  
(T) 410-410-3212  
(F) 410-410-3212

**KATZ PROPERTY**  
ST MARGARET'S FARM SUBDIVISION  
SINGLE FAMILY DWELLING GRADING PLAN  
LOT 1B, 343 KINGSBERRY DRIVE  
ANNAPOLIS, MD 21403

TAX MAP 45-0100 3-PA-RDLS 384  
INDO-ASSESSMENT DISTRICT  
 SCALE AS SHOWN

DO NOT WRITE IN THESE SPACES





## OFFICE OF PLANNING AND ZONING

### CONFIRMATION OF PRE-FILE (2024-0037-P)

DATE OF MEETING: 4/25/2024

P&Z STAFF: Sara Anzelmo, Kelly Krinetz, Habtamu Zeleke

APPLICANT/REPRESENTATIVE: David Katz/Tim Brenza EMAIL: dkatz@katzday.com, engr@messickandassociates.com

SITE LOCATION: 343 Kingsberry Drive, Annapolis LOT SIZE: 2 acres ZONING: RLD/OS

CA DESIGNATION: LDA/RCA BMA: N/A or BUFFER: Yes APPLICATION TYPE: Variance

The applicant's original variance application (submitted 7/7/23) proposed the demolition of the existing structure and reconstructing a significantly larger house on the property. In an effort to minimize their variance request, they are adding a partial second story addition and renovating the existing structure instead of demolishing and reconstructing a new one. The existing dwelling has been left vacant for nearly 27 years and is uninhabitable, having been cited for its unsafety by the County on multiple occasions prior to the applicant's ownership.

Specifically, the applicant is requesting the following variances:

1. A variance of 5 feet to the 50' front yard setback in the RLD zone (Article 18-4-401(a)(1)).
2. A variance to reconstruct/renovate a principal structure within 50' of the crest of "steep slopes" (Article 18-4-401(b)).
3. A variance to allow disturbance within the 100' Chesapeake Bay Critical Area Expanded Buffer (Article 18-13-104(b)(1)).

Based on the ongoing, more than 27-year deterioration of the existing residence, a renovation of the existing dwelling is required. The condition of the existing home is viewed as a blight on the community and attracted unsafe conditions. More importantly, the proposed reconstructed structure is consistent with the character of the community and the variances being requested are the minimum necessary to afford relief.

#### COMMENTS

The **Critical Area Team** has no objection to the proposed second story addition. However, the applicant will need to demonstrate compliance with the variance approval criteria for the proposed deck.

The **Engineering Division** reviewed the development proposal for stormwater management and utility issues and provided a list of items that need to be addressed. The list is attached as Page 2 of these pre-file comments.

The **Zoning Administration Section** notes that the variance site plan must label the dimensions, height, and number of stories of the proposed structures. While the second story over the existing dwelling is reasonable, the applicant must demonstrate that the long deck meets all of the Critical Area variance standards and that the request is the minimum necessary to afford relief.

#### INFORMATION FOR THE APPLICANT

Section 18-16-201 (b) Pre-filing meeting required. Before filing an application for a variance, special exception, or to change a zoning district, to change or remove a critical area classification, or for a variance in the critical area or bog protection area, an applicant shall meet with the Office of Planning and Zoning to review a pre-file concept plan or an administrative site plan. For single lot properties, the owner shall prepare a simple site plan as a basis for determining what can be done under the provisions of this Code to avoid the need for a variance.

\*\*\* A preliminary plan checklist is required for development impacting environmentally sensitive areas and for all new single-family dwellings. A stormwater management plan that satisfies the requirements of the County Procedures Manual is required for development impacting environmentally sensitive areas OR disturbing 5,000 square feet or more. State mandates require a developer of land provide SWM to control new development runoff from the start of the development process.

Section 18-16-301 (c ) Burden of Proof. The applicant has the burden of proof, including the burden of going forward with the production of evidence and the burden of persuasion, on all questions of fact. The burden of persuasion is by a preponderance of the evidence.

A variance to the requirements of the County's Critical Area Program may only be granted if the Administrative Hearing Officer makes affirmative findings that the applicant has addressed all the requirements outlined in Article 18-16-305. Comments made on this form are intended to provide guidance and are not intended to represent support or approval of the variance request.

2024-0037-P

Menu

Cancel

Help

Task

I and P Engineering

Assigned to Department

Engineering

Action by Department

Engineering

Start Time

Billable

No

Due Date

04/18/2024

Assigned to

Hablamu Zeleke

Action By

Hablamu Zeleke

End Time

Overtime

No

Assigned Date

04/12/2024

Status

Complete w/ Comments

Status Date

04/19/2024

Hours Spent

0.0

Comments

Variance s requests:  
1. A variance of 10 feet to the 50 feet front yard setback in the RLD zone 18-4-401(a) (1).  
2. A variance to allow construction of a principal structure within 50' of the crest of "steep slopes" (8-4-401(b)  
3. A variance to allow disturbance within the 100-foot Chesapeake Bay Critical Area Expanded Buffer 18-13-104(b)(1).  
Comments:  
1. This reviewer is unclear what type of SWM practice (s) are proposed. Per 8.1.4 (G) of the County Stormwater Practices and Procedures manual, SWM facilities shall not be located in areas that are off-limits to development, e.g., natural resources including steep slopes and buffers.  
2. Please review existing vegetation (or lack thereof) within the steep slopes; opportunities to supplement vegetation or replanting buffers with native vegetation should be reviewed and provided to enhance water quality.  
3. Show and label clearly the proposed SWM practice (s) on the site plan.  
4. A soil boring is required per practice. The suitability, and siting of proposed SWM practices should be reviewed. Soil boring information including verification of the suitability of in-situ soils for infiltration shall be submitted.  
5. The site includes a County or FEMA floodplain (Mill Creek). Submit the Plat that shows the floodplain dedications. If the floodplain is not currently dedicated, it will need to be dedicated before approval of the grading permit.  
6. Based on the plan provided, it appears that the property will be served by a private septic and well.  
7. The stormwater management, utility/Engineering design review approval for the site shall occur at the grading permit stage.  
8. The above is provided as courtesy review comments at the pre-file stage to review and consider the design plan, additional reviews and detailed reviews are at the grading permit stage.  
In Possession Time (hrs)  
Comment Display in ACA  
☐ All ACA Users  
☒ Record Creator  
☐ Licensed Professional  
☐ Contact  
☐ Owner  
Workflow Calendar

Time Tracking Start Date

Est. Completion Date

Display E-mail Address in ACA

No

☐ Display Comment in ACA

Estimated Hours

0.0

Action

Updated

Task Specific Information

Expiration Date

Reviewer Phone Number

Review Notes

Reviewer Email

Reviewer Name





**SPEIGHT**  
studio architects, inc.  
202 Leggett Avenue  
Suite 3  
Annapolis, MD 21403

**The Katz  
Residence**  
343 Kingsberry Drive  
Annapolis, Maryland 21409

date 03.21.24  
scale 1/4"=1'-0"  
project no. 224-100  
revisions

Proposed  
Elevations

A4  
of 6

DRAFT  
Not intended for the issuance  
of permits or construction

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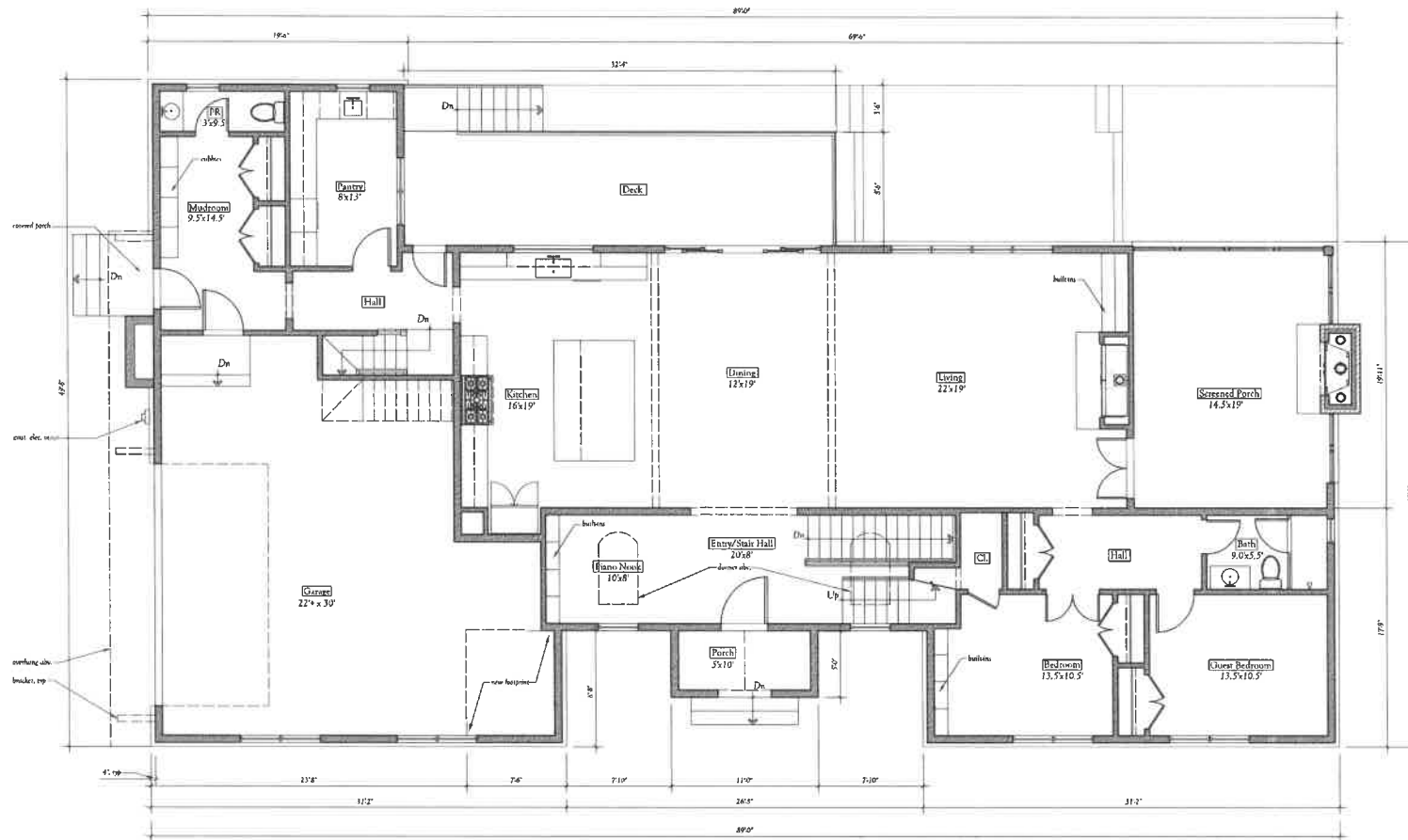
NOT FOR CONSTRUCTION



PROPOSED  
WEST ELEVATION



PROPOSED  
EAST ELEVATION



PROPOSED  
FIRST FLOOR PLAN  
*Note: Footings, foundation, and first floor structure are existing to remain, unless otherwise noted.*

**SPEIGHT**  
Studio Architects, Inc.  
100 Leggett Avenue  
Suite 1  
Annapolis, MD 21401

**The Kutz Residence**  
343 Kensington Green  
Annapolis, Maryland 21409

date: 03.25.24  
scale: 1/4" = 1'-0"  
project no.: 224.100  
revisions:

Proposed  
First Floor Plan

A2  
of 6

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NOT FOR CONSTRUCTION



**The Katz  
Residence**  
343 Kingsberry Drive  
Annapolis, Maryland 21409

date	03.25.24
scale	1/4"=1'-0"
project no.	224.100
revisions	

Proposed  
Second Floor  
Plan

A3  
of 6

DRAFT

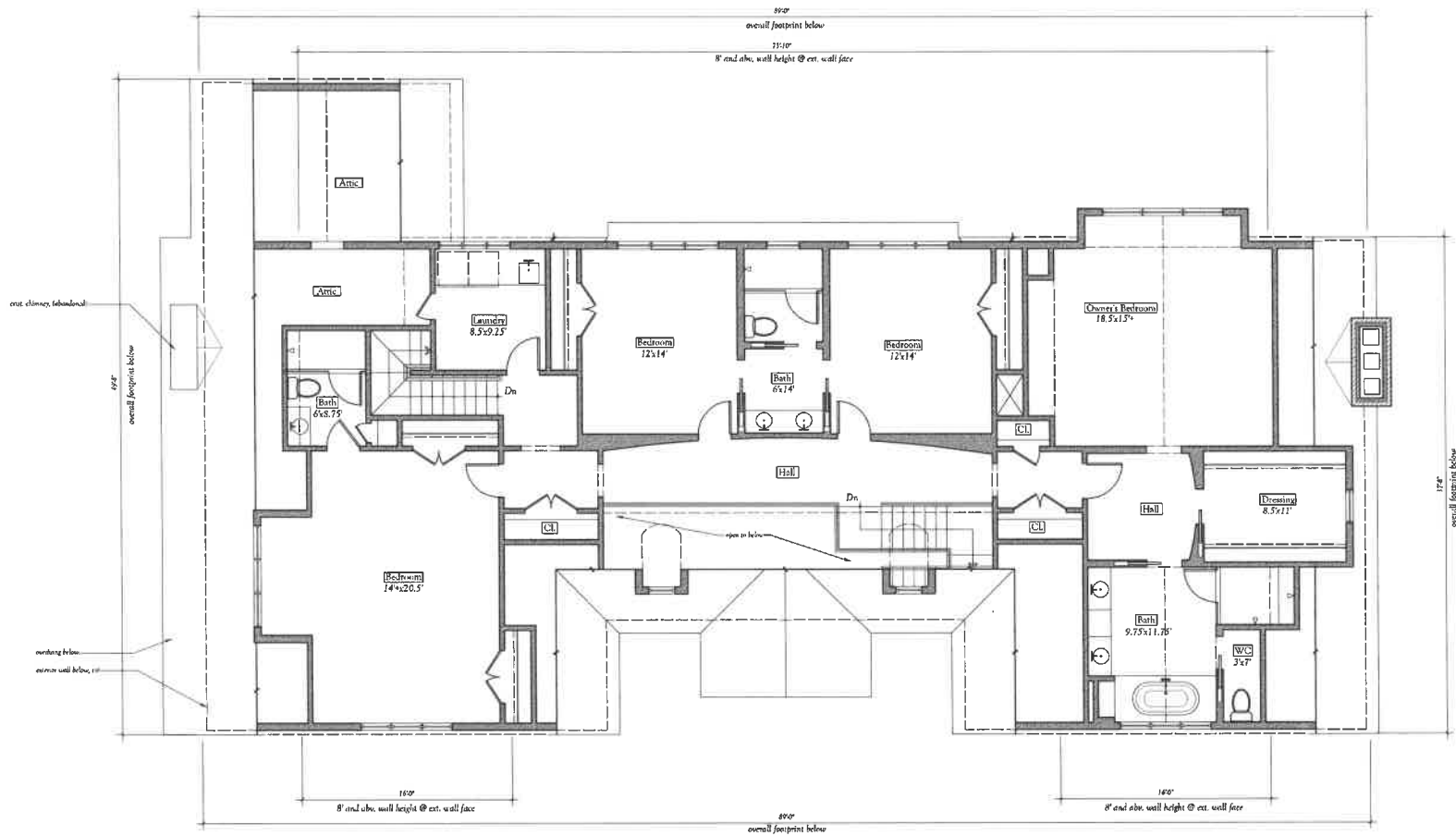
is intended for the insurer  
payable or assignee.

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## PROPOSED SECOND FLOOR PLAN





**SPEIGHT**  
architects, inc.

202 Legree Avenue  
Suite 3  
Annapolis, MD 21401

**The Katz  
Residence**

343 Kingsberry Drive  
Annapolis, Maryland 21409

date 04.05.14  
scale 1/4"=1'-0"  
project no. 224-300  
revisions

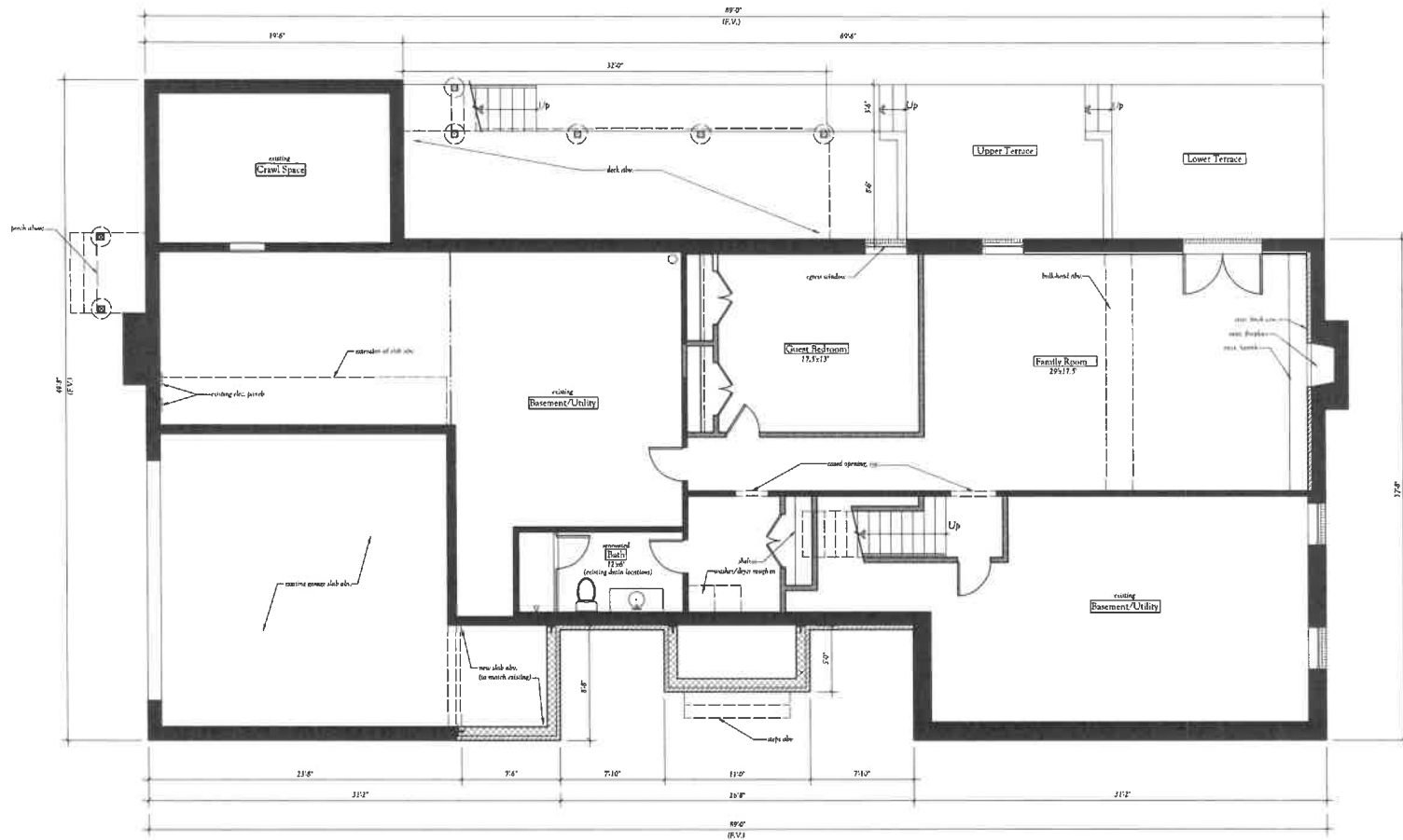
Proposed  
Basement/  
Foundation Plan

**A1**  
of 6

**DRAFT**

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of permits or construction

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## PROPOSED BASEMENT/FOUNDATION PLAN

### NOTES

1. All dimensions are to face of finish, unless noted otherwise.
2. All interior walls with pocket doors shall be framed as 2x6 unless noted otherwise.
3. All interior walls with core openings shall be framed as 2x6 unless noted otherwise.
4. All exterior steps to grade shall be field verified with final grade.
5. See structural drawings for additional notes, materials, and details.
6. Windows and doors at basement level to be new units in existing masonry openings. Field verify all rough openings prior to installing units.



NOT FOR CONSTRUCTION

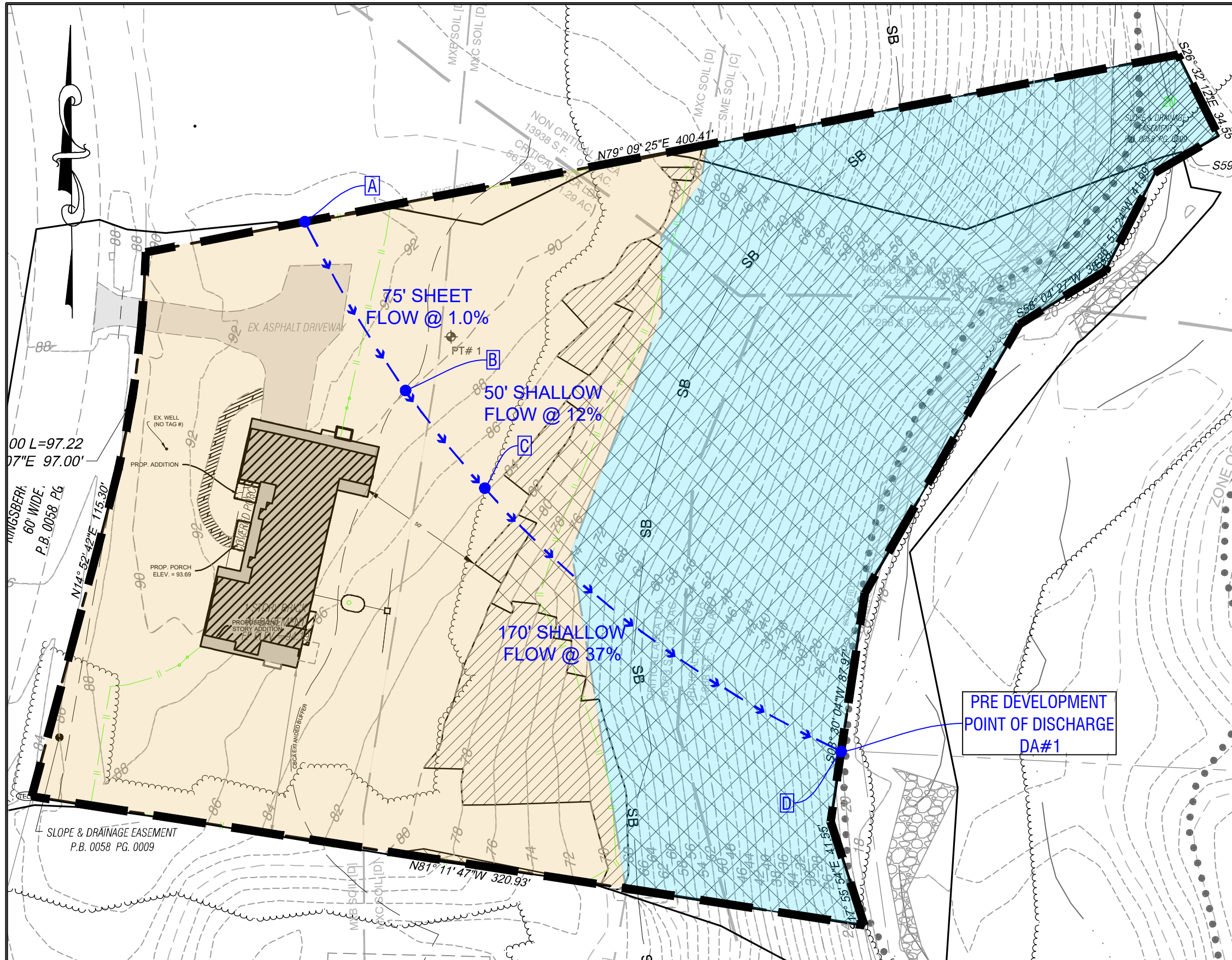




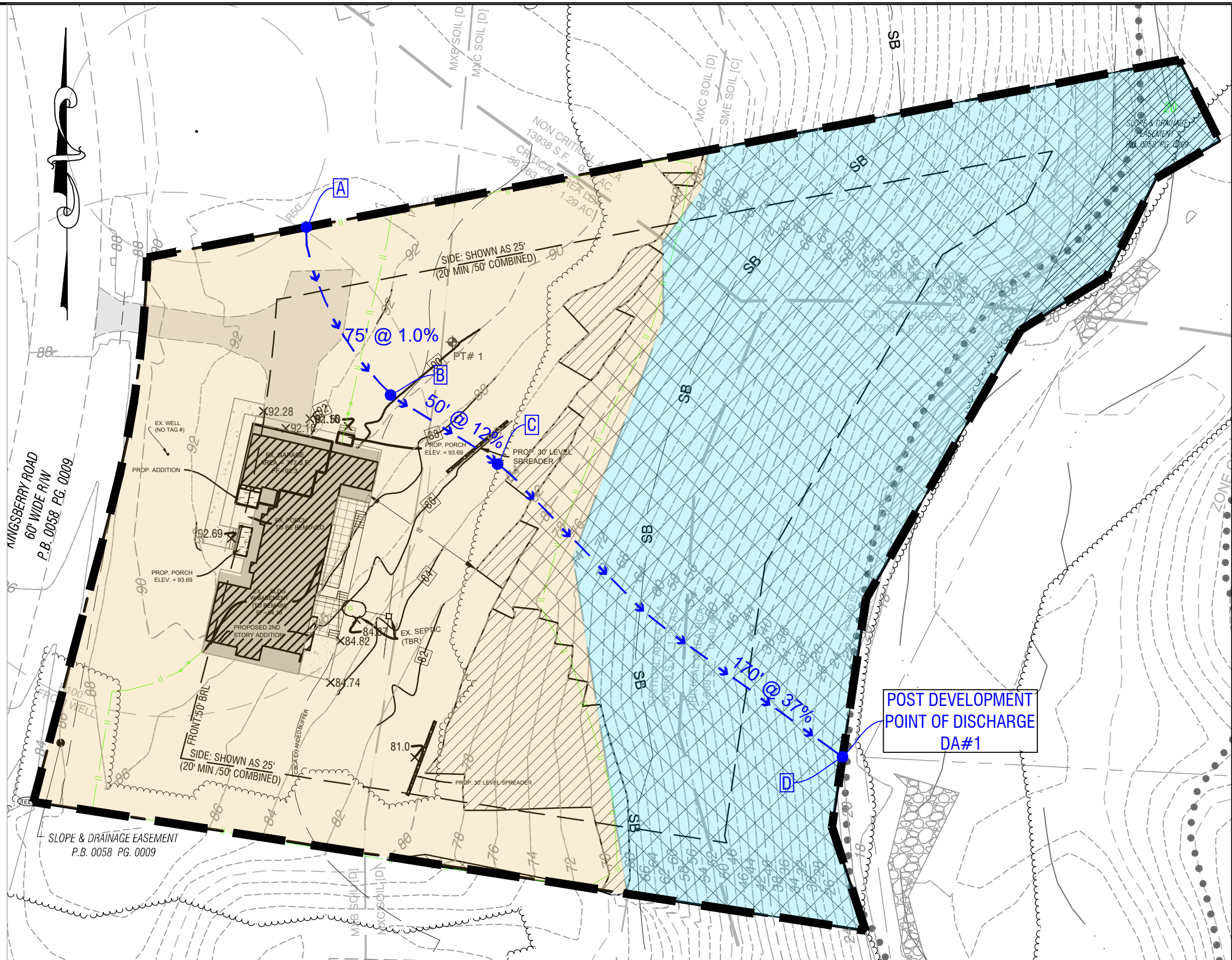








EXISTING CONDITIONS DRAINAGE AREA MAP  
SCALE: 1" = 40'

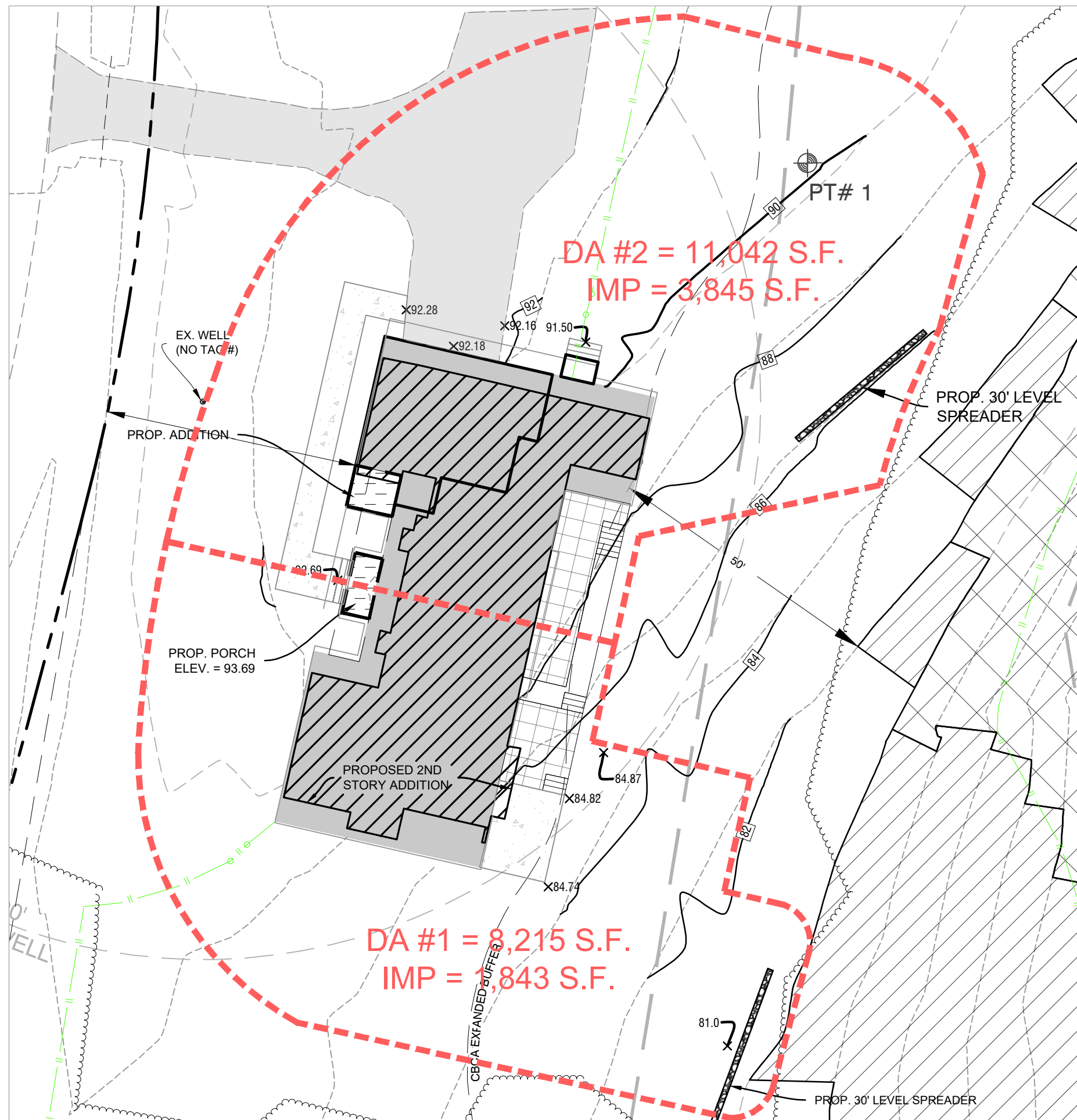


PROPOSED CONDITIONS DRAINAGE AREA MAP  
SCALE: 1" = 40'

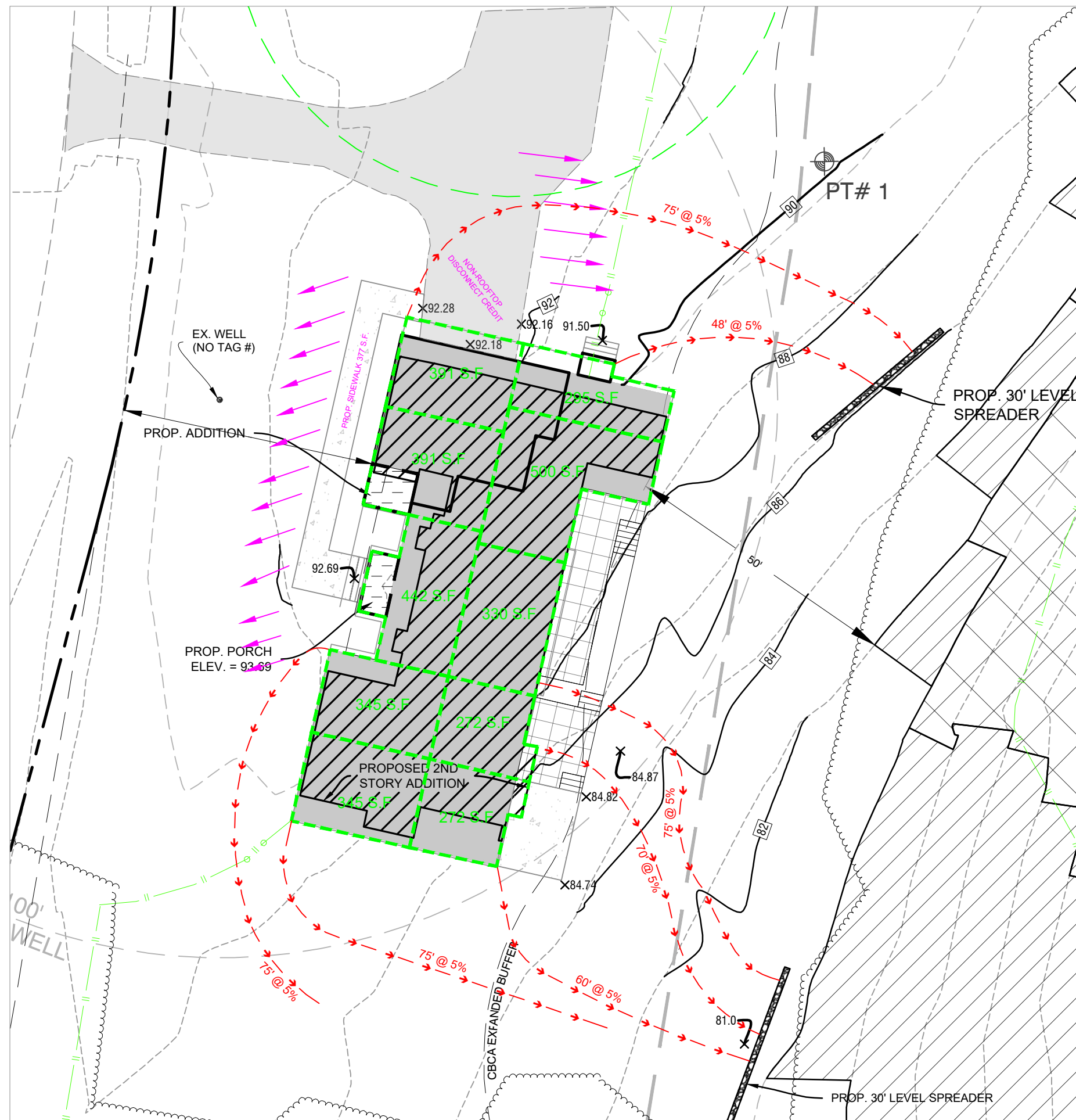
DRAINAGE AREA: DA 1				
EXISTING CONDITIONS DRAINAGE AREA Tc				
TOTAL AREA		2.00 AC		
RUNOFF CURVE NUMBER		76		
TIME OF CONCENTRATION		0.35 HRS.		
10-YEAR PEAK DISCHARGE		5.27 CFS		

SEGMENT	TYPE	n Coeff	LENGTH (FT)	SLOPE (%)
A-B	SHEET FLOW	0.41	75	1.00
B-C	SHALLOW FLOW, UNPAVED V= 7.04-FPS		50	12%
C-D	SHALLOW FLOW, WOODS V= 12.37-FPS		170	37%

ID	HSG	DESCRIPTION
MxB	D	MATTAPEX-BUTLERTOWN COMPLEX, 2% TO 5% SLOPE
MxC	D	MATTAPEX-BUTLERTOWN COMPLEX, 5% TO 10% SLOPE
SME	C	SASSAFRAS AND CROOM SOILS, 15% TO 25% SLOPES,



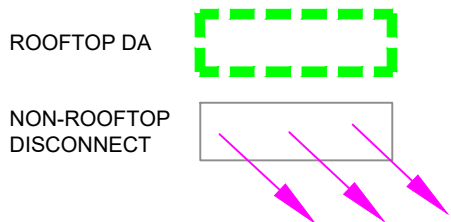
SHEET FLOW TO BUFFER  
SCALE: 1" = 20'



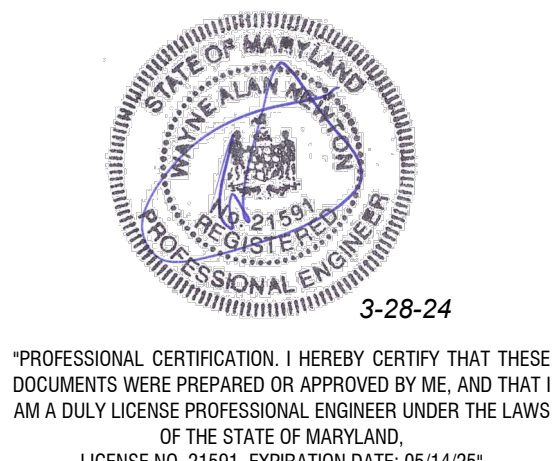
ROOFTOP & NON-ROOFTOP DISCONNECT CREDITS MAP  
SCALE: 1" = 20'

DRAINAGE AREA: DA 1				
PROPOSED CONDITIONS DRAINAGE AREA Tc				
TOTAL AREA		2.0 AC		
RUNOFF CURVE NUMBER		76		
TIME OF CONCENTRATION		0.35 HRS.		
10-YEAR PEAK DISCHARGE		5.27 CFS		

SEGMENT	TYPE	n Coeff	LENGTH (FT)	SLOPE (%)
A-B	SHEET FLOW	0.41	75	1.00
B-C	SHALLOW CONCENTRATED FLOW V=7.04 FPS		50	12%
C-D	SHALLOW CONCENTRATED FLOW V=12.37 FPS		170	37%



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(E): C/O ENGR@MESSICKANDASSOCIATES.COM

**EXISTING & PROPOSED DRAINAGE AREA MAPS**

**KATZ PROPERTY**  
ST MARGARET'S FARM SUBDIVISION  
SINGLE FAMILY DWELLING GRADING PLAN  
LOT 19, 343 KINGSBERRY DRIVE  
ANNAPOLIS, MD 21409

TAX MAP: 46 GRID: 3 PARCELS: 384  
THIRD ASSESSMENT DISTRICT  
SCALE: AS SHOWN

TAX ACCOUNT: 03-737-07969691  
ANNE ARUNDEL COUNTY, MARYLAND 21409  
DATE: MARCH 2024

ZONING: RLD/OS  
SHEET: 3 OF 6





REVISION	DESCRIPTION	BY	DATE

MESSICK & ASSOCIATES<sup>\*</sup>

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LICENSE NO. 21591, EXPIRATION DATE: 09/14/25

STATE OF MARYLAND  
ANNAPOLIS  
JUL 21 2024  
PROFESSIONAL ENGINEER

3-28-24

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DEMOLITION PLAN

KATZ PROPERTY

ST MARGARET'S FARM SUBDIVISION

SINGLE FAMILY DWELLING GRADING PLAN

LOT 19, 343 KINGSBERRY DRIVE

ANNAPOLIS, MD 21409

TAX MAP: 46 GRID: 3 PARCELS: 384

THIRD ASSESSMENT DISTRICT

SCALE: AS SHOWN

TAX ACCOUNT: 03-737-07969691

ANNE ARUNDEL COUNTY, MARYLAND 21409

DATE: MARCH 2024

ZONING: RLD/OS

SHEET: 4 OF 6

**ST MARGARETS FARM SUBDIVISION BOOK NO 58 PAGES 7 TO 9 PLAT#3082-3084**

**LOT 13**  
CHRISTINA CUTIERREZ AND KELVIN LUCAS  
330 KINGSBERRY DR  
ANNAPOLIS, MD 21409  
TA #03-737-07969685  
DEED: 346551407  
TM. 46 GR. 03 P. 384

**LOT 14**  
CREATIVE REMODELING INC.  
326 KINGSBERRY DR  
ANNAPOLIS, MD 21409  
TA #03-737-07969686  
DEED: 328471253  
TM. 46 GR. 03 P. 384

**LOT 18**  
RODNEY WILLIAMS AND JUDITH CARRITHERS  
338 KINGSBERRY DR  
ANNAPOLIS, MD 21409  
TA #03-737-07969690  
DEED: 366581451  
TM. 46 GR. 03 P. 383

**LOT 20**  
MARK AND SARAH CRAMER  
347 KINGSBERRY DR  
ANNAPOLIS, MD 21409  
TA #03-737-07969677  
DEED: 377871354  
TM. 46 GR. 03 P. 383

**LOT 26**  
LAURENCE AND JO ANN  
1649 WESTCHESTER DT  
ANNAPOLIS, MD 21409  
TA #03-737-7969663  
DEED: 3847355  
TM. 46 GR. 03 P. 382

**LOT 3**  
COLE FAMILY LTD PTNSHP  
104 OLD FARM BRIDGE  
ANNAPOLIS, MD 21409  
TA #03-000-80096845  
DEED: 310101100  
TM. 46 GR. 03 P. 13

**LOT 1R**  
CHARLES CRIBEL AND MARY COLE  
106 OLD FARM BRIDGE  
ANNAPOLIS, MD 21409  
TA #03-000-90075559  
DEED: 310101100  
TM. 46 GR. 03 P. 13

**LOT 2**  
MATTHEW AND FRANCES COLE  
105 OLD FARM BRIDGE  
ANNAPOLIS, MD 21409  
TA #03-000-90075560  
DEED: 20747156  
TM. 46 GR. 03 P. 13

**COLE PROPERTY SUBDIVISION BOOK NO 194 PAGES 9 TO 11 PLAT# 10234-10236**

**ST MARGARETS FARM SUBDIVISION BOOK NO 58 PAGES 7 TO 9 PLAT#3082-3084**

**EXISTING WELL #AA-73-6026**

**EXISTING POOL**

**EXISTING DRIVEWAY**

**EXISTING FENCE**

**EXISTING BUILDING**

**EXISTING BOUNDARY**

**EXISTING WOODLANDS**

**EXISTING PROPERTY LINE**

**EXISTING ZONING LINE**

**BUILDING RESTRICTION LINE**

**15% SLOPE**

**25% SLOPE**

**CBCA EXPANDED BUFFER**

**TO BE REMOVED (TBR)**

**PLAN SCALE: 1" = 30'**

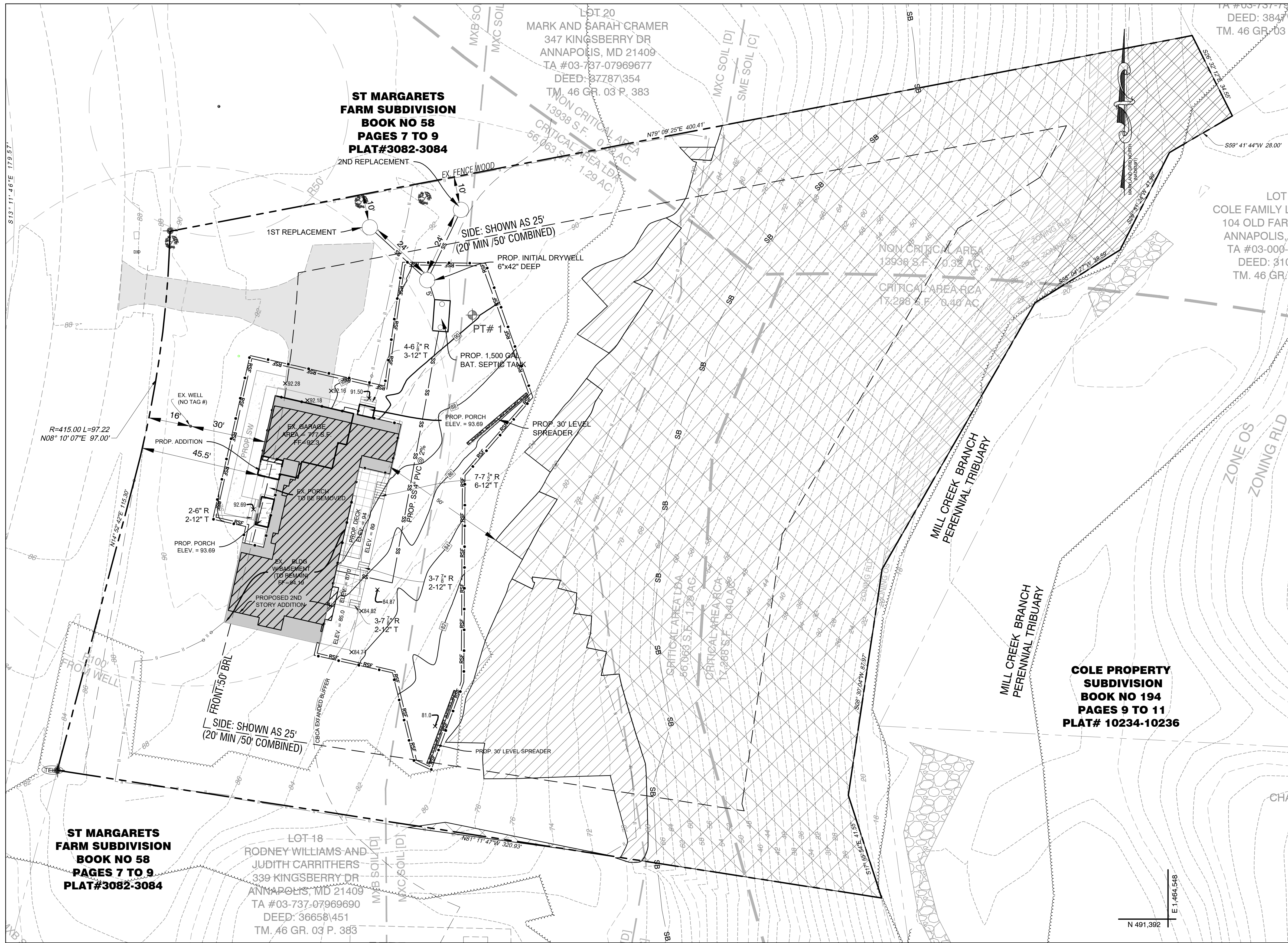
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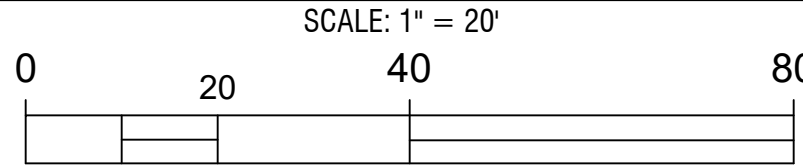
EXISTING CONTOUR	---
SOIL TYPES	DxC DxC CSE
SOILS LINE	---
EXISTING DRIVEWAY	---
EXISTING FENCE	---
EXISTING BUILDING	---
EXISTING BOUNDARY	---
EXISTING WOODLANDS	---
EXISTING PROPERTY LINE	---
EXISTING ZONING LINE	---
BUILDING RESTRICTION LINE	---
15% SLOPE	---
25% SLOPE	---
CBCA EXPANDED BUFFER	---
TO BE REMOVED (TBR)	---





SITE AREA TABLE		
CRITICAL AREA	AREA S.F.	AREA AC.
CBCA LDA	56,063	1.29
CBCA RCA	17,288	0.40
EX. COVERAGE (TOTAL)	5,864	0.13
- HOUSE	3,315	0.08
- DRIVE WAY & SIDEWALK	2,549	0.06
PROPOSED COVERAGE (TOTAL)	6,611	0.15
-HOUSE	3,378	0.08
-DRIVEWAY	2,024	0.05
-PATIO & SIDEWALK	1,209	0.03
TOTAL COVERAGE AREA WITHIN EXPANDED BUFFER	185	0.00

EXISTING CONDITIONS DRAINAGE AREA MAP



HYDROLOGIC SOIL GROUP						
	A	B	B/D	C	D	TOTAL
AREA (AC.)	0.00	0.00	0.00	0.89	1.11	2.00

ID		HSG	SOILS TABLE DESCRIPTION
MxB	D	D	MATTAPEX-BUTLERTOWN COMPLEX, 2% TO 5% SLOPE
MxC	D	D	MATTAPEX-BUTLERTOWN COMPLEX, 5% TO 10% SLOPE
SME	C	C	SASSAFRAS AND CROOM SOILS, 15% TO 25% SLOPES,



REVISION	DESCRIPTION	BY	DATE

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LICENSE NO. 21591, EXPIRATION DATE: 09/14/25\*

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GRADING, EROSION & SEDIMENT CONTROL PLAN

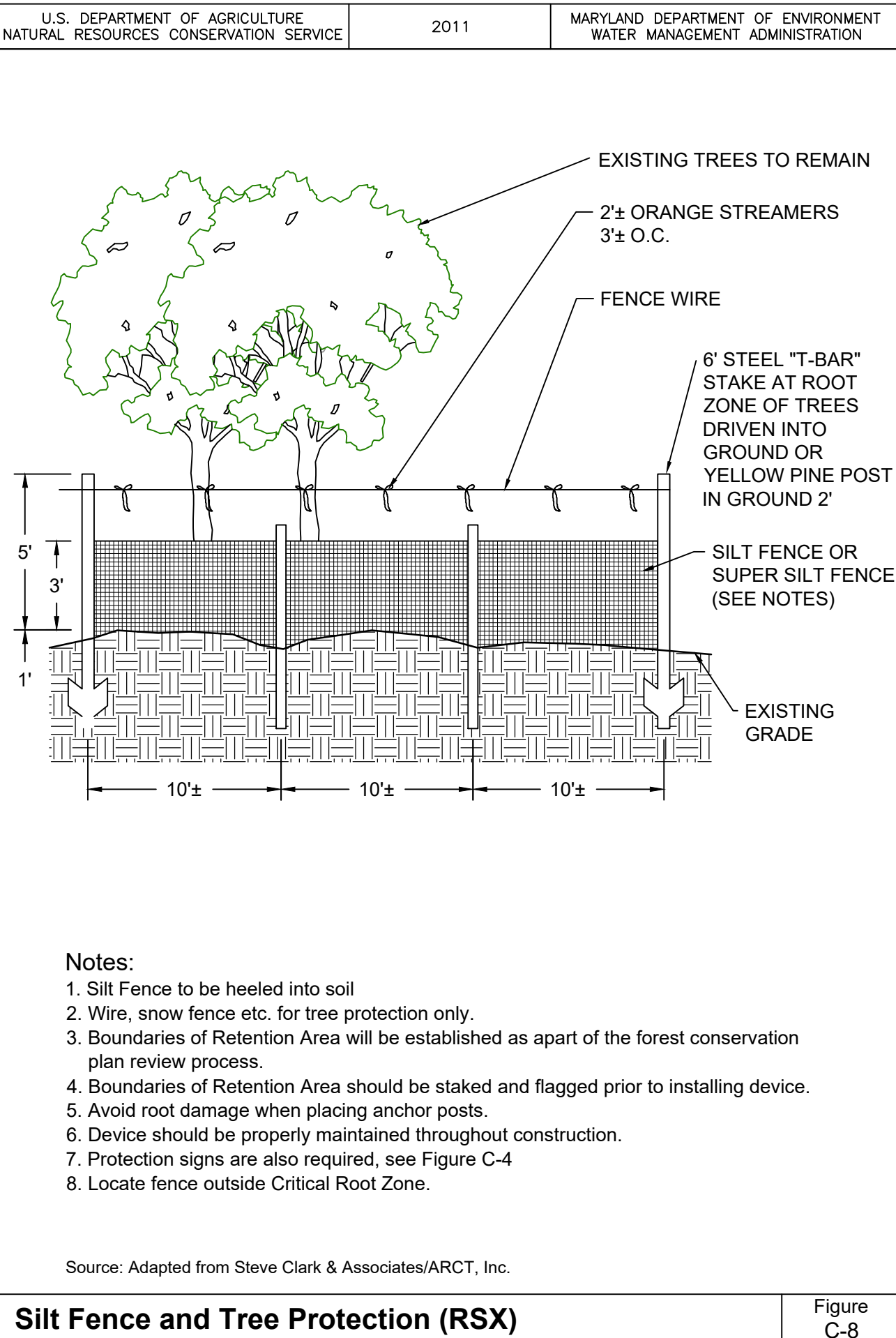
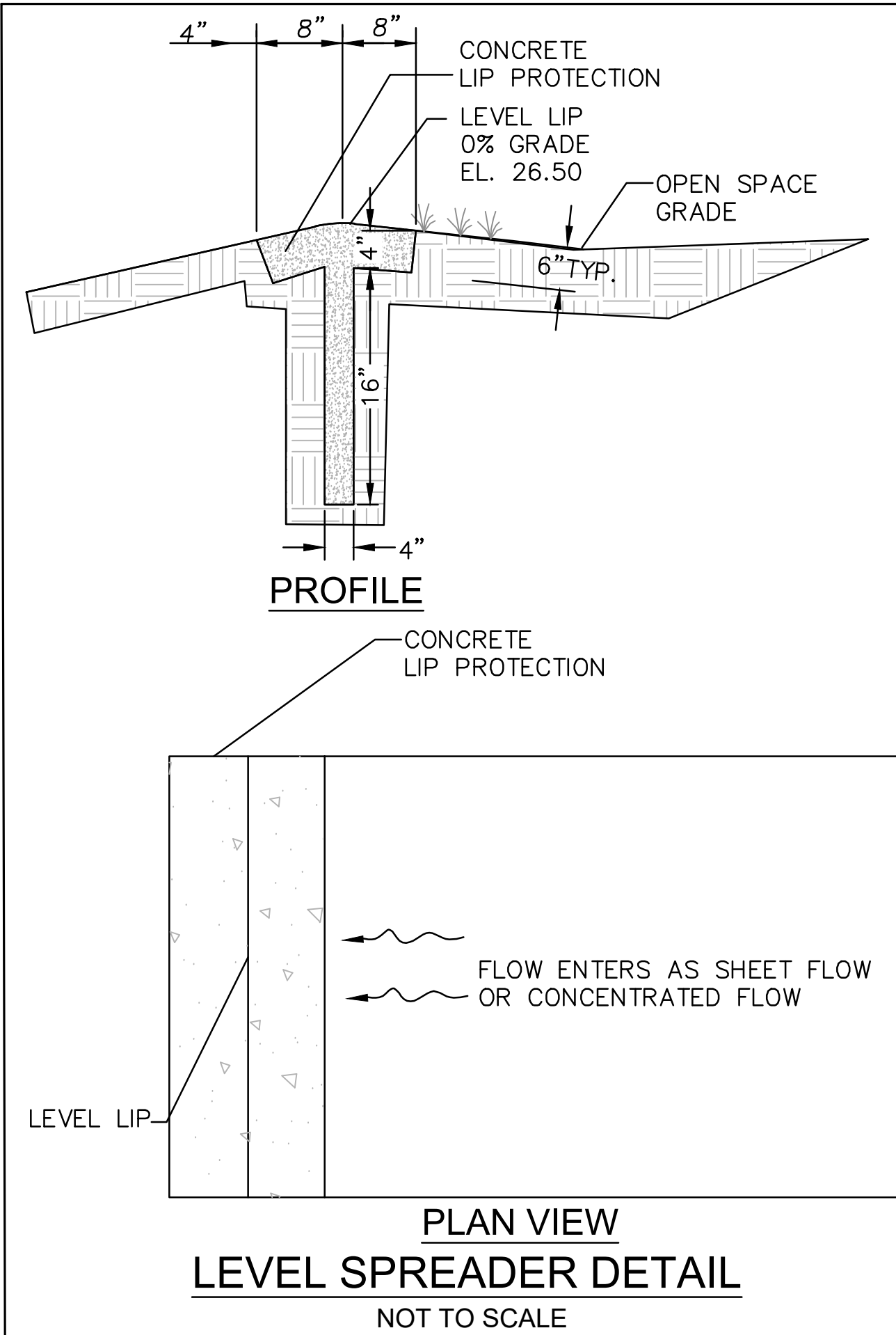
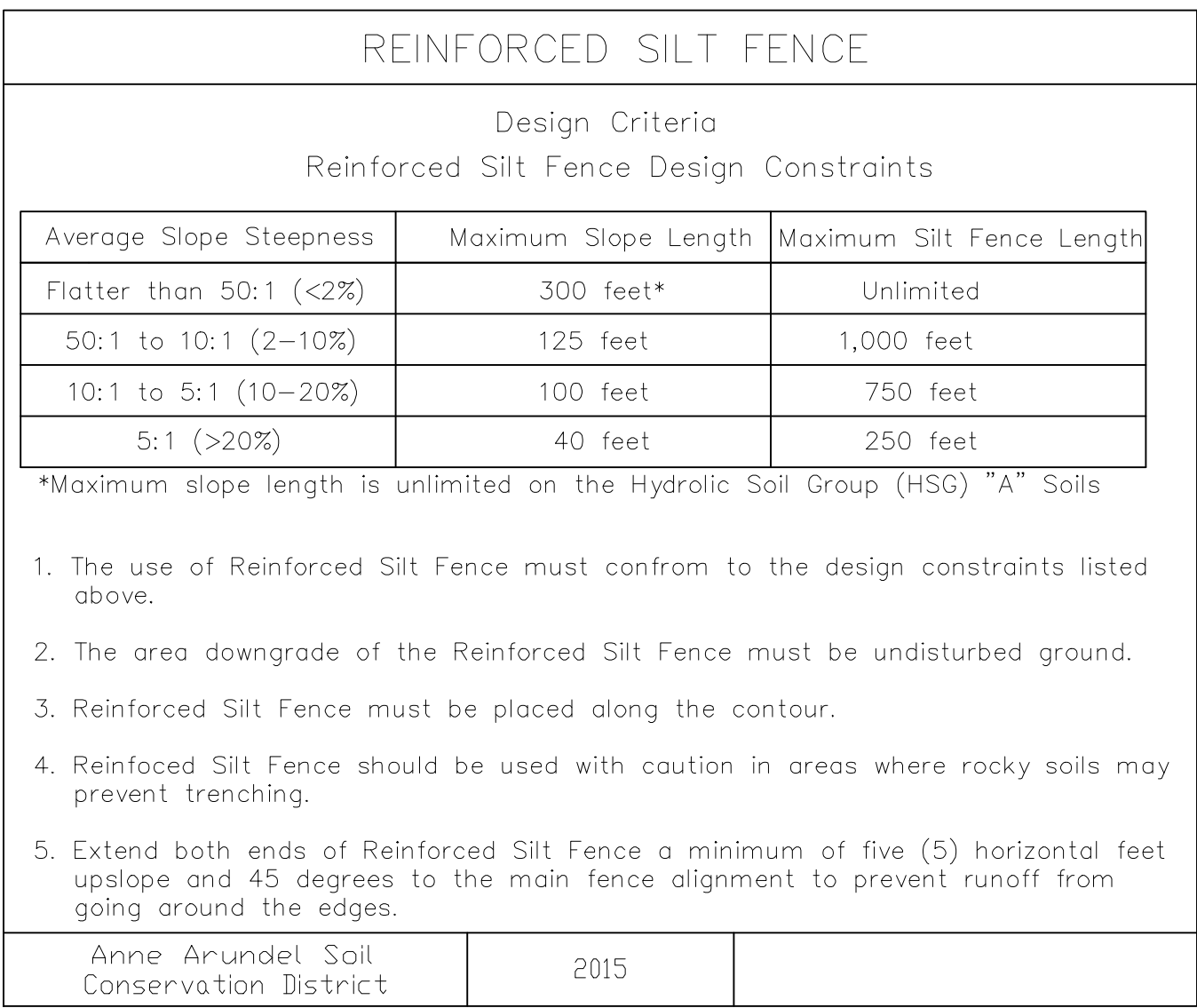
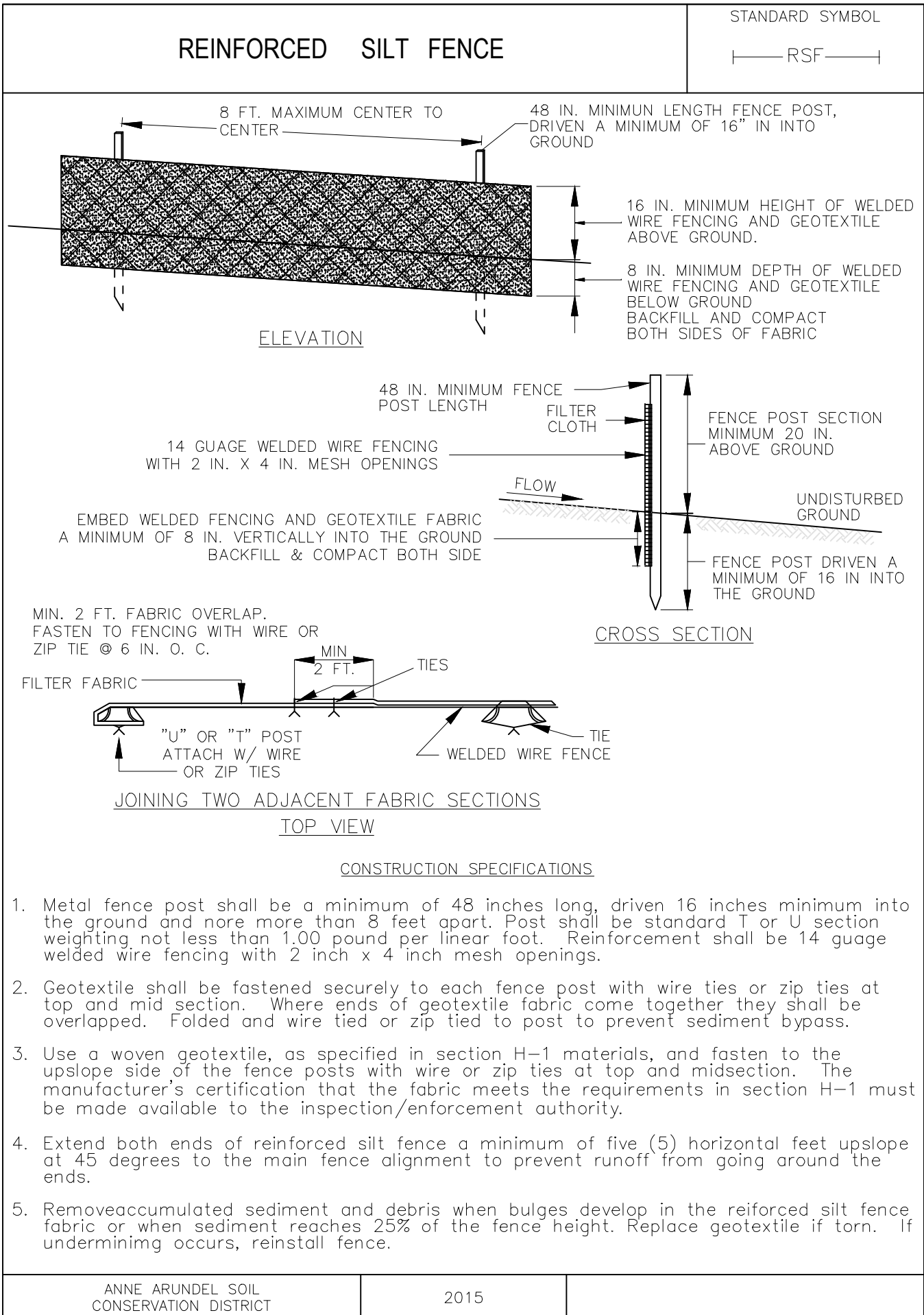
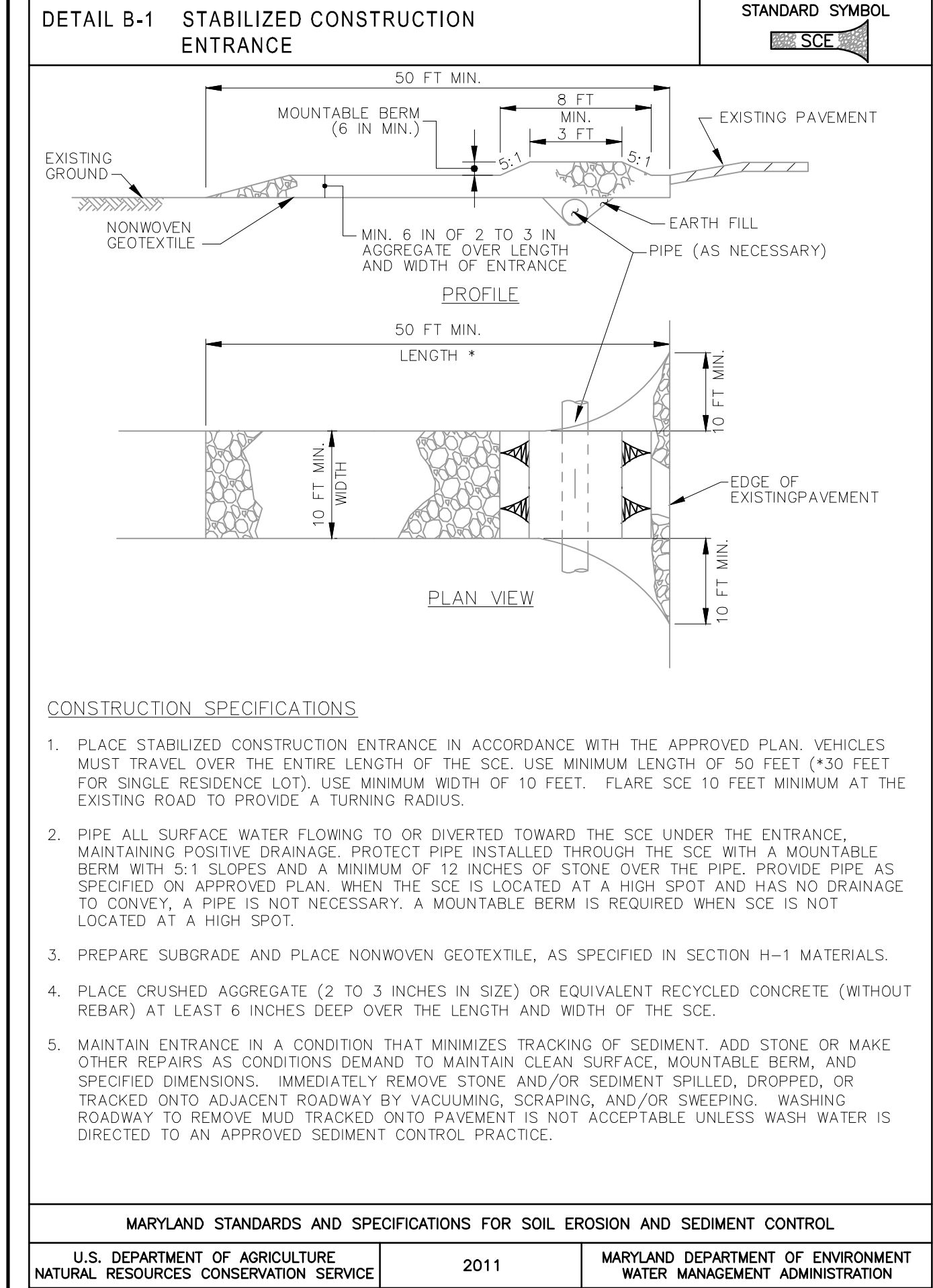
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ZONING: RLD/OS  
SHEET: 5 OF 6





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		DATE

MESSICK & ASSOCIATES<sup>\*</sup>

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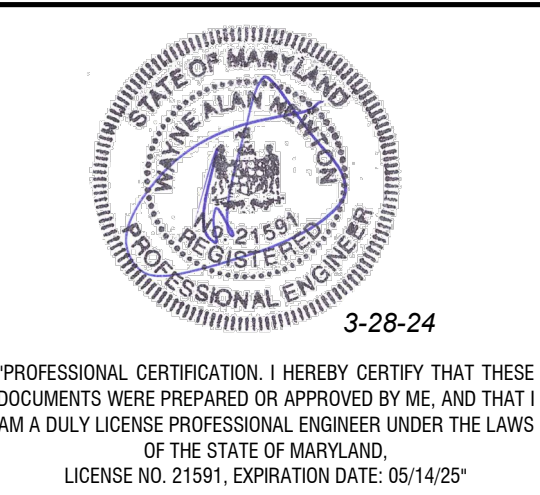
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3-28-24

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(E): c/o ENGR@MESSICKANDASSOCIATES.COM

EROSION & SEDIMENT CONTROL DETAIL & NOTES

KATZ PROPERTY

ST MARGARET'S FARM SUBDIVISION

SINGLE FAMILY DWELLING GRADING PLAN

LOT 19, 343 KINGSBERRY DRIVE

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ANN ARUNDEL COUNTY, MARYLAND 21409

DATE: MARCH 2024

ZONING: RLD/OS

SHEET: 6 OF 6