SHEET INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	ENVIRONMENTAL CONCEPT PLAN
3	EROSION AND SEDIMENT CONTROL PLAN
4	DRAINAGE AREA MAP
5	DETAIL SHEET

ENVIRONMENTAL CONCEPT PLAN

OLD COLUMBIA CROSSING

LOT 1 THRU 3 & OPEN SPACE LOT 4

ZONED: R-ED

TAX MAP No. 251 GRID No. 13 PARCEL NO. 262

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6·8·23

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4/27/23

SWM DESIGN NARRATIVE

Introduction:

This report will demonstrate how the criteria set forth in the Maryland Stormwater Design Manual, Volumes I and II (effective October 2000, revised May 2009) will be satisfied on this project. The goal of creating hydrology similar to that of "Woods in Good Condition" will be accomplished through the use of the practices contained within Chapter 5 of said manual. The achievement of this goal will remove the requirement of providing Channel Protection Volume.

General Site Conditions:

Old Columbia Crossing is zoned R-ED and is located on Tax Map 25A, Parcel 262 of the Howard County, Maryland Tax Map Database System. The property is located at 3832 Old Columbia Pike in the Historic Ellicott City. The site is currently improved by a Historic House and property is being subdivided into three lots, with the existing house being on one of three buildable lots. The site has a large lawn area in front and a large forested area to the rear. This subdivision will meet forest conservation requirements of Section 16.1200 of the Howard County Code for Forest Conservation by retention of existing forest. The existing and proposed houses will be served by public water and public sewer. The runoff from the lots are mostly to the northeast and southeast since there is a high point around the middle of the property. Runoff to the Northeast will flow to the Tiber at the edge of the northeast corner of the property. Micro-Bioretention, a rain garden, and Drywells will be utilized to treat the rooftop and driveway runoff as well as 100 yr and 3.55-hour 6.6 inch event management. Per the 2004 Web Soil Survey, soils on-site consist of "MgF" Manor-Bannertown sandy loams, type B soil and "GfB" Gladstone-Urban land complex, type A Soil.

I. Natural Resource Protection:

Environmentally sensitive features such as steep slopes, floodplain, a stream and its buffer, do exist on-site.
Stream and its buffer will have super silt fence provided to protect them during construction.

II. Maintenance of Natural Flow Patterns:

Natural flow patterns will be maintained. Existing and proposed runoff flows mostly toward the northeast and southeast portion of the site.

III. Reduction of impervious areas through better site design, alternative surfaces and Nonstructural Practices

A single common driveway will be utilized to provide access to the proposed houses. 4

IV. Integration of Erosion and Sediment Controls into Stormwater Strategy:

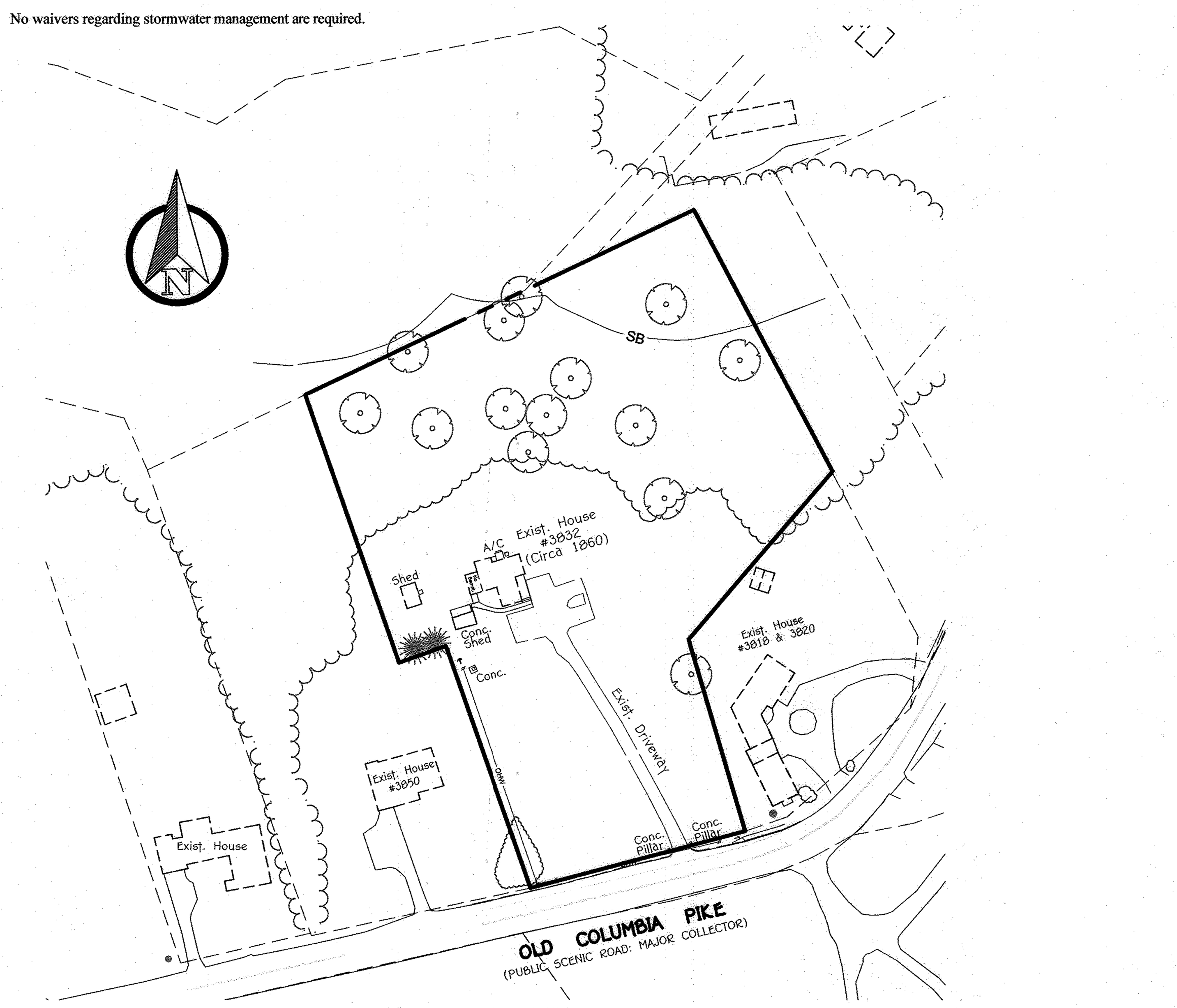
Super Silt Fence will be utilized to provide erosion and sediment control.

V. Implementation of ESD Planning Techniques and practices to the Maximum Extent Practicable (MEP)

The full required ESD volume is being provided along with 100 yr and 3.55-hour 6.6 inch event management.

VI. Request for Design Manual Waiver:

No waivers regarding stormwater management are required.



EXISTING CONDITION

SCALE: 1" = 100'

STORMWATER MANAGEMENT INFORMATION							
Lot No.	Facility Name & Number	Practice Type (Quantity)	Public	Private	HOA Maintained	Homeowner Maintained	Remarks
1	DRY WELL #1, #2, #3 & #4	M-5 - (4)	--	X	--	X	STANDARD DW
2	DRY WELL #5, #6 & #7	M-5 - (3)	--	X	--	X	STANDARD DW
1	MICRO BIO-RETENTION #1	M-6 - (1)	--	X	X	--	--
3	BIO-RETENTION #2	F-6 - (1)	--	X	X	--	--

STORMWATER MANAGEMENT NOTES

1. STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE WITH WITH CHAPTER 5, "ENVIRONMENTAL SITE DESIGN" OF THE 2007 MARYLAND STORMWATER MANAGEMENT DESIGN MANUAL, EFFECTIVE MAY 4, 2010.
2. MAXIMUM CONTRIBUTING ROOF TOP AREA TO EACH DOWNSPOUT SHALL BE 1,000 SQ. FT. OR LESS.
3. DRYWELLS SHALL BE PROVIDED AT LOCATIONS WHERE THE LENGTH OF DISCONNECTION IS LESS THAN 75' AT 5%. THE SIZE AND CONSTRUCTION OF THE DRYWELL SHALL BE IN ACCORDANCE WITH THE DETAIL SHOWN ON THESE PLANS.
4. FINAL GRADING WILL BE SHOWN ON THE FUTURE SITE DEVELOPMENT PLAN.

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
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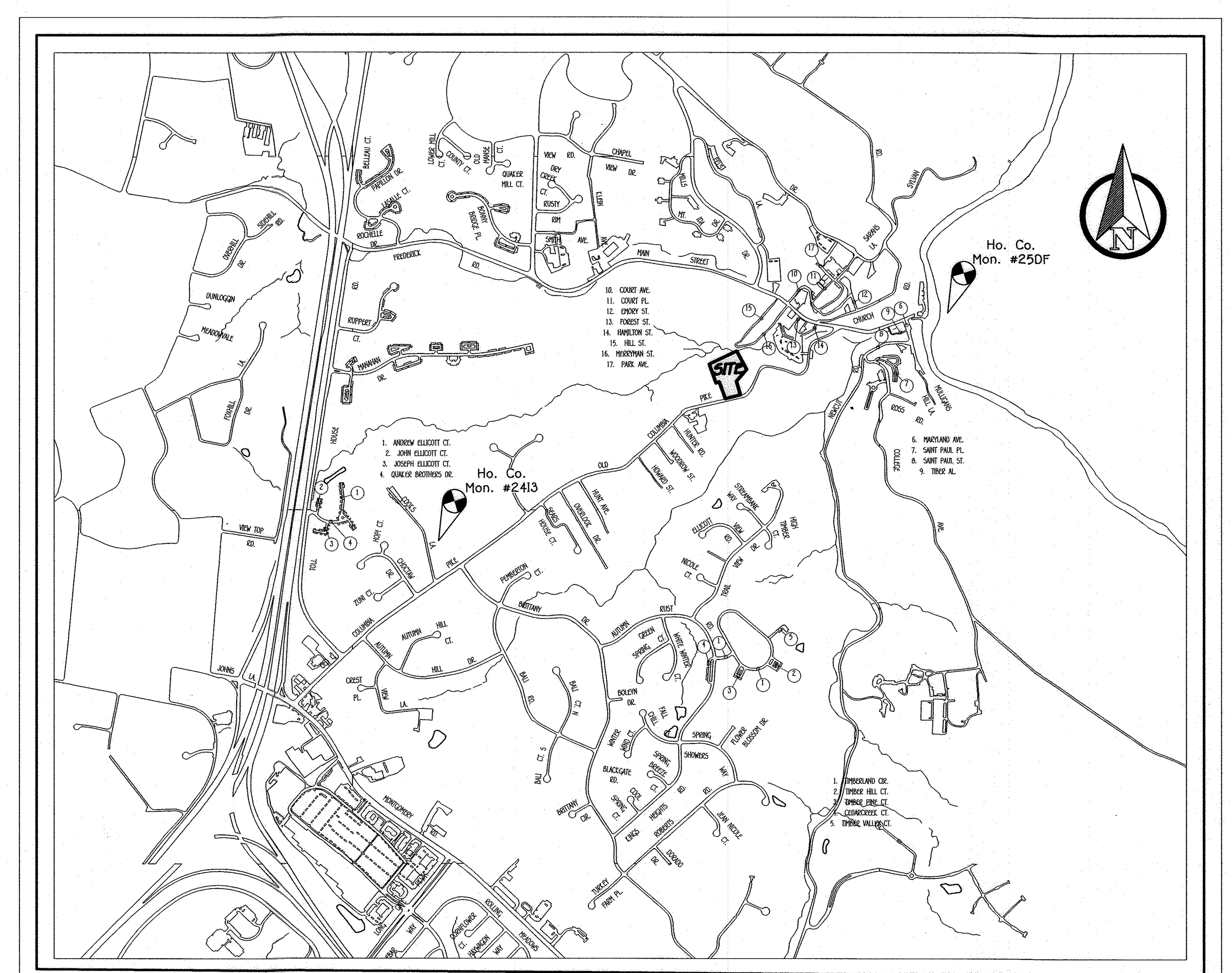
(410) 461 - 2855



VICINITY MAP

SCALE: 1" = 2,000'

ADC STREET MAP: MAP 28 GRID A-1

SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

STORMWATER MANAGEMENT PRACTICES		
LOT/PARCEL No.	MICRO BIO-RETENTION M-6 (NUMBER)	DRY WELLS M-5 (NUMBER)
1	YES	YES (4)
2	NO	YES (3)
3	YES	NO

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 20748, EXPIRATION DATE: 2/22/2025

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

SIGNATURE OF PROFESSIONAL ENGINEER — DATE 3/6/23

OWNER/DEVELOPER
KELLY ZHAO
1514 PICCARD DRIVE
ROCKVILLE, MD. 20850
PH: (202) 701-9756

General Notes:

1. Subject Property Zoned R-ED Per 10/06/13 Comprehensive Zoning Plan.
2. Coordinates Based On Nad '83, Maryland Coordinate System As Projected By Howard County Geodetic Control Station No. 2413 And Baltimore County Control Station No. 25DF.
   Sta. 2413 N 580,648.901 E 1,364,974.507 Elev.= 403.703
   Sta. 25DF N 583,222.771 E 1,370,771.665 Elev.= 125.45
3. This Plan Is Based On Field Run Monumented Boundary Survey Performed On Or About August, 2014 By Fisher, Collins And Carter, Inc.
4. All Areas Are More Or Less (±).
5. Distances Shown Are Based On Surface Measurement And Not Reduced To Nad '83 Grid Measurement. For Flag Or Pipe Stem Lots, Snow Removal And Road Maintenance Are Provided To The Junction Of Flag Or Pipe Stem And Road Right-Of-Way Line Only And Not Onto The Flag Or Pipe Stem Lot Driveway. Trash And Recyclables Collection Will Be At Mill Creek Way Within 5' Of The County Roadway.
6. Driveways Shall Be Provided Prior To Issuance Of A Use And Occupancy Permit For Any New Dwellings To Ensure Safe Access For Fire And Emergency Vehicles Per The Following (Minimum) Requirements:
   a). Width - 12 Feet (16 Feet Serving More Than One Residence);
   b). Surface - Six (6") Inches Of Compacted Crusher Run Base With Tar And Chip Coating. (1 -1/2" Minimum);
   c). Geometry - Maximum 15% Grade, Maximum 10% Grade Change And 45-Foot Turning Radius;
   d). Structures (Culverts/Bridges) - Capable Of Supporting 25 Gross Tons (H25-Loading);
   e). Drainage Elements - Capable Of Safely Passing 100 Year Flood With No More Than 1 Foot Depth Over Surface;
   f). Structure Clearance - Minimum 12 Feet;
   g). Maintenance - Sufficient To Ensure All Weather Use.
7. Property Subject To Prior Department Of Planning And Zoning File No's: ECP-14-028 And WP-21-081.
8. No Cemeteries Exist On The Subject Property Based On Visual Observation Or Listed In Available Howard County Cemetery Inventory Map.
9. There Is An Existing Historic Dwelling On Lot 3 To Remain (HO-558). No New Buildings, Extensions Or Additions To The Existing Dwelling Are To Be Constructed At A Distance Less Than The Zoning Regulation Requirements.
10. Property Is Located Within The Ellicott City Historic District. This Plan Received Advisory Comments From The Historic Preservation Commission (HPC) On May 7, 2020 (HPC-20-28).
11. There Are No Wetlands On This Site Per Investigation By Eco-Science Professionals, Inc. Steep Slopes, Stream And Its Buffers Exist On-Site.
12. A Wetland Delineation And Forest Stand Delineation Report For This Project Dated February, 2021 Was Prepared By Eco-Science Professionals, Inc.
13. 100 Year Floodplain Exists On This Property (210 sq.ft.±).
14. No Clearing, Grading Removal Of Vegetative Cover Or Trees, Paving And New Structures Shall Be Permitted Within The Limits Of Stream Buffers And Forest Conservation Easement Areas.
15. Stormwater Management Is In Accordance With The M.D.E. Storm Water Design Manual, Volumes I & II, Revised 2009. Site Is Located Within The Tiber Hudson Watershed. Non-Structural Practices (Bio-Retention Facilities (M-6 & F-6) And Drywells (M-5)) In Accordance With Chapter 5 Are Being Utilized. 100 Year Management And The 3.55 HR / 6.6 In Storm Event Are Being Provided In The Proposed Pocket Sand Filter.
22. This Subdivision Plan Is Subject To The Amended Fifth Edition Of The Subdivision And Land Development Regulations And The 10-06-13 Zoning Regulations Per Council Bill No. 32-2013. Development Or Construction On These Lots Or Parcels Must Comply With Setbacks And Buffer Regulations In Effect At The Time Of Submission Of A Building Or Grading Permit Application.
23. The Traffic Study For This Project Was Prepared By Mars Group In February, 2020.
24. No Noise Study Is Required For This Project.
25. This Development Is Designed To Be In Accordance With Section 16.127 - Residential Infill Development Of The Subdivision And Land Development Regulations. The Developer Of This Project Shall Create Compatibility With The Existing Neighborhood Through The Use Of Enhanced Perimeter Landscaping, Berms, Fences, Similar Housing Unit Types And The Directional Orientation Of The Proposed House. The Enhanced Landscape Buffer Has Been Provided On Open Space Lots 17 And 18 To Mitigate Views And To Address Privacy And Compatibility Concerns Expressed By The Adjacent Lot Owners At The Pre-Submission Community Meeting.
26. A Historic Preservation Meeting Was Conducted On 05/07/20 (HPC-20-28) For The Purpose Of The Developer To Provide Information To The Community Regarding The Proposed Residential Development And To Allow The Community To Ask Questions And To Make Comments, Per Section 16.128(d) Of The Subdivision Regulations.
27. The Private Variable Width Access, Stormwater Management, Water, Sewer, Drainage & Utility Easement And Maintenance Agreement For The Use And Benefit Of Lots 1 Thru 3 And Open Space Lot 4 Will Be Recorded Simultaneously With The Plat At Final Plan Submission.
28. This Subdivision Is Subject To The Protection Of Scenic Roads, Per Section 16.125 Of The Subdivision And Land Development Regulations. Site Has Frontage On Old Columbia Pike, A Major Collector, Scenic Road. An Undisturbed Vegetative Buffer Of At Least 35 Feet In Width Will Remain At The Property's Frontage, Except For Where The Access Road Is Proposed. Planning Board Approval Of Final Plans Is Required For Minor Subdivisions That Abut A Scenic Road.
29. This Plan Is Subject To WP-21-081 Which On January 21, 2021 The Planning Director Approved A Request For Alternative Compliance In Respect To Section 16.128(c)(1) Of The Subdivision And Land Development Regulations To Allow The Petitioner To Host A Virtual Presubmission Community Meeting During The COVID-19 State Of Emergency. Approval Of This Alternative Compliance Is Subject To The Following Conditions:
   1. The Alternative Compliance Petition Will Remain Valid As Long As The Howard County State Of Emergency Is In Effect.
   2. The Petitioner Must Comply With The Department Of Planning And Zoning's Virtual Presubmission Meeting Guidelines For Applying And Hosting A Virtual Public Meeting (Attached).

   (Note That WP-21-081 Is No Longer Active Due To Howard County Lifting The State Of Emergency On 3/15/22).
   At This Phase, It Is Anticipated That Alternative Compliances Will Be Required From Section 16.1205 (a)(2) And (3) & Section 16.125 (c)(c) At The Final Plan Stage.
30. Open Space Tabulation: (Per Howard County Section 16.121.(a))
   a. Open Space Required = 1.495 Acres (2.989 Ac. x 50%)
   b. Total Open Space Provided = 1.500 Acres
31. Approval Of This ECP Does Not Constitute An Approval Of Any Subsequent And Associated Subdivision Plan/Plat And/or Site Development Plan And/or Red-line Revision Plan. Review Of This Project For Compliance With The Howard County Subdivision and Land Development Regulations Shall Occur At The Subdivision Plan/Plat And/or Site Development Plan Stages And/or Red-line Revision Process. The Applicant And Consultant Should Expect Additional And More Detailed Review Comments (including Comments That May Alter The Overall Site Design) As This Project Progresses Through The Plan Review Process.

SITE ANALYSIS DATA CHART

A. TOTAL AREA OF THIS SUBMISSION = 2.989 AC.±
B. LIMIT OF DISTURBED AREA = 39,204 SQ.FT.± OR 0.90 AC.±
C. PRESENT ZONING DESIGNATION = R-ED (PER 10/06/2013 COMPREHENSIVE ZONING PLAN)
D. PROPOSED USE: RESIDENTIAL
E. PREVIOUS HOWARD COUNTY FILES: ECP-14-028, WP-21-081
F. TOTAL AREA OF FLOODPLAIN LOCATED ON-SITE = 210 SQ.FT.±
G. TOTAL AREA OF STEEP SLOPES:
   MODERATED STEEP SLOPES: 15%-24.99% = 10,352 SQ.FT.± OR 0.238 AC.±
   STEEP SLOPES: 25% OR GREATER = 64,556 SQ.FT.± OR 1.482 AC.±
H. TOTAL AREA OF WETLANDS (INCLUDING BUFFER) = 0.00 AC.±
I. TOTAL AREA OF STREAM (INCLUDING BUFFER) = 10,570 SQ.FT.±
J. TOTAL AREA OF EXISTING FOREST = 60,801 SQ.FT.± OR 1.396 AC.±
K. TOTAL AREA OF FOREST TO BE RETAINED = 1.342 AC± (FCE)
L. TOTAL AREA OF BUILDABLE LOTS = 1.453 AC±
M. TOTAL GREEN OPEN AREA = 1.500 AC±
N. TOTAL IMPERVIOUS AREA = 10,914 SQ.FT.± OR 0.250 AC.±
O. TOTAL AREA OF ERODIBLE SOILS = 1.55 AC.±
P. TOTAL AREA OF ROAD DEDICATION = 0.035 AC.±
Q. TOTAL NET TRACT AREA = 1.502 AC±
R. DENSITY CALCULATIONS: PER R-ED; 2 D.U. PER NET AREA = 1.502 x 2 = 3.04 UNITS OR 3 LOTS.

Old Columbia Pike - 100-Year and Ellicott City Storms - Summary

DRAINAGE AREA DESIGNATION	Area (Acres)	AREA (Sq. Miles)	RCN	T/C (hrs.)	100-Yr. Q (cfs)	ELLICOTT CITY FLOOD Q (cfs)	100-Yr. WSE	ELLICOTT CITY FLOOD WSE	REMARKS
A-ex	0.59	0.00092	34	0.1	0.28	0.37	-----	-----	Reflects Woods in Good Cond.
B-ex	0.21	0.00031	30	0.10	0.03	0.03	-----	-----	Reflects Woods in Good Cond.
C-ex	0.21	0.00031	30	0.10	0.03	0.03	-----	-----	Reflects Woods in Good Cond.
							-----	-----	
TOTAL EXISTING	1.01	-----	-----	-----	0.30	0.41	-----	-----	Total Ex. Via Addhyd
								-----	
A	0.32	0.0005	51	0.17	0.77	1.1 In			Area to Bio#1
A-Bio#1 Outfall					0	0 (out)		264.00	Entire 100-yr./E.C. Stored in Facility
B	0.10	0.00016	51	0.10	0.29	0.39 In			
B-Dry Wells Outfall					0	0 (out)	-----	-----	Entire 100-yr./E.C. Stored in Facility
C-1	0.44	0.00069	59	0.10	1.72	2.45 In	-----	-----	Area to Bio#2
C-1 Bio#2 Outfall						0 (out)			Entire 100-yr./E.C. Stored in Facility
C-2	0.10	0.00016	45	0.10	0.20	0.27			
							-----	-----	
							-----	-----	
TOTAL PROPOSED	-----	-----	-----	-----	0.20	0.27	----- -----	----- -----	Total Proposed
	-----	-----	-----	-----			-----	-----	
Overall Decrease Ex. To Proposed SWM	-----	-----	-----	-----	33%	34%	-----	-----	Overall % Decrease

0' 2,000' 4,000' 8,000'

SCALE: 1" = 2,000'

TITLE SHEET
OLD COLUMBIA CROSSING
LOTS 1 THRU 3 & OPEN SPACE LOT 4
3832 OLD COLUMBIA PIKE

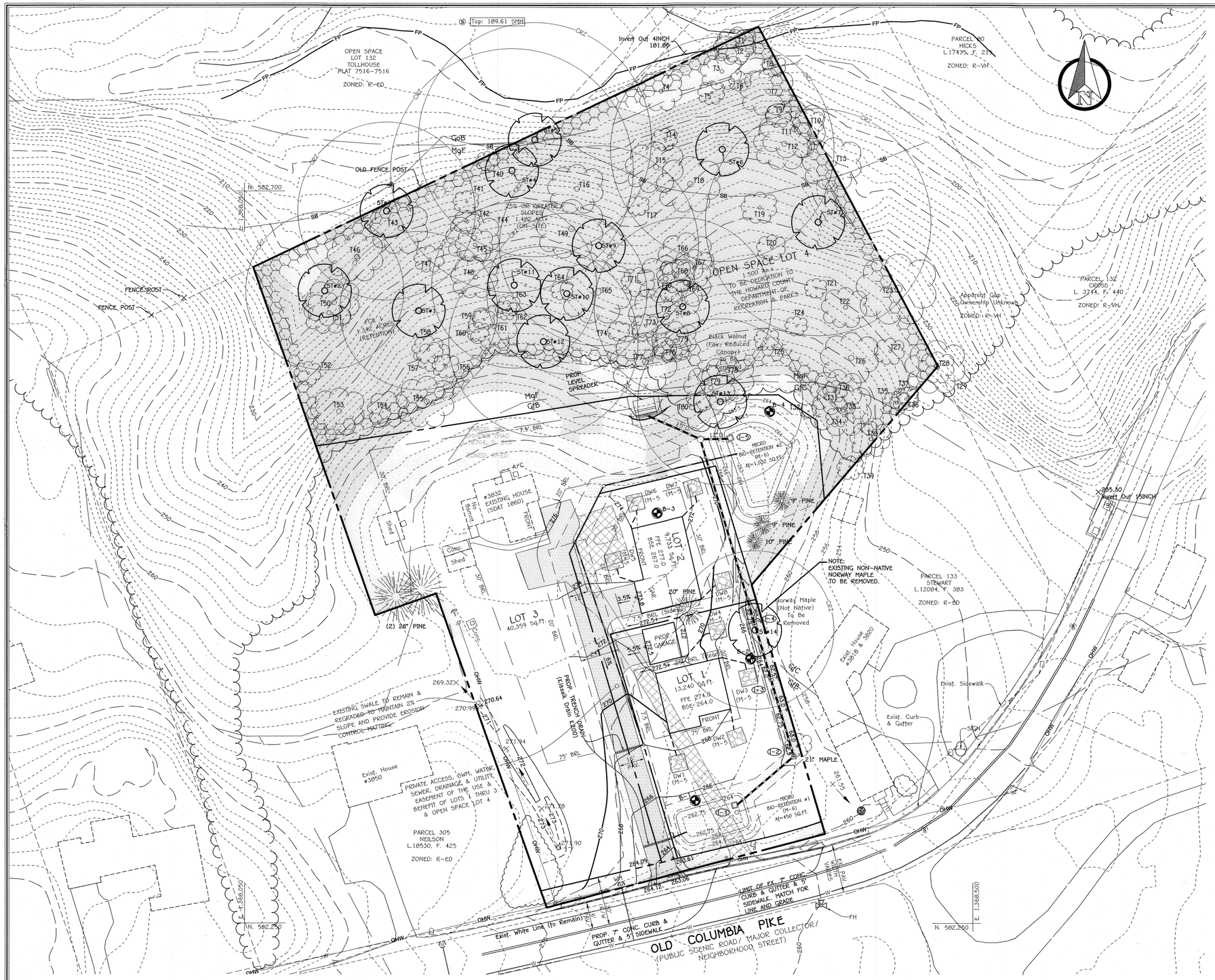
ZONED R-ED

TAX MAP NO.: 251 GRID NO.: 13 PARCEL NO.: 262

SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN DATE: MARCH 6, 2023

ECP-22-057



LEGEND

SYMBOL	DESCRIPTION
492	EXISTING 2' CONTOURS
490	EXISTING 10' CONTOURS
GfB GfC MgF	SOILS LINES AND TYPE
	EXISTING TREELINE
	PROPOSED TREELINE
482	PROPOSED CONTOUR
	PROPOSED DRYWELL (M-5)
+362.5	SPOT ELEVATION
	FLOW ARROW
	EXISTING POWER POLE
ST#7	SPECIMEN TREE
SB	STREAM BUFFER
FP	FLOODPLAIN
	25% OR GREATER SLOPES (1.482 AC.±)
	15% TO 24.9% SLOPES (0.238 AC.±)

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6.8.23

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/6/23

TREE LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
T1	18" MAPLE	T41	11.5" BEECH
T2	18" MAPLE	T42	12" BEECH
T3	18.5" TULIP POPLAR	T43	26" TULIP POPLAR
T4	20" MAPLE	T44	24" TULIP POPLAR
T5	12" MAPLE	T45	17" TULIP POPLAR
T6	10" BEECH	T46	25" TULIP POPLAR
T7	24" OAK	T47	13.5" MAPLE
T8	10.5" CHERRY	T48	21" TULIP POPLAR
T9	12" DECIDUOUS	T49	30" TULIP POPLAR
T10	14" TULIP POPLAR	T50	24" TULIP POPLAR
T11	29.5" OAK	T51	21" TULIP POPLAR
T12	26" OAK	T52	12" MAPLE
T13	26.5" TULIP POPLAR	T53	24" CHERRY
T14	11.5" BEECH	T54	18" DECIDUOUS
T15	26" OAK	T55	26" TULIP POPLAR
T16	25" TULIP POPLAR	T56	12" MAPLE
T17	17" MAPLE	T57	15" MAPLE
T18	28.5" OAK	T58	14" MAPLE
T19	16" BEECH	T59	10" MAPLE
T20	13" CHERRY	T60	10" MAPLE
T21	10" TULIP POPLAR	T61	22" DECIDUOUS
T22	20.5" DECIDUOUS	T62	10" WALNUT
T23	36" TULIP POPLAR	T63	10.5" MAPLE
T24	10" TULIP POPLAR	T64	10" MAPLE
T25	11" TULIP POPLAR	T65	29.5" TULIP POPLAR
T26	26" TULIP POPLAR	T66	24" TULIP POPLAR
T27	13.5" MAPLE	T67	19" TULIP POPLAR
T28	16" MAPLE	T68	17" TULIP POPLAR
T29	18" DECIDUOUS	T69	24" TULIP POPLAR
T30	23" TULIP POPLAR	T70	24" TULIP POPLAR
T31	11" MAPLE	T71	15" TULIP POPLAR
T32	12" CHERRY	T72	32" TULIP POPLAR
T33	26.75" TULIP POPLAR	T73	12" TULIP POPLAR
T34	10" DECIDUOUS	T74	10" MAPLE
T35	12" MAPLE	T75	20" WALNUT
T36	12" MAPLE	T76	16" TULIP POPLAR
T37	10" MAPLE	T77	29" SYCAMORE
T38	18" TULIP POPLAR	T78	23.5" TULIP POPLAR
T39	12" MULBERRY	T79	23" WALNUT
T40	10" MAPLE	T80	10" CHERRY

SOILS LEGEND

SOIL	NAME	K.w	CLASS
GfB	Gladstone-Urban land complex, 0 to 8 percent slopes	.20	A
GfC	Gladstone-Urban land complex, 8 to 15 percent slopes	.28	A
GoB	Glenville-Codorus silt loams, 0 to 8 percent slopes	.37	C
MgF	Manor-Bannertown sandy loams, 25 to 65 percent slopes, rocky	.24	B

NOTES:
- * Hydric soils and/or contains hydric inclusions
- ** May contain hydric inclusions
- † Generally only within 100-year floodplain areas

0' 30' 60' 120'

SCALE: 1" = 30'

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 20748, EXPIRATION DATE: 2/22/2024

SIGNATURE OF PROFESSIONAL ENGINEER — DATE 5/30/23

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

OWNER/DEVELOPER
KELLY ZHAO
1514 PICCARD DRIVE
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ENVIRONMENTAL CONCEPT PLAN
OLD COLUMBIA CROSSING
LOTS 1 THRU 3 & OPEN SPACE LOT 4
3832 OLD COLUMBIA PIKE
ZONED R-ED

TAX MAP NO.: 251 GRID NO.: 13 PARCEL NO.: 262
SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2023
SHEET 2 OF 5

ECP-22-057

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APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6.8.23

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4/27/23

LEGEND	
SYMBOL	DESCRIPTION
492	EXISTING 2' CONTOURS
490	EXISTING 10' CONTOURS
GfB GfC MgF	SOILS LINES AND TYPE
	EXISTING TREELINE
	PROPOSED TREELINE
486	PROPOSED CONTOUR
	PROPOSED DRYWELL (M-5)
+362.5	SPOT ELEVATION
	FLOW ARROW
	EXISTING POWER POLE
ST#7	SPECIMEN TREE
SB	STREAM BUFFER
FP	FLOODPLAIN
	25% OR GREATER SLOPES (1.482 AC.±)
	15% TO 24.9% SLOPES (0.238 AC.±)

SEDIMENT CONTROL LEGEND

- SSF SSF SSF — SUPER-SILT FENCE
- S.C.E. — STABILIZED CONSTRUCTION ENTRANCE
- L.O.D. — LIMIT OF DISTURBANCE
- E.C.M. — EROSION CONTROL MATTING

SOILS LEGEND

SOIL	NAME	K.w	CLASS
GfB	Gladstone–Urban land complex, 0 to 8 percent slopes	.20	A
GfC	Gladstone–Urban land complex, 8 to 15 percent slopes	.28	A
GoB	Glenville–Codorus silt loams, 0 to 8 percent slopes	.37	C
MgF	Manor–Bannertown sandy loams, 25 to 65 percent slopes, rocky	.24	B

NOTES:

* Hydric soils and/or contains hydric inclusions

** May contain hydric inclusions

† Generally only within 100-year floodplain areas

0' 30' 60' 120'

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SIGNATURE OF PROFESSIONAL ENGINEER — DATE 5/6/25

FISHER, COLLINS & CARTER, INC.
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SEDIMENT & EROSION CONTROL PLAN
OLD COLUMBIA CROSSING
LOTS 1 THRU 3 & OPEN SPACE LOT 4
3832 OLD COLUMBIA PIKE

ZONED R-ED

TAX MAP NO.: 251 GRID NO.: 13 PARCEL NO.: 262

SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN DATE: MARCH 6, 2023

SHEET 3 OF 5

ECP-22-057

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APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6.8.23

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4/27/23

SOILS LEGEND

SOIL	NAME	CLASS
GfB	Gladstone–Urban land complex, 0 to 8 percent slopes	A
GfC	Gladstone–Urban land complex, 8 to 15 percent slopes	A
GoB	Glenville–Codorus silt loams, 0 to 8 percent slopes	C
MgF	Manor–Bannertown sandy loams, 25 to 65 percent slopes, rocky	B

NOTES:

* Hydric soils and/or contains hydric inclusions

** May contain hydric inclusions

† Generally only within 100–year floodplain areas

DRAINAGE AREA INFORMATION

FACILITY	AREA	'RCN' FACTOR	Tc
BIO #1 (M-6)	A 8,718 SQ.FT.±	51	0.17 hr.
BIO #2 (F-6)	B 2,242 SQ.FT.±	51	0.10 hr.
	C-1 19,002 SQ.FT.±	59	0.10 hr.
---	C-2 4,117 SQ.FT.±	45	0.10 hr.

DRY WELL CHART

LOT No.	DRYWELL No.	AREA OF ROOF PER DRYWELL
LOT 1	DW1	440 SQ. FT.
LOT 1	DW2	320 SQ. FT.
LOT 1	DW3	640 SQ. FT.
LOT 1	DW4	440 SQ. FT.
LOT 2	DW5	840 SQ. FT.
LOT 2	DW6	320 SQ. FT.
LOT 2	DW7	640 SQ. FT.

0' 30' 60' 120'

SCALE: 1" = 30'

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 20748, EXPIRATION DATE: 2/22/25

MICHAEL WICCI — REGISTERED PROFESSIONAL ENGINEER

SIGNATURE OF PROFESSIONAL ENGINEER — DATE 3/6/23

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

OWNER/DEVELOPER

KELLY ZHAO
1514 PICCARD DRIVE
ROCKVILLE, MD. 20850
PH: (202) 701-9756

DRAINAGE AREA MAP
OLD COLUMBIA CROSSING
LOTS 1 THRU 3 & OPEN SPACE LOT 4
3832 OLD COLUMBIA PIKE

ZONED R-ED

TAX MAP NO.: 251 GRID NO.: 13 PARCEL NO.: 262

SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN DATE: MARCH 6, 2023

SHEET 4 OF 5

ECP-22-057

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Infiltration and Filter System Construction Specifications

Infiltration and filter systems either take advantage of existing permeable soils or create a permeable medium such as sand for WC), and Re v. In some instances where permeability is great, these facilities may be used for Qp as well. The most common systems include infiltration trenches, infiltration basins, sand filters, and organic filters.

When properly planted, vegetation will thrive and enhance the functioning of these systems. For example, pre-treatment buffers will trap sediments that often are bound with phosphorous and metals. Vegetation planted in the facility will aid in nutrient uptake and water storage. Additionally, plant roots will provide arteries for stormwater to permeate soil for groundwater recharge. Finally, successful plantings provide aesthetic value and wildlife habitat making these facilities more desirable to the public.

Design Constraints:

> Planting buffer strips of at least 20 feet will cause sediments to settle out before reaching the facility, thereby reducing the possibility of clogging.
> Determine areas that will be saturated with water and water table depth so that appropriate plants may be selected (hydrology will be similar to bioretention facilities, see figure A.5 and Table A.4 for planting material guidance).
> Plants known to send down deep taproots should be avoided in systems where filter fabric is used as part of facility design.
> Test soil conditions to determine if soil amendments are necessary.
> Plants shall be located so that access is possible for structure maintenance.
> Stabilize heavy flow areas with erosion control mats or sod.
> Temporarily divert flows from seeded areas until vegetation is established.
> See Table A.5 for additional design considerations.

Bio-retention

Soil Bed Characteristics

The characteristics of the soil for the bioretention facility are perhaps as important as the facility location, size, and treatment volume. The soil must be permeable enough to allow runoff to filter through the media, while having characteristics suitable to promote and sustain a robust vegetative cover crop. In addition, much of the nutrient pollutant uptake (nitrogen and phosphorus) is accomplished through absorption and microbial activity within the soil profile. Therefore, soils must balance their chemical and physical properties to support biotic communities above and below ground.

The planting soil should be a sandy loam, loamy sand, loam (USDA), or a loam/sand mix (should contain a minimum 35 to 60% sand, by volume). The clay content for these soils should be less than 25% by volume (Environmental Quality Resources (EQR), 1996; Engineering Technology Inc. and Biohabitats, Inc. (ETAB), 1993). Soils should fall within the SM, ML, SC classifications or the Unified Soil Classification System (USCS). A permeability of at least 1.0 feet per day (0.5" /hr) is required (a conservative value of 0.5 feet per day is used for design). The soil should be free of stones, stumps, roots, or other woody material over 1" in diameter. Brush or seeds from noxious weeds (e.g., Johnson Grass, Mugwort, Nutsedge, and Canada Thistle or other noxious weeds as specified under COMAR 15.08.01.05.) should not be present in the soils. Placement of the planting soil should be in 12 to 18 lifts that are loosely compacted (tamped lightly with a backhoe bucket or traversed by dozer tracks). The specific characteristics are presented in Table A.3.

Table A.3 Planting Soil Characteristics

Parameter	Value
pH range	5.2 to 7.00
Organic matter	1.5 to 4.0% (by weight)
Magnesium	35 lbs. per acre, minimum
Phosphorus (phosphate - P2O5)	75 lbs. per acre, minimum
Potassium (potash - I(K2O)	85 lbs. per acre, minimum
Soluble salts	500 ppm
Clay	0 to 5%
Silt	30 to 55%
Sand	35 to 60%

Mulch Layer

The mulch layer plays an important role in the performance of the bioretention system. The mulch layer helps maintain soil moisture and avoids surface sealing, which reduces permeability. Mulch helps prevent erosion, and provides a microenvironment suitable for soil biota at the mulch/soil interface. It also serves as a pretreatment layer, trapping the finer sediments, which remain suspended after the primary pretreatment.

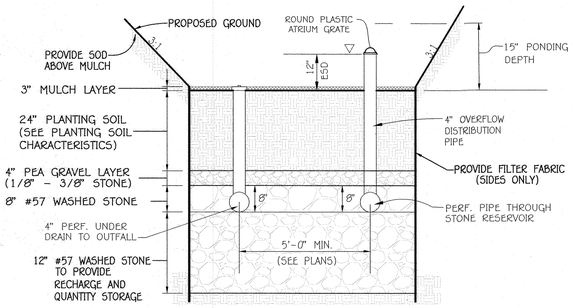
The mulch layer should be standard landscape style, single or double shredded hardwood mulch or chips. The mulch layer should be well aged (stockpiled or stored for at least 12 months), uniform in color, and free of other materials, such as weed seeds, soil, roots, etc. The mulch should be applied to a maximum depth of three inches. Grass clippings should not be used as a mulch material.

Planting Guidance

Plant material selection should be based on the goal of simulating a terrestrial forested community of native species. Bioretention simulates an upland-species ecosystem. The community should be dominated by trees, but have a distinct community of understory trees, shrubs and herbaceous materials. By creating a diverse, dense plant cover, a bioretention facility will be able to treat stormwater runoff and withstand urban stresses from insects, disease, drought, temperature, wind, and exposure. The proper selection and installation of plant materials is key to a successful system. There are essentially three zones within a bioretention facility (Figure A.5). The lowest elevation supports plant species adapted to standing and fluctuating water levels. The middle elevation supports plants that like drier soil conditions, but can still tolerate occasional inundation by water. The outer edge is the highest elevation and generally supports plants adapted to dryer conditions. A sample of appropriate plant materials for bioretention facilities are included in Table A.4. The layout of plant material should be flexible, but should follow the general principals described in Table A.5. The objective is to have a system, which resembles a random, and natural plant layout, while maintaining optimal conditions for plant establishment and growth. For a more extensive bioretention plan, consult ETAB, 1993 or Claytor and Schueler, 1997.

Table B.4. Materials Specifications for Micro-Bioretention, Rain Gardens & Landscape Infiltration

Material	Specification	Size	Notes
Plantings	see Appendix A; Table A.4	n/a	plantings are site-specific
Planting soil (2' to 4' deep)	loamy sand 60-65% compost 35-40% or sandy loam 30% coarse sand 30% compost 40%		USDA soil types loamy sand or sandy loam; clay content <5%
Organic Content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum
Pea gravel diaphragm	pea gravel: ASTM-D-448	No. 8 or No. 9 (1/8" to 3/8")	
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile		n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	No. 57 or No. Aggregate (3/8" to 3/4")	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with 1/4 inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; f = 3500 psi at 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n.a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 350.R/89; vertical loading (H-10 or H-20); allowable horizontal loading (based on soil pressures); and analysis of potential cracking
Sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone (AASHTO #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.



MICRO BIO-RETENTION SECTION WITH 6" OVERFLOW DISTRIBUTION PIPE

NO SCALE

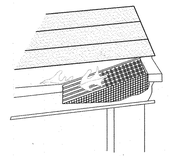
OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS (M-6 / F-6)

1. The owner shall maintain the plant material, mulch layer and soil layer annually. maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable replacement plant material is limited to the following: 2000 Maryland stormwater design manual volume II, table A.4.1 and 2.

2. The owner shall perform a plant in the spring and in the fall each year. during the inspection, the owner shall remove dead and diseased vegetation considered beyond treatment, replace dead plant material with acceptable replacement plant material. Treat diseased trees and shrubs and replace all deficient stakes and wires.

3. The owner shall inspect the mulch each spring. The mulch shall be replaced every two to three years. The previous mulch layer shall be removed before the new layer is applied.

4. The owner shall correct soil erosion on an as needed basis, with a minimum of once per month and after each heavy storm.

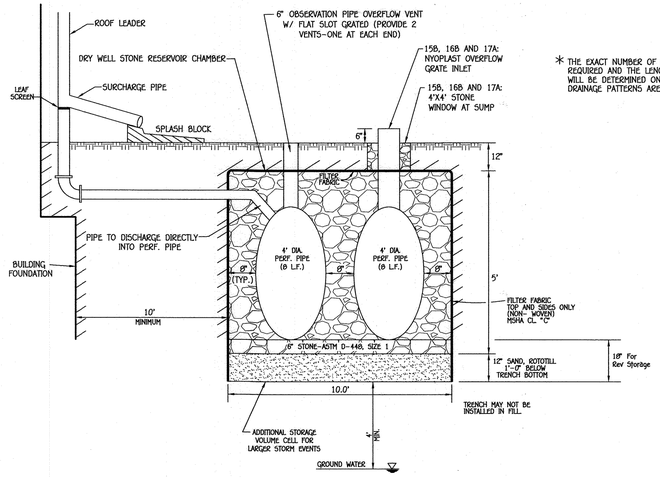


GUTTER DRAIN FILTER DETAIL

NOT TO SCALE

STORMWATER MANAGEMENT NOTES

1. STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE WITH WITH CHAPTER 5, "ENVIRONMENTAL SITE DESIGN" OF THE 2007 MARYLAND STORMWATER MANAGEMENT DESIGN MANUAL, EFFECTIVE MAY 4, 2010.
2. MAXIMUM CONTRIBUTING ROOF TOP AREA TO EACH DOWNSPOUT SHALL BE 1,000 SQ. FT. OR LESS.
3. DRYWELLS SHALL BE PROVIDED AT LOCATIONS WHERE THE LENGTH OF DISCONNECTION IS LESS THAN 75' AT 5%. THE SIZE AND CONSTRUCTION OF THE DRYWELL SHALL BE IN ACCORDANCE WITH THE DETAIL SHOWN ON THIS SHEET.
4. FINAL GRADING IS SHOWN ON THE SITE DEVELOPMENT PLAN.



Modified Drywell (M-5)

NO SCALE

* THE EXACT NUMBER OF DRYWELLS REQUIRED AND THE LENGTH AND WIDTH WILL BE DETERMINED ONCE DOWNSPOUT DRAINAGE PATTERNS ARE DETERMINED.

OPERATION AND MAINTENANCE SCHEDULE FOR DRYWELLS (M-5)

1. The Owner Shall Inspect The Monitoring Wells And Structures On A Quarterly Basis And After Every Heavy Storm Event.
2. The Owner Shall Record The Water Levels And Sediment Build Up In The Monitoring Wells Over A Period Of Several Days To Insure Trench Drainage.
3. The Owner Shall Maintain A Log Book To Determine The Rate At Which The Facility Drains.
4. When The Facility Becomes Clogged So That It Does Not Drain Down Within A Seventy Two (72) Hour Time Period, Corrective Action Shall Be Taken.
5. The Maintenance Log Book Shall Be Available To Howard County For Inspection To Insure Compliance With Operation And Maintenance Criteria.
6. Once The Performance Characteristics Of The Infiltration Facility Have Been Verified, The Monitoring Schedule Can Be Reduced To An Annual Basis Unless The Performance Data Indicates That A More Frequent Schedule Is Required.

DRY WELL CHART

LOT No.	DRYWELL No.	AREA OF ROOF PER DRYWELL	VOLUME REQUIRED	VOLUME PROVIDED	AREA OF TREATMENT	L x W x D
LOT 1	1	440 SQ. FT.	56	240	440 SQ. FT.	10' x 10' x 6.5'
LOT 1	2	320 SQ. FT.	41	320	320 SQ. FT.	10' x 10' x 6.5'
LOT 1	3	640 SQ. FT.	82	640	640 SQ. FT.	10' x 10' x 6.5'
LOT 1	4	440 SQ. FT.	56	440	440 SQ. FT.	10' x 10' x 6.5'
LOT 2	5	840 SQ. FT.	107	840	840 SQ. FT.	10' x 10' x 6.5'
LOT 2	6	320 SQ. FT.	41	320	320 SQ. FT.	10' x 10' x 6.5'
LOT 2	7	640 SQ. FT.	82	640	640 SQ. FT.	10' x 10' x 6.5'

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6.8.23

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4/27/23

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 20748, EXPIRATION DATE: 2/22/2025

STATE OF MARYLAND — KEVIN MICHAEL CHAFFEE — 20748 — REGISTERED PROFESSIONAL ENGINEER

SIGNATURE OF PROFESSIONAL ENGINEER — DATE 3/6/23

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DETAIL SHEET

OLD COLUMBIA CROSSING

LOTS 1 THRU 3 & OPEN SPACE LOT 4

3832 OLD COLUMBIA PIKE

ZONED R-ED

TAX MAP NO.: 251 GRID NO.: 13 PARCEL NO.: 262

SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN DATE: MARCH 6, 2023

SHEET 5 OF 5

ECP-22-057

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