

**GENERAL NOTES**

- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- THE EXISTING TOPOGRAPHY SHOWN HEREON IS BASED VOGEL ENGINEERING + TIMMONS GROUP, INC. SURVEY CONDUCTED ON AUGUST 20, 2021 AND FROM HOWARD COUNTY GIS.
- BEARINGS AND DISTANCES SHOWN HEREON ARE BASED ON A BOUNDARY SURVEY PERFORMED BY VOGEL ENGINEERING + TIMMONS GROUP, INC. AND FROM RECORDED PLATS AND DEEDS.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 35GG AND 35GF WERE USED FOR THIS PROJECT.
- THE SUBJECT PROPERTY IS ZONED "RR-DEO" IN ACCORDANCE WITH THE 10/6/13 ZONING REGULATIONS, AND IS SUBJECT TO THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS EFFECTIVE 10/2/03 PER COUNCIL BILL 75-2003.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE WETLANDS, STREAM(S) OR THEIR REQUIRED BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100-YEAR FLOODPLAIN.
- THERE IS A PERENNIAL STREAM ON-SITE.
- THERE IS A 100-YEAR FLOODPLAIN LOCATED ON-SITE.
- STEEP SLOPES OVER 20.00% SF CONTIGUOUS ARE NOT LOCATED ON-SITE.
- FOREST CONSERVATION OBLIGATIONS FOR THIS PROJECT SHALL BE ADDRESSED BY A FOREST CONSERVATION PLAN SUBMITTED WITH THE FUTURE SITE DEVELOPMENT PLAN.
- THERE ARE WETLANDS LOCATED AND SHOWN ON-SITE AND ARE BASED ON THE ENVIRONMENTAL REPORT BY ECO-SCIENCE PROFESSIONALS, INC. C/O MR. JOHN CANOLES, DATED MARCH 9, 2021. THE WETLANDS ARE OUTSIDE OF THE LIMIT OF DISTURBANCE AND SHALL NOT BE DISTURBED.
- STREAM BUFFER SHOWN ON-SITE ARE BASED ON ENVIRONMENTAL REPORT BY ECO-SCIENCE PROFESSIONALS, INC. C/O MR. JOHN CANOLES, DATED MARCH 9, 2021.
- GEOTECHNICAL INVESTIGATIONS SHALL BE COMPLETED AND SUBMITTED WITH THE SITE DEVELOPMENT PLANS.
- A NOISE STUDY IS NOT REQUIRED FOR THIS SITE.
- GUILFORD ROAD IS CLASSIFIED AS A MAJOR COLLECTOR. HALL SHOP ROAD IS CLASSIFIED AS A MAJOR COLLECTOR.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS, CEMETERIES, OR HISTORIC STRUCTURES LOCATED ON THIS PROPERTY.
- STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY THE USE OF STRUCTURAL, NON-STRUCTURAL PRACTICES AND MICRO-SCALE PRACTICES IN ACCORDANCE WITH THE DESIGN CRITERIA. THESE PRACTICES INCLUDE NON-ROOF TOP DISCONNECTION (N-2), MICRO-BIORETENTION (M-6), AND LEVEL SPREADER. THESE FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED.
- APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (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 AND THE HOWARD COUNTY ZONING REGULATIONS SHALL OCCUR AT THE SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN 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.
- APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE PROPOSED SEDIMENT CONTROL SCHEME. THE FINAL PLAN SHALL INCLUDE A SEQUENCE OF CONSTRUCTION WHICH SHALL DETAIL SEDIMENT & EROSION CONTROLS AND PHASING AND ADDRESS THE PROJECT TEMPORARY STORMWATER MANAGEMENT REQUIREMENTS.
- ISOLATED, SURFACE SMOOTHING AND/OR FINE GRADING MAY BE REQUIRED TO SUPPORT SOLAR EQUIPMENT INSTALLATION. HOWEVER, NO MASS GRADING WILL BE REQUIRED. ISOLATED FINE GRADES WILL BE PROVIDED WITH SITE DEVELOPMENT PLAN SUBMISSIONS, AS REQUIRED.
- THERE IS AN EXISTING STRUCTURE LOCATED ON THE PROPERTY, WHICH IS TO REMAIN.
- ALL ACCESS DRIVES FROM THE PUBLIC ROAD TO THE EQUIPMENT PAD TO BE 12' MINIMUM WIDTH AND CAPABLE OF SUPPORTING FIRE DEPARTMENT VEHICLES.
- NO MARYLAND STATE CHAMPION TREES OR TREES 75% OF THE DIAMETER OF A STATE CHAMPION TREE EXIST ON-SITE.
- THIS PROJECT IS SUBJECT TO BOARD OF APPEALS CASE BA-21-008C, ON JULY 6, 2021; THE HOWARD COUNTY BOARD OF APPEALS HEARING EXAMINER GRANTED THE PETITION OF TPE MD HO93, LLC, PROVIDED THAT THE PETITIONER MEET CERTAIN CONDITIONS:
  - THE COMMERCIAL SOLAR FACILITY CONDITIONAL USE SHALL BE CONDUCTED IN CONFORMANCE WITH AND SHALL ONLY TO THE PETITION AS SUBMITTED AND AS SHOWN ON THE CONDITIONAL USE PLAN SUBMITTED WITH THE PETITION DATED MARCH 2020 AND NOT TO OTHER ACTIVITIES, USES, OR STRUCTURES ON THE PROPERTY.
  - PETITIONER SHALL COMPLY WITH ALL CONDITIONAL USE STANDARDS.
  - THE SITE DEVELOPMENT PLAN, OR ITS EQUIVALENT, SHALL INCLUDE A NOTE CONTAINING ALL CONDITIONS OF APPROVAL.
  - PETITIONER SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.
  - THE SYSTEMS INSTALLED BY THE PETITIONER ON THE PROPERTY SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL LAWS AND PROVISIONS.
  - ANY COMMERCIAL SOLAR FACILITY THAT IS NO LONGER USED SHALL BE REMOVED BY THE PROPERTY OWNER FROM THE SITE WITHIN ONE YEAR OF THE DATE THAT THE USE CEASES.
  - THE PREMISES SHALL BE MAINTAINED AT ALL TIMES IN A CLEAN AND ORDERLY CONDITION, INCLUDING THE CARE OR REPLACEMENT OF PLANT MATERIALS REQUIRED IN THE LANDSCAPING PLAN. THE RESPONSIBILITY FOR COMPLIANCE WITH THIS PROVISION SHALL BE WITH ALL PARTIES HAVING A LEASE OR OWNERSHIP INTEREST IN THE COMMERCIAL SOLAR FACILITY.
  - THE PETITIONER SHALL REGISTER ALL SOLAR COLLECTORS WITH THE DEPARTMENT OF FIRE AND RESCUE SERVICES. THE REGISTRATION SHALL INCLUDE A MAP OF THE SOLAR FACILITY NOTING THE LOCATION OF THE SOLAR COLLECTORS AND THE PANEL DISCONNECT.
  - TREE REMOVAL SHALL BE MINIMIZED, AND REFORESTATION SHALL BE DONE IN ACCORDANCE WITH SECTION 16.1026 OF THE HOWARD COUNTY CODE.
  - ALL REQUIRED LANDSCAPING SHALL BE PROVIDED WITHIN 6 MONTHS OF INSTALLATION OF THE SOLAR PANELS.

**ENVIRONMENTAL SITE DESIGN NARRATIVE:**

- THERE ARE ENVIRONMENTAL FEATURES LOCATED ON THE EASTERN PART OF THE SITE. TREE BUFFERS AND HEDGEROWS ARE PRESENT AROUND THE PERIMETER OF THE WESTERN PORTION OF THE PROJECT AREA. WETLAND VEGETATION, STREAM BUFFER, AND STORMWATER MANAGEMENT FACILITY COMPLEX IS PRESENT ALONG ITS EASTERN PORTION OF THE PROJECT AREA. THERE IS A FOREST LOCATED AT THE SOUTHERN PART OF THE PROPERTY AND A TRIBUTARY STREAM RUNNING FROM WEST TO EAST THROUGH THE SOUTHERN PART OF THE PROPERTY. THERE IS NO PROPOSED DISTURBANCE TO THE WETLAND OR THE WETLAND BUFFER.
- THE SITE NATURALLY SLOPES FROM THE NORTH TO SOUTH BY SHEET FLOW, NATURAL SWALE, AND STREAM. THE SITE HAS BEEN DESIGNED TO MAINTAIN THE NATURAL DRAINAGE PATTERNS, WITH NO CHANGES TO THE NATURAL DRAINAGE PATTERN.
- THE CONCEPTUAL REDUCTION IN IMPERVIOUS AREA THROUGH BETTER SITE DESIGN IS ACHIEVED THROUGH THE ENVIRONMENTAL SITE DESIGN (ESD) FOR THE PROJECT TO THE MAXIMUM EXTENT PRACTICABLE (MEP). THE RESULTS OF THE ENVIRONMENTAL SITE DESIGN FOR THIS PROJECT WILL REFLECT "WOODS IN GOOD CONDITION". THE ESD CONCEPT INCLUDES THE USE OF NON-ROOF TOP DISCONNECTION (N-2), MICRO-BIORETENTION (M-6), AND LEVEL SPREADER.
- SEDIMENT CONTROL FOR THIS SPECIFIC SITE PLAN WILL BE PROVIDED THROUGH THE USE OF PROPOSED SILT FENCE PERIMETER CONTROLS. SEDIMENT CONTROL SHALL BE IN ACCORDANCE WITH CURRENT REQUIREMENTS AND SHALL BE APPROVED BY THE HOWARD SOIL CONSERVATION DISTRICT DURING THE FUTURE SITE DEVELOPMENT PLAN PHASE OF THE PROJECT.
- STORMWATER MANAGEMENT FOR THE PROJECT SHALL BE MET THROUGH THE USE OF NON-ROOF TOP DISCONNECTION (N-2), MICRO-BIORETENTION (M-6), AND LEVEL SPREADER. PROPOSED PRACTICES HAVE BEEN MAXIMIZED TO THE EXTENT PRACTICAL. THE CALCULATED RAINFALL TARGET (PE) FOR THIS PROJECT IS 1.0", AND THE TOTAL RUNOFF VOLUME (ESDv) REQUIRED IS 2,622 CF. THE CALCULATED RAINFALL PROVIDED (PE) FOR THIS PROJECT IS 1.3", AND THE TOTAL RUNOFF VOLUME (ESDv) PROVIDED IS 2,796 CF.
- AT THIS CONCEPT STAGE OF DEVELOPMENT, NO DESIGN MANUAL WAIVERS ARE ANTICIPATED.

**SITE ANALYSIS DATA CHART**

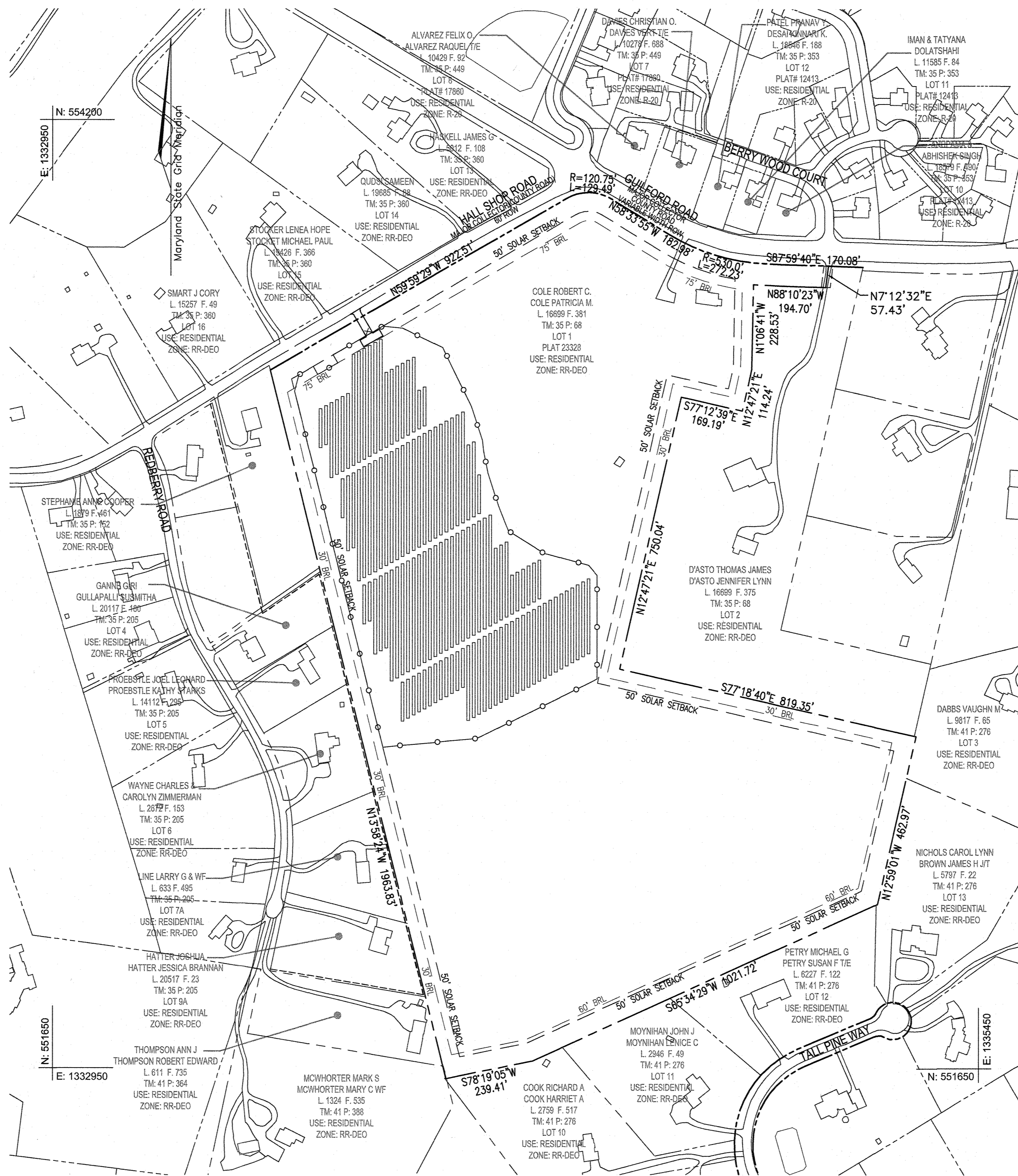
A. TOTAL SITE AREA:	53.11 AC.
B. AREA OF PLAN SUBMISSION:	13.07 AC. (LOD & SOLAR AREA)
C. COMMERCIAL SOLAR AREA:	12.79 AC. (12.80 AC. BA-21-008C)
D. AREA OF WETLANDS AND BUFFERS:	107,482 SF OR 2.47 AC.
E. AREA OF FLOODPLAIN:	108,372 SF OR 2.49 AC.
F. AREA OF 100' STREAM BUFFER:	566,954 SF OR 13.06 AC.
G. AREA OF FOREST:	1,129,390 SF OR 25.83 AC.
H. AREA OF MODERATE SLOPES (15%-24.99%):	199,216 SF OR 4.57 AC.±
I. AREA OF STEEP SLOPES (25% & GREATER):	56,511 SF OR 1.30 AC.±
J. ERODIBLE SOILS:	1,787,450 SF OR 41.03 AC.±
K. LIMIT OF DISTURBED AREA:	569,352 SF OR 13.07 AC.±
L. PROPOSED USES FOR SITE AND STRUCTURES:	SOLAR FACILITY COMMERCIAL
M. GREEN OPEN AREA:	12.99 AC.± (WITHIN LOD & SOLAR AREA)
N. PROPOSED IMPERVIOUS AREA:	0.08 AC.± (WITHIN LOD & SOLAR AREA)
O. PRESENT ZONING DESIGNATION:	RR-DEO
P. OPEN SPACE REQUIRED:	N/A
Q. DPZ FILE REFERENCES:	BA-21-008C, F-14-024

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Chad Robinson* 12/16/21  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE

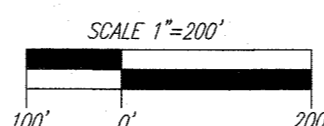
*R* 12/17/21  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE

**ENVIRONMENTAL CONCEPT PLAN**  
**TPE MD HO93, LLC**  
 6838 GUILFORD ROAD  
 CLARKSVILLE, MARYLAND 21029



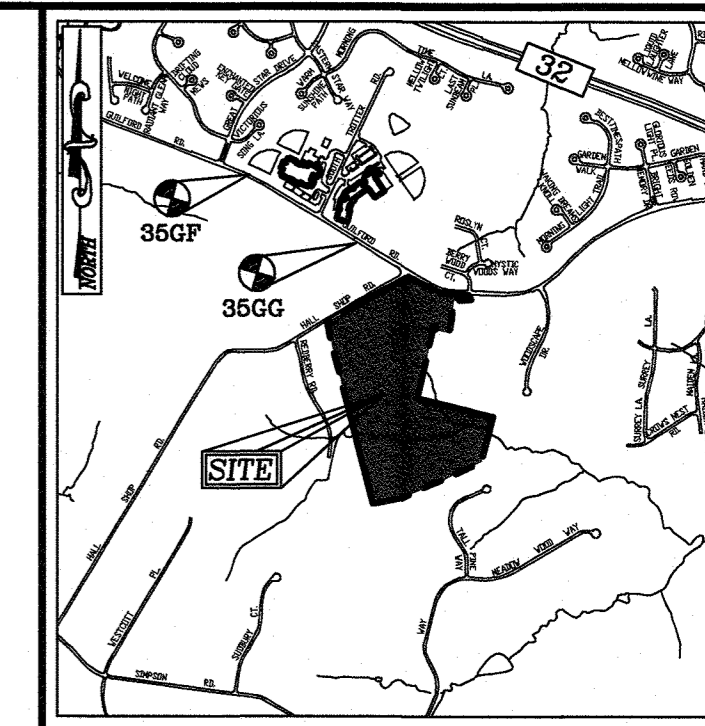
**LOCATION MAP**

SCALE: 1"=200'



**LEGENDS:**

- PARCEL BOUNDARY
- ADJACENT BOUNDARY
- 50' SOLAR SETBACK
- BUILDING RESTRICTION LINE



**VICINITY MAP**

SCALE: 1"=200'  
 ADC MAP: 5052 PAGE: 27 GRID: C1

**BENCHMARKS**

HOWARD COUNTY BENCHMARK 35GG  
 N 554,358.86 E 1,333,834.18 ELEV.: 477.96'  
 HOWARD COUNTY MONUMENT  
 HOWARD COUNTY BENCHMARK 35GF  
 N 555,080.17 E 1,332,716.63 ELEV.: 466.90'  
 HOWARD COUNTY MONUMENT

**SHEET INDEX**

DESCRIPTION	SHEET NO.
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STORMWATER MANAGEMENT DRAINAGE AREA MAP	7-8 OF 9
STORMWATER MANAGEMENT & SITE NOTES AND DETAILS	9 OF 9

**OWNER**

ROBERT C. COLE TRUSTEE  
 PATRICIA M. COLE TRUSTEE  
 6838 GUILFORD ROAD  
 CLARKSVILLE, MD 21029

**DEVELOPER**

TPE MD HO93, LLC  
 3820 S. DEHLIA STREET  
 DENVER, CO 80237  
 PHONE: 970-379-3937

NO.	REVISION	DATE

**ENVIRONMENTAL CONCEPT PLAN**  
**COVER SHEET**

**TPE MD HO93, LLC**

6838 GUILFORD ROAD, CLARKSVILLE, MD 21029

DEED L 16597 F.362

ROBERT C. COLE TRUSTEE - LOT 1 ZONED RR-DEO

TAX MAP 35 BLOCK 20 PLAT NO. 23328 HOWARD COUNTY, MARYLAND

5TH ELECTION DISTRICT

**VOGEL ENGINEERING**



**TIMMONS GROUP**

3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043  
 P: 410.461.7666 F: 410.461.9961 www.timmons.com

DESIGN BY: RHV

DRAWN BY: IMH

CHECKED BY: RHV

DATE: DECEMBER 2021

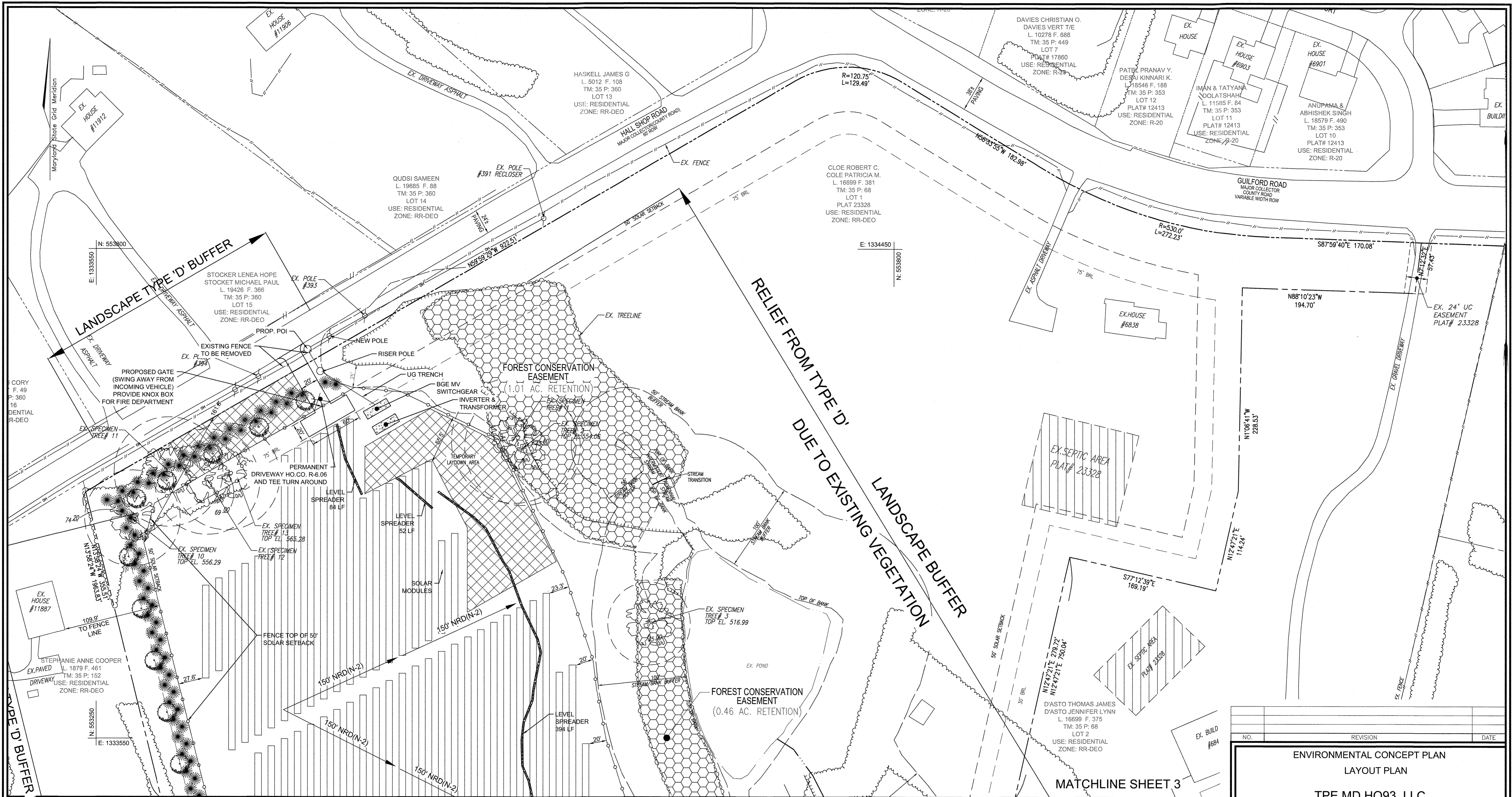
SCALE: AS SHOWN

W.O. NO.: 45812

**PROFESSIONAL CERTIFICATE**

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. 16193 EXPIRATION DATE: 06-27-2022

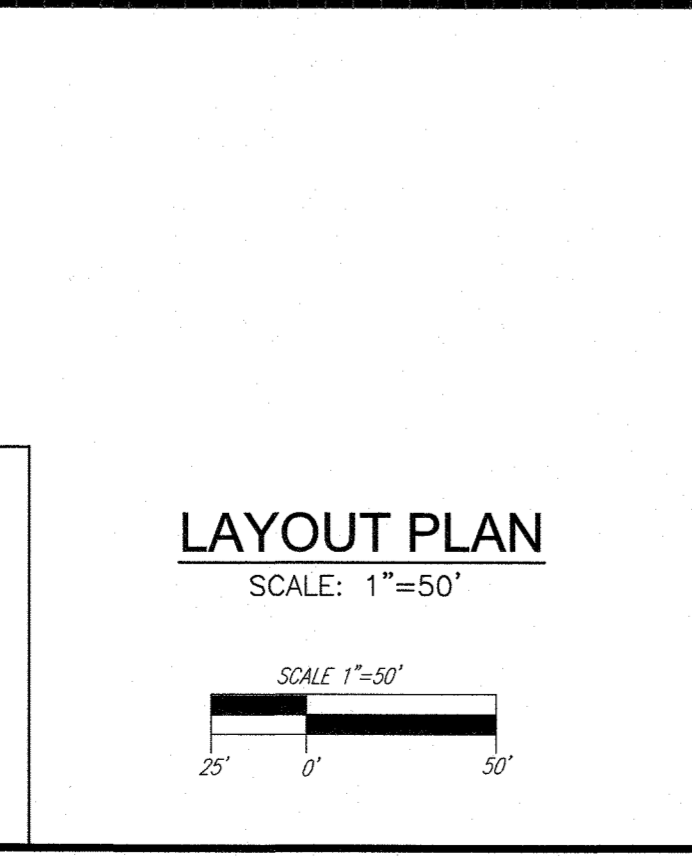
1 SHEET OF 9



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]*  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 12.16.21

*[Signature]*  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 12/17/21



- LEGENDS:**
- PARCEL BOUNDARY
  - - - 50' SOLAR SETBACK
  - - - - - STREAM CENTERLINE
  - - - - - STREAM BUFFER
  - ||||| WETLAND
  - ||||| WETLAND BUFFER
  - EXISTING TREELINE
  - XXXXX TEMPORARY LAYDOWN / STAGING AREA
  - TRANSFORMER PAD
  - - - - - PROPOSED FENCE
  - ▨ MICRO-BIORETENTION (M-6)
  - SPECIMEN TREE

**OWNER**  
 ROBERT C. COLE TRUSTEE  
 PATRICIA M. COLE TRUSTEE  
 6838 GUILFORD ROAD  
 CLARKSVILLE, MD 21029

**DEVELOPER**  
 TPE MD H093, LLC  
 3820 S. DENLIA STREET  
 DENVER, CO 80237  
 PHONE: 970-379-3937

NO.	REVISION	DATE

**ENVIRONMENTAL CONCEPT PLAN**  
**LAYOUT PLAN**

**TPE MD H093, LLC**  
 6838 GUILFORD ROAD, CLARKSVILLE, MD 21029  
 DEED L 18597 F.362  
 ROBERT C. COLE PROPERTY - LOT 1 ZONED RR-DEO  
 TAX MAP 35 BLOCK 20 PLAT NO. 23328 PARCEL 68  
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL ENGINEERING**  
 Ⓢ  
**TIMMONS GROUP**  
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 211043  
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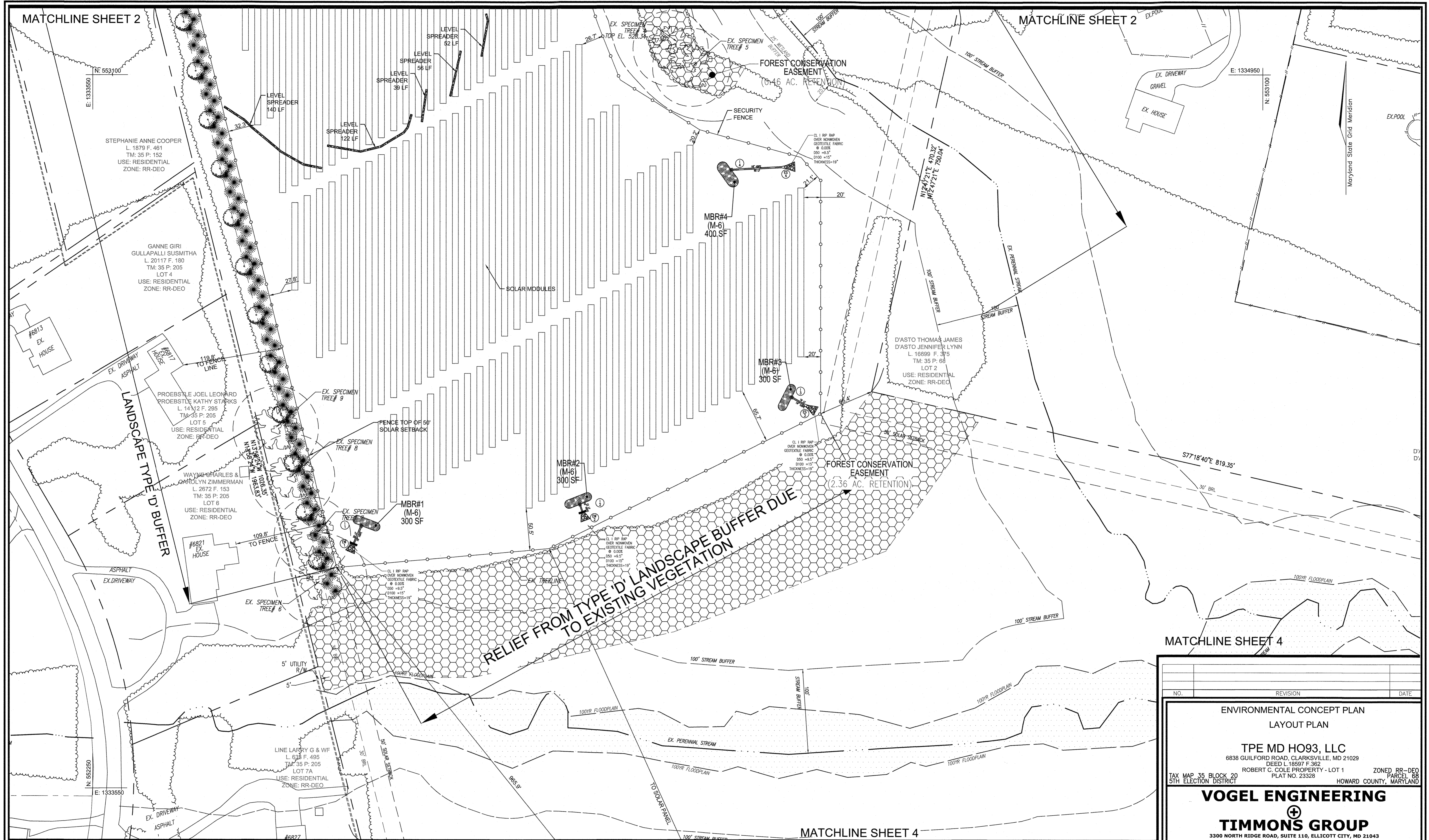
**PROFESSIONAL CERTIFICATE**  
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16183 EXPIRATION DATE: 09-27-2022

DESIGN BY: RHV  
 DRAWN BY: IMH  
 CHECKED BY: RHV  
 DATE: DECEMBER 2021  
 SCALE: AS SHOWN  
 W.O. NO.: 45812

2 SHEET OF 9

MATCHLINE SHEET 2

MATCHLINE SHEET 2



MATCHLINE SHEET 4

MATCHLINE SHEET 4

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* /2.16.21  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* /2.17.21  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

LAYOUT PLAN  
 SCALE: 1"=50'

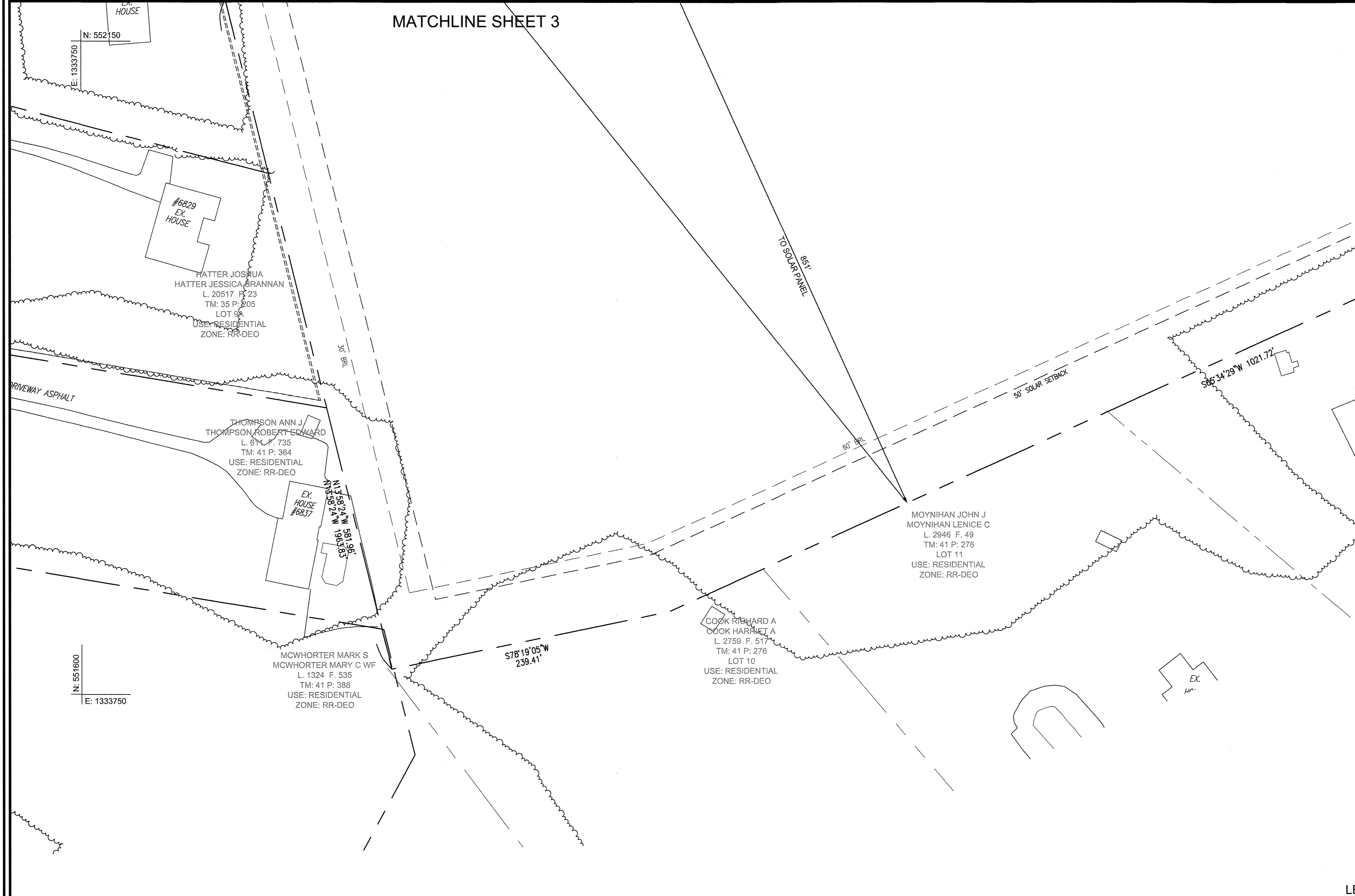
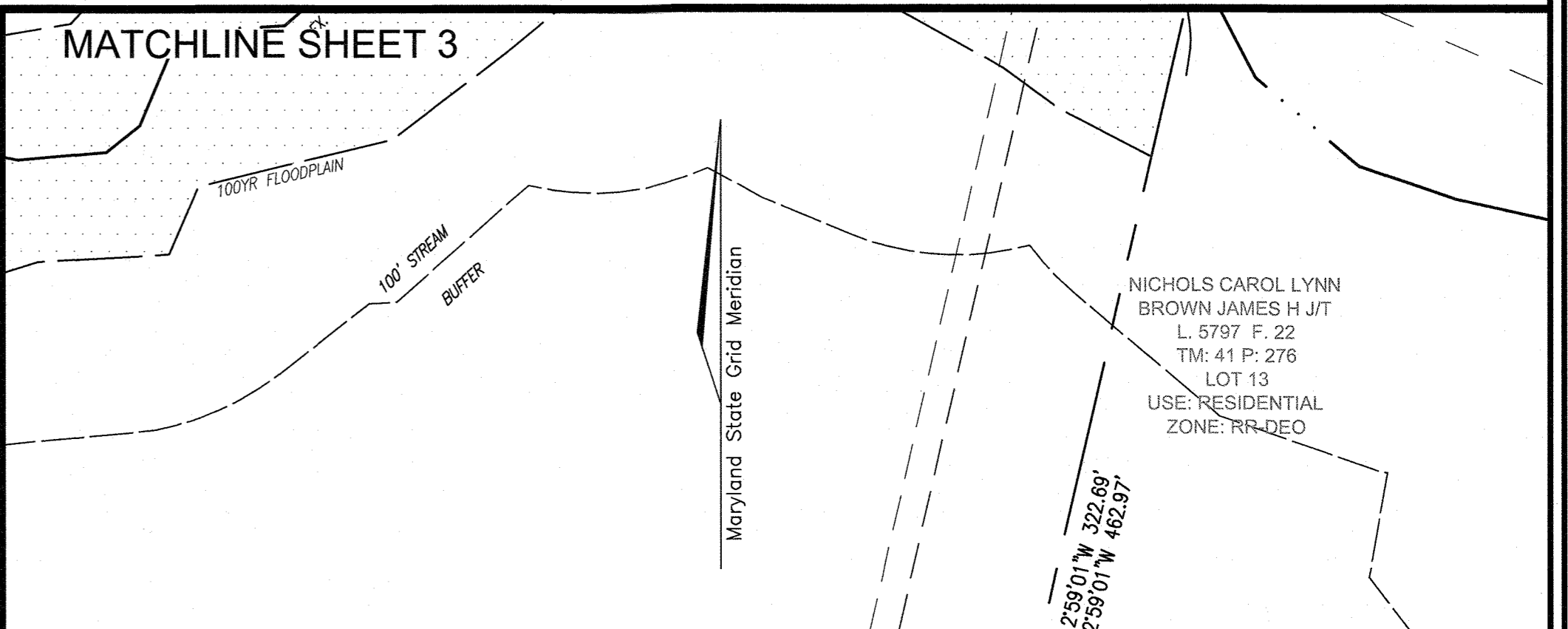
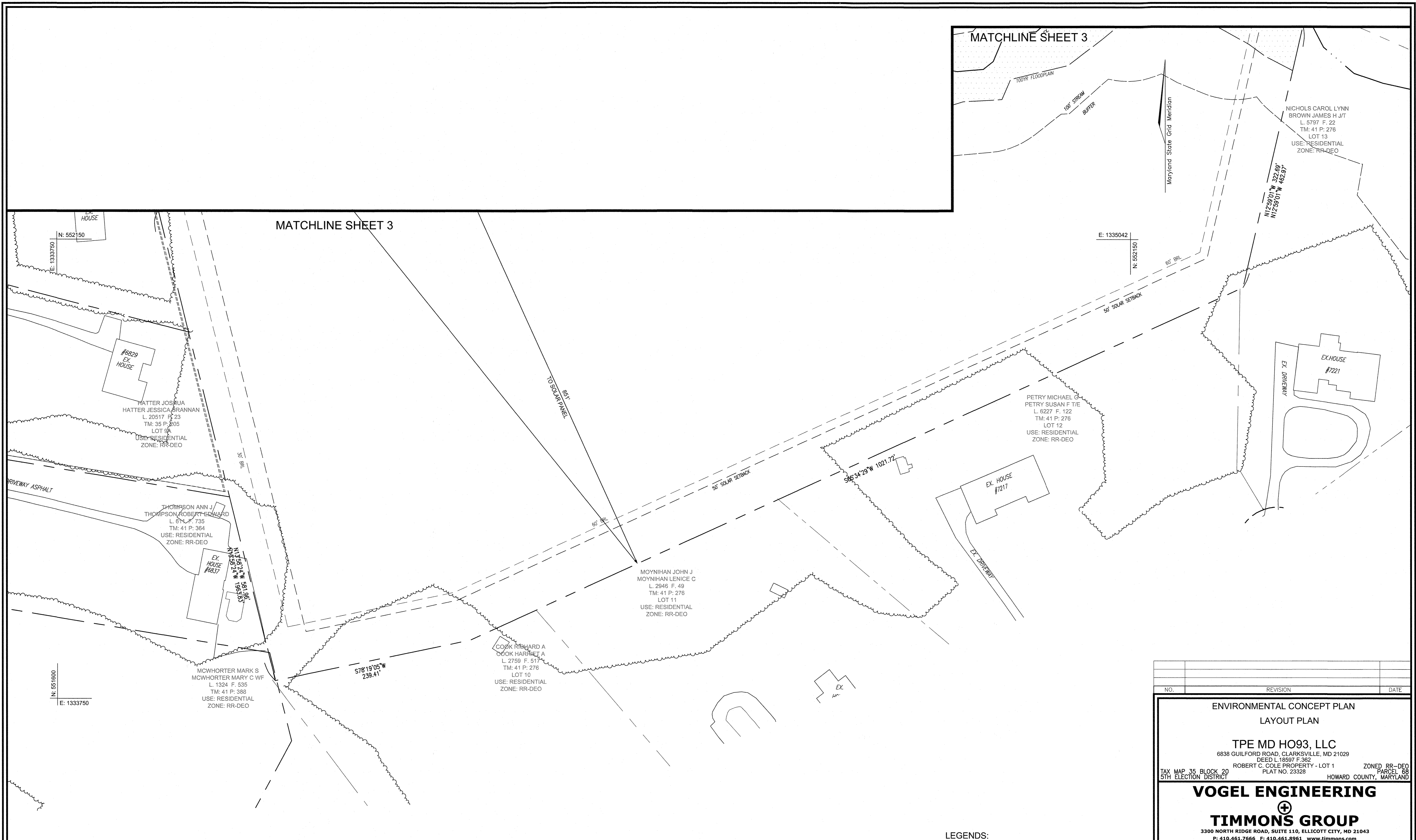
SCALE 1"=50'  
 25' 0' 50'

- LEGENDS:
- PARCEL BOUNDARY
  - 50' SOLAR SETBACK
  - STREAM CENTERLINE
  - STREAM BUFFER
  - WETLAND
  - WETLAND BUFFER
  - EXISTING TREELINE
  - TEMPORARY LAYDOWN / STAGING AREA
  - TRANSFORMER PAD
  - PROPOSED FENCE
  - MICRO-BIORETENTION (M-6)
  - SPECIMEN TREE

OWNER  
 ROBERT C. COLE TRUSTEE  
 PATRICIA M. COLE TRUSTEE  
 6836 GUILFORD ROAD, CLARKSVILLE, MD 21029

DEVELOPER  
 TPE MD HO93, LLC  
 3820 S. DEHLIA STREET  
 DENVER, CO 80231  
 PHONE: 970-379-3937

NO.	REVISION	DATE
ENVIRONMENTAL CONCEPT PLAN LAYOUT PLAN		
TPE MD HO93, LLC 6838 GUILFORD ROAD, CLARKSVILLE, MD 21029 DEED L 18597 F. 362 ROBERT C. COLE PROPERTY - LOT 1 ZONED RR-DEO TAX MAP 35 BLOCK 20 PLAT NO. 23328 PARCEL 68 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND		
<b>VOGEL ENGINEERING</b> + <b>TIMMONS GROUP</b> 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043 P: 410.461.7666 F: 410.461.8961 www.timmons.com		
DESIGN BY:	RHV	PROFESSIONAL CERTIFICATE
DRAWN BY:	IMH	I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 08-27-2022
CHECKED BY:	RHV	
DATE:	DECEMBER 2021	
SCALE:	AS SHOWN	
W.O. NO.:	45912	
3 SHEET OF 9		



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 12/16/21  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 12/17/21  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

LAYOUT PLAN  
 SCALE: 1"=50'

- LEGENDS:**
- PARCEL BOUNDARY
  - - - 50' SOLAR SETBACK
  - STREAM CENTERLINE
  - - - STREAM BUFFER
  - EXISTING TREELINE
  - x - EXISTING FENCE

**OWNER**  
 ROBERT C. COLE TRUSTEE  
 PATRICIA M. COLE TRUSTEE  
 6838 GUILFORD ROAD  
 CLARKSVILLE, MD 21029

**DEVELOPER**  
 TPE MD H093, LLC  
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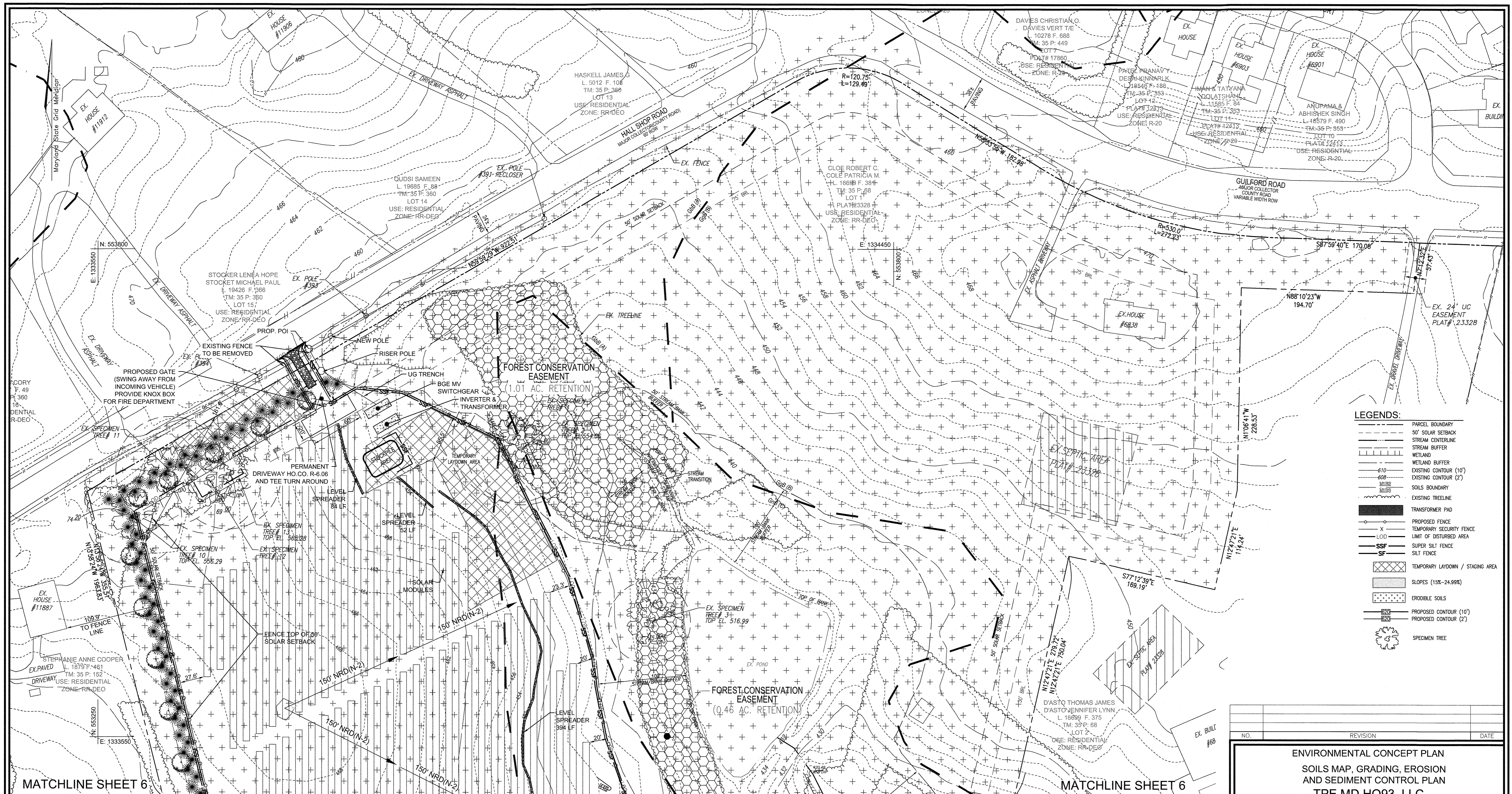
NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN  
 LAYOUT PLAN

TPE MD H093, LLC  
 6838 GUILFORD ROAD, CLARKSVILLE, MD 21029  
 DEED L-18597 F-362  
 ROBERT C. COLE PROPERTY - LOT 1 ZONED RR-DEO  
 TAX MAP 35 BLOCK 20 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 PARCEL 68 PLAT NO. 23329

**VOGEL ENGINEERING**  
 +  
**TIMMONS GROUP**  
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043  
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

	DESIGN BY: RHV	<b>PROFESSIONAL CERTIFICATE</b> 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. 16193, EXPIRATION DATE: 08-27-2022.
	DRAWN BY: IMH	
	CHECKED BY: RHV	
	DATE: DECEMBER 2021	
SCALE: AS SHOWN	W.O. NO.: 45912	4 SHEET OF 9



**LEGENDS:**

- PARCEL BOUNDARY
- - - 50' SOLAR SETBACK
- STREAM CENTERLINE
- STREAM BUFFER
- WETLAND BUFFER
- 610 EXISTING CONTOUR (10')
- 608 EXISTING CONTOUR (2')
- SOLS BOUNDARY
- EXISTING TREELINE
- TRANSFORMER PAD
- PROPOSED FENCE
- X TEMPORARY SECURITY FENCE
- LOD LIMIT OF DISTURBED AREA
- SSF SUPER SILT FENCE
- SF SILT FENCE
- TEMPORARY LAYDOWN / STAGING AREA
- SLOPES (15%-24.99%)
- ERODIBLE SOILS
- PROPOSED CONTOUR (10')
- PROPOSED CONTOUR (2')
- SPECIMEN TREE

MATCHLINE SHEET 6

MATCHLINE SHEET 6

**NOTE:**

- SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
- SILT FENCE SHALL BE CURLED UP HILL NO MORE THAN 35 FEET APART
- DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

**NOTE:**

1. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE IN DITCHES AFTER CONSTRUCTION OF SOLAR ARRAY.
2. CONTRACTOR SHALL MAINTAIN THAT RUNOFF IS DIRECTED TO THE MICRO-BIORETENTION FACILITIES.

**NOTES:**

1. APPROVAL OF THIS ECP DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED BUILDING AND/OR GRADING PERMIT ZONING AND SUBDIVISION AND SUBDIVISION AND LAND DEVELOPMENT REGULATIONS SHALL OCCUR AT THE FINAL PLAN AND SITE DEVELOPMENT PLAN STAGES, AND THEREFORE, THIS PLAN IS SUBJECT TO ADDITIONAL AND MORE DETAILED COMMENTS AS THE PLAN PROGRESSES THROUGH THE PERMIT PROCESS.
2. THERE ARE NO ENVIRONMENTAL FEATURES: FLOODPLAIN, WETLANDS, STREAMS, STEEP SLOPES OR FOREST THAT EXISTS WITHIN THE PROPOSED LIMIT OF DISTURBANCE.

**HSCD NOTES:**

APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE PROPOSED SEDIMENT CONTROL SCHEME.

1. THE FINAL PLAN SHALL INCLUDE A SEQUENCE OF CONSTRUCTION WHICH SHALL DETAIL SEDIMENT & EROSION CONTROLS AND PHASING
2. THE PROJECT SHALL ADDRESS ANY TEMPORARY STORMWATER MANAGEMENT REQUIREMENTS
3. THE FINAL PLAN SUBMISSION SHALL PROVIDE A DRAINAGE AREA MAP SPECIFIC TO CHOSEN SEDIMENT CONTROLS
4. THE FINAL PLAN SUBMISSION SHALL PROVIDE COMPUTATIONS TO VERIFY VELOCITIES ALONG DIKES, SWALES AND AT DIKES OUTLET LOCATIONS.

**SOILS MAP, GRADING, EROSION AND SEDIMENT CONTROL PLAN**

SCALE: 1" = 50'

SOILS LEGEND				
SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE HYDRIC
M6C	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B	0.32	NO NO
G8B	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	0.32	NO NO
G8B	GLENNVILLE-CODORUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	0.49	YES NO
G8B	GLENNVILLE-SALE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	0.49	YES YES
G8B	GLENNVILLE LOAM, 3 TO 8 PERCENT SLOPES	B	0.37	YES NO

**SOILS NOTE:**  
HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 12/16/21

*[Signature]*  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE: 12/17/21

**OWNER:**  
ROBERT C. COLE TRUSTEE  
PATRICIA M. COLE TRUSTEE  
6838 GUILFORD ROAD  
CLARKSVILLE, MD 21029

**DEVELOPER:**  
TPE MD HO93, LLC  
3820 S. DELIA STREET  
DENVER, CO 80231  
PHONE: 970-379-3937

NO.	REVISION	DATE

**ENVIRONMENTAL CONCEPT PLAN**  
**SOILS MAP, GRADING, EROSION AND SEDIMENT CONTROL PLAN**  
**TPE MD HO93, LLC**  
6838 GUILFORD ROAD, CLARKSVILLE, MD 21029  
DEED L 18597 F 362  
ROBERT C. COLE PROPERTY - LOT 1 ZONED RR-DEO  
TAX MAP 35 BLOCK 20 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL ENGINEERING**  
**TIMMONS GROUP**  
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043  
P: 410.461.7666 F: 410.461.8961 www.timmons.com

**PROFESSIONAL CERTIFICATE**

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 09-27-2022

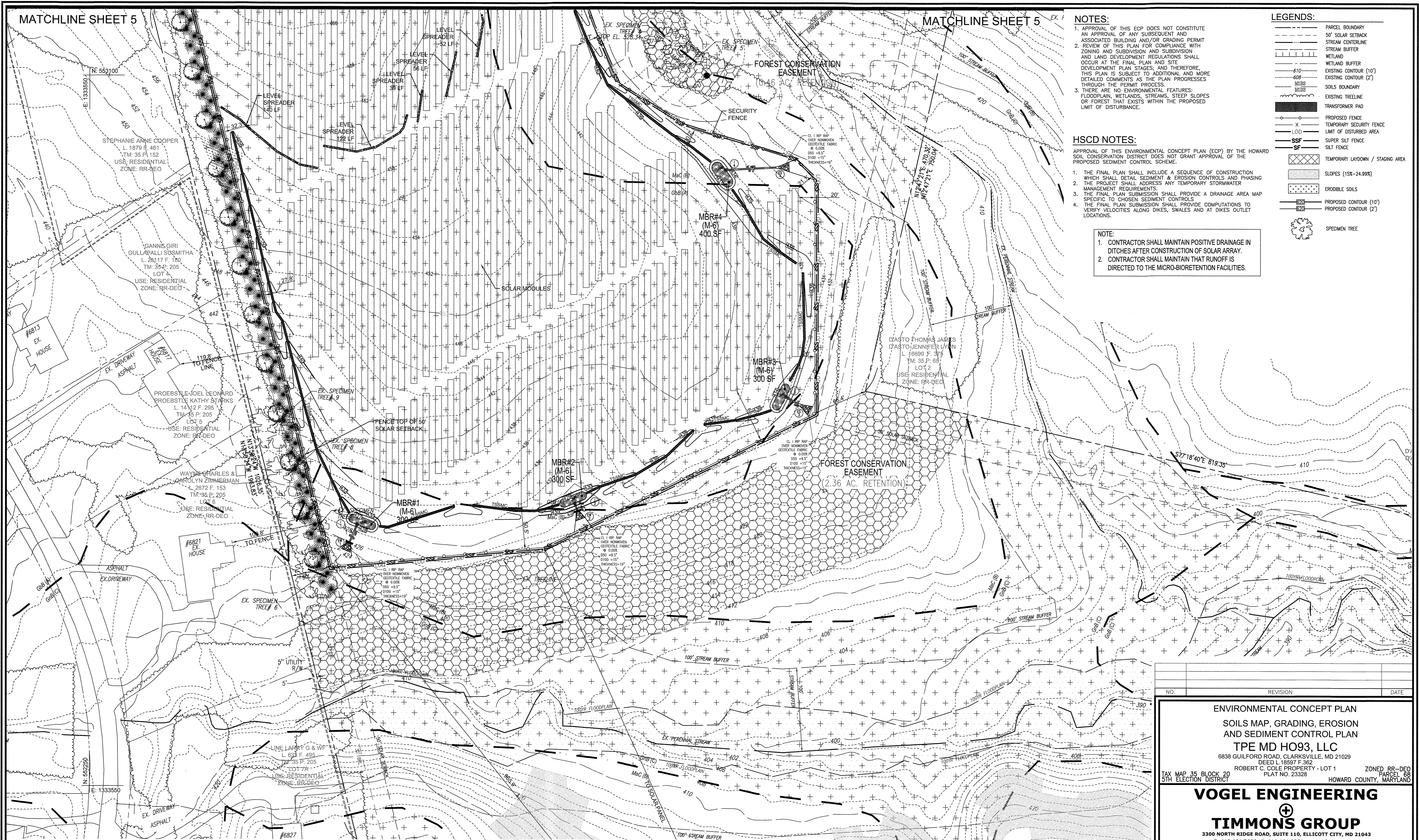
DESIGN BY: RIV  
DRAWN BY: IMH  
CHECKED BY: RIV  
DATE: DECEMBER 2021  
SCALE: AS SHOWN  
W.O. NO.: 45912

*[Signature]*  
ROBERT H. VOGEL, PE No.16193

5 SHEET OF 9

MATCHLINE SHEET 5

MATCHLINE SHEET 5



**NOTES:**

- APPROVAL OF THIS ECP DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED BUILDING AND/OR GRADING PERMIT.
- REVIEW OF THIS PLAN FOR COMPLIANCE WITH ZONING AND SUBDIVISION AND SUBDIVISION AND LAND DEVELOPMENT REGULATIONS SHALL OCCUR AT THE FINAL PLAN AND SITE DEVELOPMENT PLAN STAGES; AND THEREFORE, THIS PLAN IS SUBJECT TO ADDITIONAL AND MORE DETAILED COMMENTS AS THE PLAN PROGRESSES THROUGH THE PERMIT PROCESS.
- THERE ARE NO ENVIRONMENTAL FEATURES: FLOODPLAIN, WETLANDS, STREAMS, STEEP SLOPES OR FOREST THAT EXISTS WITHIN THE PROPOSED LIMIT OF DISTURBANCE.

**HSCD NOTES:**

APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE PROPOSED SEDIMENT CONTROL SCHEME.

- THE FINAL PLAN SHALL INCLUDE A SEQUENCE OF CONSTRUCTION WHICH SHALL DETAIL SEDIMENT & EROSION CONTROLS AND PHASING MANAGEMENT REQUIREMENTS.
- THE FINAL PLAN SUBMISSION SHALL PROVIDE A DRAINAGE AREA MAP SPECIFIC TO CHOSEN SEDIMENT CONTROLS.
- THE FINAL PLAN SUBMISSION SHALL PROVIDE COMPUTATIONS TO VERIFY VELOCITIES ALONG DIKES, SWALES AND AT DIKES OUTLET LOCATIONS.

**NOTE:**

- CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE IN DITCHES AFTER CONSTRUCTION OF SOLAR ARRAY.
- CONTRACTOR SHALL MAINTAIN THAT RUNOFF IS DIRECTED TO THE MICRO-BIORETENTION FACILITIES.

**LEGENDS:**

	PARCEL BOUNDARY
	50' SOLAR SETBACK
	STREAM CENTERLINE
	STREAM BUFFER
	WETLAND
	WETLAND BUFFER
	EXISTING CONTOUR (10')
	EXISTING CONTOUR (2')
	MLB
	MLD
	SOILS BOUNDARY
	EXISTING TREELINE
	TRANSFORMER PAD
	PROPOSED FENCE
	TEMPORARY SECURITY FENCE
	LIMIT OF DISTURBED AREA
	SUPER SILT FENCE
	SILT FENCE
	TEMPORARY LAYDOWN / STAGING AREA
	SLOPES (15%-24.99%)
	ERODIBLE SOILS
	PROPOSED CONTOUR (10')
	PROPOSED CONTOUR (2')
	SPECIMEN TREE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]*  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 12/16/21

*[Signature]*  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 12/17/21

**SOILS MAP, GRADING, EROSION AND SEDIMENT CONTROL PLAN**

SCALE: 1"=50'

**SOILS LEGEND**

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE	HYDRIC
MAC	MAJOR LOAM, 8 TO 15 PERCENT SLOPES	B	0.32	NO	NO
Gc8	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	0.32	NO	NO
Gc8	GLENVILLE-CODORUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	0.49	YES	NO
Gc8	GLENVILLE-BAILE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	0.49	YES	YES
Gc8	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	B	0.37	YES	NO

**SOILS NOTE:**  
 HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

**NOTE:**

- SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
- SILT FENCE SHALL BE CURLED UPHILL. NO MORE THAN 35 FEET APART.
- DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

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 CLARKSVILLE, MD 21029

**DEVELOPER**  
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 3820 S. DENVER STREET  
 DENVER, CO 80237  
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NO.	REVISION	DATE

**ENVIRONMENTAL CONCEPT PLAN**  
**SOILS MAP, GRADING, EROSION AND SEDIMENT CONTROL PLAN**  
**TPE MD H093, LLC**  
 6838 GUILFORD ROAD, CLARKSVILLE, MD 21029  
 DEED L-18597 F-362  
 ROBERT C. COLE PROPERTY - LOT 1 ZONED RR-DEO  
 TAX MAP 35 BLOCK 20 PLAT NO. 23328 PARCEL 68  
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

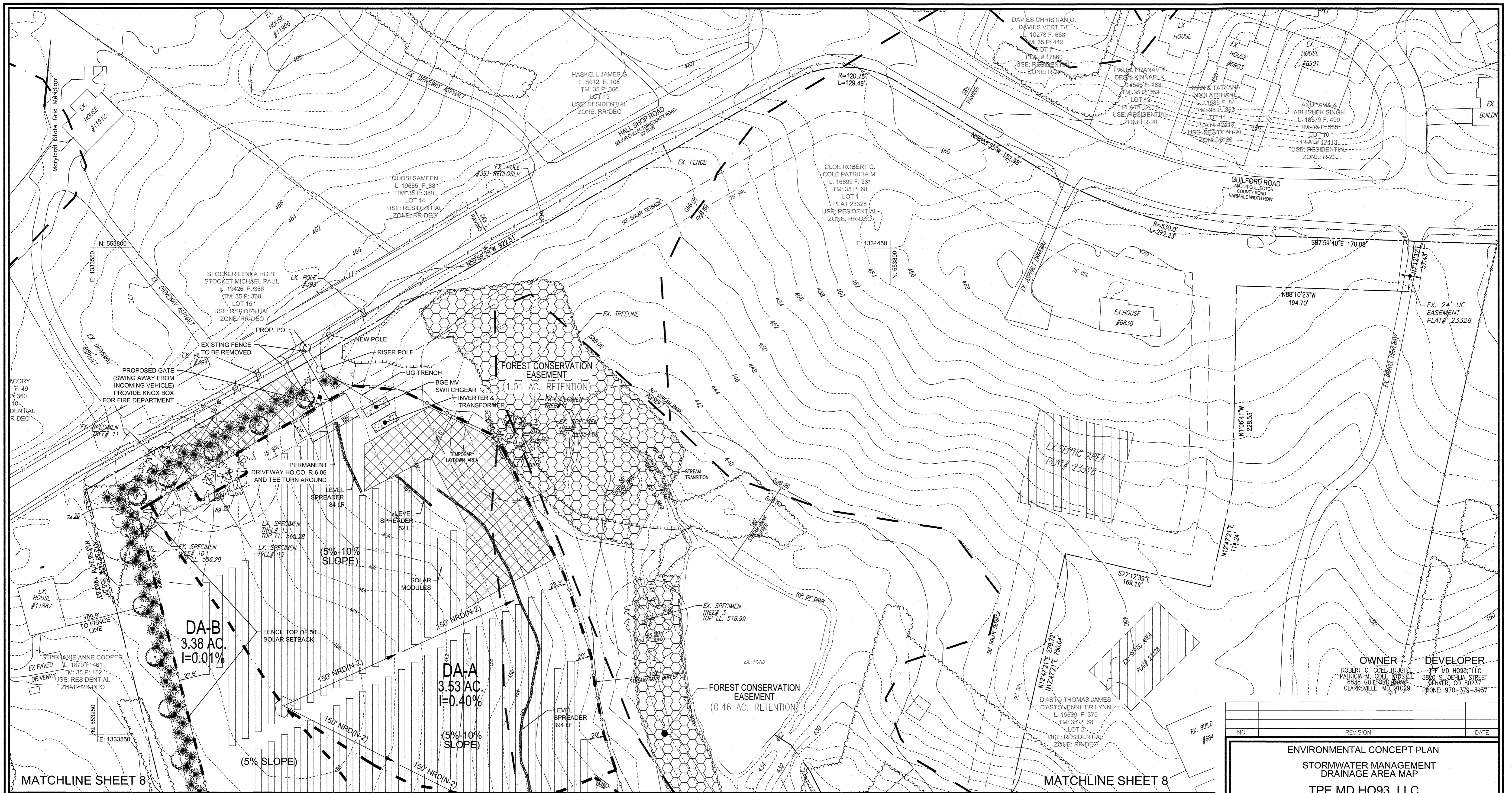
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 EXPIRATION DATE: 09-27-2022

DESIGN BY: RHV  
 DRAWN BY: IMH  
 CHECKED BY: RHV  
 DATE: DECEMBER 2021  
 SCALE: AS SHOWN  
 W.D. NO.: 45912

ROBERT H. VOGEL, PE No.16193

6 SHEET OF 9



MATCHLINE SHEET 8

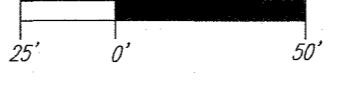
MATCHLINE SHEET 8

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 12/16/21  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 12/17/21  
 CHIEF, DIVISION OF LAND DEVELOPMENT

- LEGENDS:**
- PARCEL BOUNDARY
  - 50' SOLAR SETBACK
  - STREAM CENTERLINE
  - STREAM BUFFER
  - WETLAND
  - WETLAND BUFFER
  - EXISTING CONTOUR (10')
  - EXISTING CONTOUR (2')
  - M1B2
  - M1B3
  - EXISTING TREELINE
  - DRAINAGE AREA
  - PROPOSED CONTOUR (10')
  - PROPOSED CONTOUR (2')
  - TEMPORARY LAYDOWN / STAGING AREA
  - TRANSFORMER PAD
  - PROPOSED FENCE
  - SLOPES (15%-24.99%)
  - MICRO-BIORETENTION (M-6)
  - SPECIMEN TREE

**STORMWATER MANAGEMENT DRAINAGE AREA MAP**

SCALE: 1"=50'



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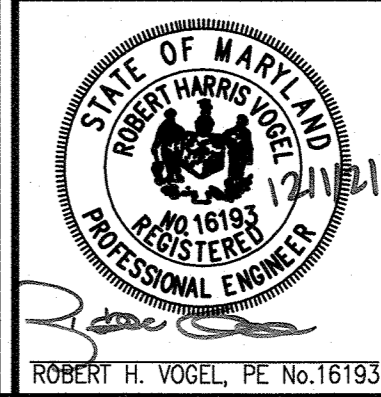
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**OWNER DEVELOPER**  
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**ENVIRONMENTAL CONCEPT PLAN**  
**STORMWATER MANAGEMENT DRAINAGE AREA MAP**  
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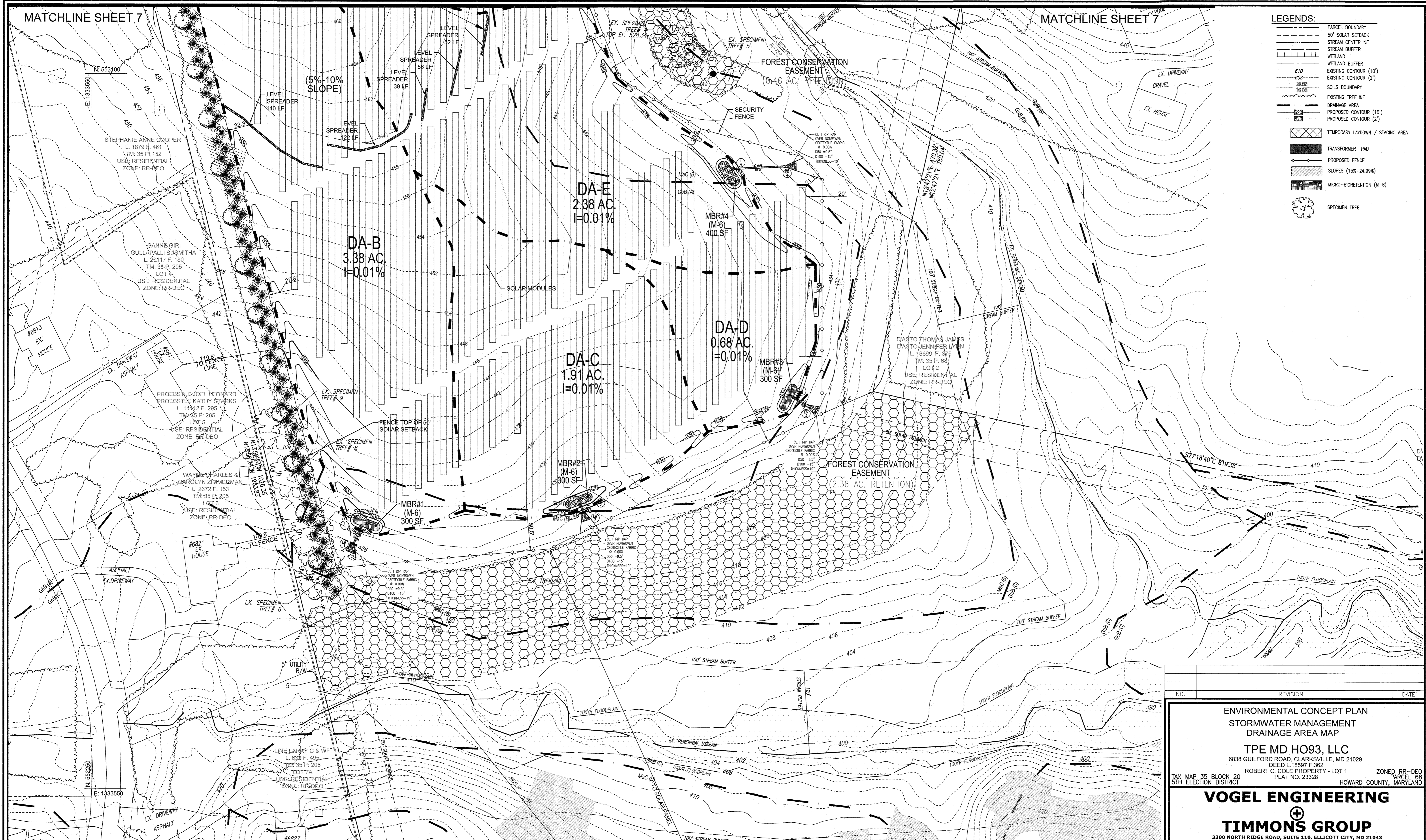
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DESIGN BY: RHW  
 DRAWN BY: IMH  
 CHECKED BY: RHW  
 DATE: DECEMBER 2021  
 SCALE: AS SHOWN  
 W.O. NO.: 45912

MATCHLINE SHEET 7

MATCHLINE SHEET 7

- LEGENDS:**
- PARCEL BOUNDARY
  - - - 50' SOLAR SETBACK
  - STREAM CENTERLINE
  - STREAM BUFFER
  - WETLAND
  - WETLAND BUFFER
  - 610 EXISTING CONTOUR (10')
  - 608 EXISTING CONTOUR (2')
  - 3038 SOILS BOUNDARY
  - EXISTING TREELINE
  - DRAINAGE AREA
  - PROPOSED CONTOUR (10')
  - PROPOSED CONTOUR (2')
  - TEMPORARY LAYDOWN / STAGING AREA
  - TRANSFORMER PAD
  - PROPOSED FENCE
  - SLOPES (15%-24.99%)
  - MICRO-BIORETENTION (M-6)
  - SPECIMEN TREE



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 12/16/21  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 12/17/21  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

**STORMWATER MANAGEMENT  
 DRAINAGE AREA MAP**

SCALE: 1"=50'

**OWNER**  
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**ENVIRONMENTAL CONCEPT PLAN  
 STORMWATER MANAGEMENT  
 DRAINAGE AREA MAP**

**TPE MD H093, LLC**  
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 DEED L.18597 F.362  
 ROBERT C. COLE PROPERTY - LOT 1  
 PLAT NO. 23328

TAX MAP 35, BLOCK 20, 5TH ELECTION DISTRICT      ZONED RR-DEO PARCEL 88      HOWARD COUNTY, MARYLAND

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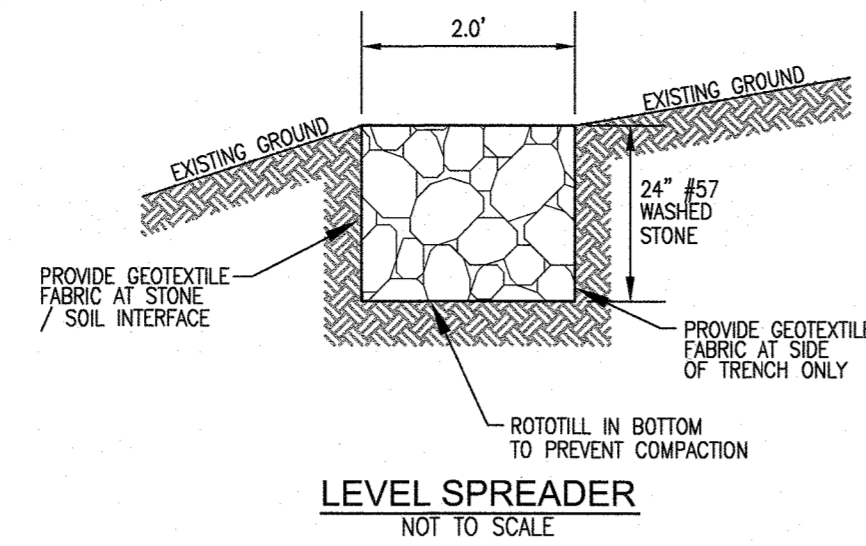
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 DATE: DECEMBER 2021  
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 W.O. NO.: 45912

ROBERT H. VOGEL, PE No.18143



N-2. DISCONNECTION OF NON-ROOFTOP RUNOFF

**CONSTRUCTION CRITERIA:**  
 THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING THE CONSTRUCTION OF PROJECTS WITH PLANNED NON-ROOFTOP DISCONNECTIONS:  
 -EROSION AND SEDIMENT CONTROL: EROSION AND SEDIMENT CONTROL PRACTICES (E.G., SEDIMENT TRAPS) SHALL NOT BE LOCATED IN VEGETATED AREAS RECEIVING DISCONNECTED RUNOFF  
 -SITE DISTURBANCE: CONSTRUCTION VEHICLES AND EQUIPMENT SHOULD AVOID AREAS RECEIVING DISCONNECTED RUNOFF TO MINIMIZE DISTURBANCE AND COMPACTION. SHOULD AREAS RECEIVING DISCONNECTED RUNOFF BECOME COMPACTED, SCARPING THE SURFACE OR ROTOTILLING THE SOIL TO A DEPTH OF FOUR TO SIX INCHES SHALL BE PERFORMED TO ENSURE PERMEABILITY. ADDITIONALLY, AMENDMENTS MAY BE NEEDED FOR TIGHT, CLAYEY SOILS.  
**INSPECTION:**  
 A FINAL INSPECTION SHALL BE CONDUCTED BEFORE USE AND OCCUPANCY APPROVAL TO ENSURE THAT SIZING FOR TREATMENT AREAS HAS BEEN MET AND PERMANENT STABILIZATION HAS BEEN ESTABLISHED.  
**MAINTENANCE CRITERIA:**  
 MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE AREAS RECEIVING RUNOFF SHOULD BE PROTECTED FROM FUTURE COMPACTION (E.G., BY PLANTING TREES OR SHRUBS ALONG THE PERIMETER). IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.



**HOWARD COUNTY - OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)**  
 A. MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE OWNER SHALL ENSURE THE AREAS RECEIVING RUNOFF ARE PROTECTED FROM FUTURE COMPACTION OR DEVELOPMENT OF IMPERVIOUS AREA. IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.

**APPENDIX B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDEN, LANDSCAPE INFILTRATION & INFILTRATION BERMS**

**1. MATERIAL SPECIFICATIONS**  
 THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.  
**2. FILTERING MEDIA OR PLANTING SOIL**  
 THE SOIL SHALL BE A UNIFORM MIX FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVIDE A HINDERANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05. THE PLANTING SOIL SHALL BE:  
 • SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION).  
 • ORGANIC CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (30%-65%) AND COMPOST (30% TO 40%) OR SANDY LOAM (30%, COURSE SAND (30%), AND COMPOST (40%).  
 • PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIMES, IRON SULFATE PLUS SULFUR) MAY BE MIXED IN TO THE SOIL TO INCREASE OR DECREASE PH.  
 THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.

**3. COMPACTION**  
 IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING LOADERS, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TIRE TREADS. EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE. COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACURE THE SOIL PROFILE THROUGHOUT THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.  
 ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE. WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE. WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

**4. PLANT MATERIAL**  
 RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.  
**5. PLANT INSTALLATION**  
 COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AERED (6 TO 12 MONTHS) FOR ACCEPTANCE. ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION. TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL. GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLOTS SHOULD BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS. THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DETAILS, OR AT A MINIMUM, IMPROVES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

**6. UNDERDRAINS**  
 UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:  
 • PIPE - SHOULD BE 4" TO 8" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F758, TYPE PS 28, OR ASTM F278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OF HDPE).  
 • PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 6X4) GALVANIZED HARDWARE CLOTH.  
 • GRAVEL - THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.  
 • THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.  
 • A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQUARE FEET) TO PROVIDE A CLEAN-OUT POINT AND MONITOR PERFORMANCE OF THE FILTER.  
 • A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".  
 THIS MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).

**7. MISCELLANEOUS**  
 THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.  
**OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (M-6) AND BIORETENTION (F-6)**

- THE OPERATOR 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 PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUME II, TABLE A.4.1 AND 2.
- THE OPERATOR SHALL PERFORM A PLANT INSPECTION IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OPERATOR 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 WIRE.
- THE OPERATOR 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.
- THE OPERATOR SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 12-16-21  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 12-17-21  
 CHIEF, DIVISION OF LAND DEVELOPMENT

**Guilford Solar - ECP - ESDv COMPUTATIONS**

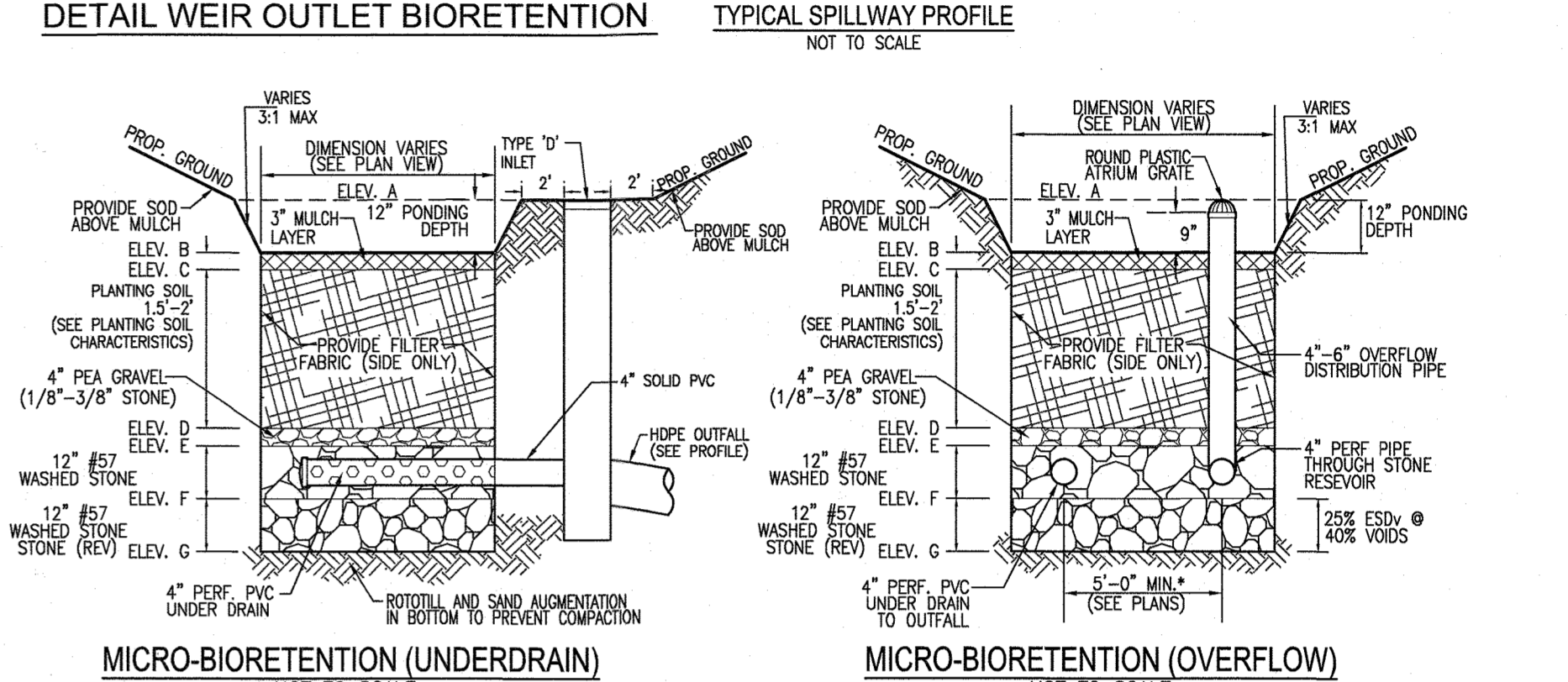
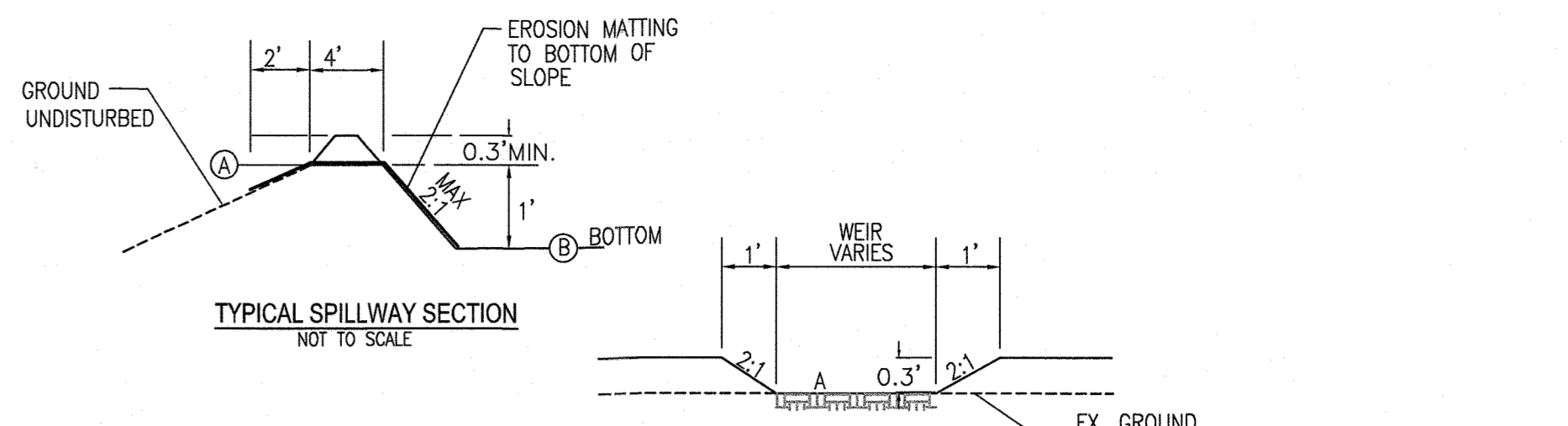
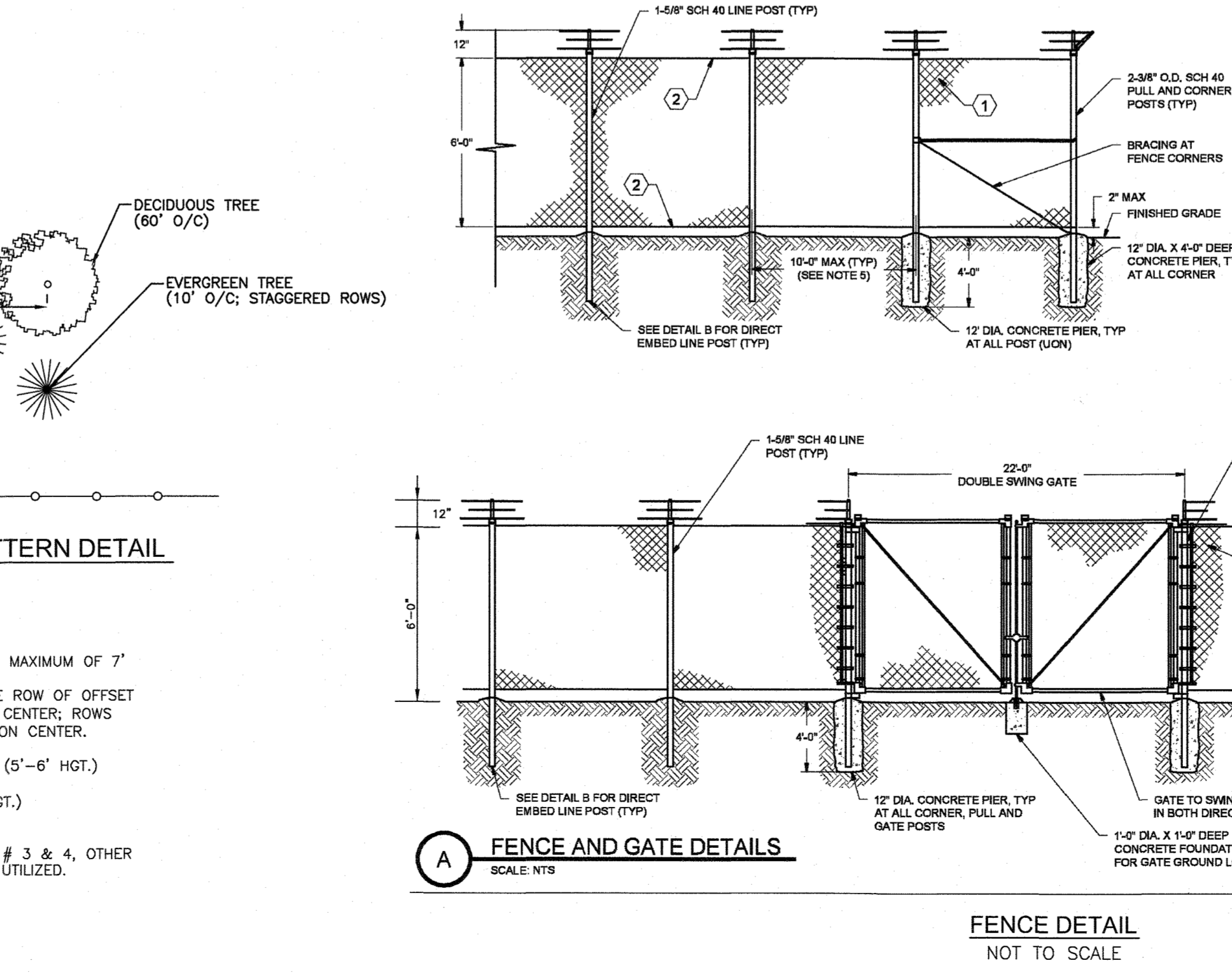
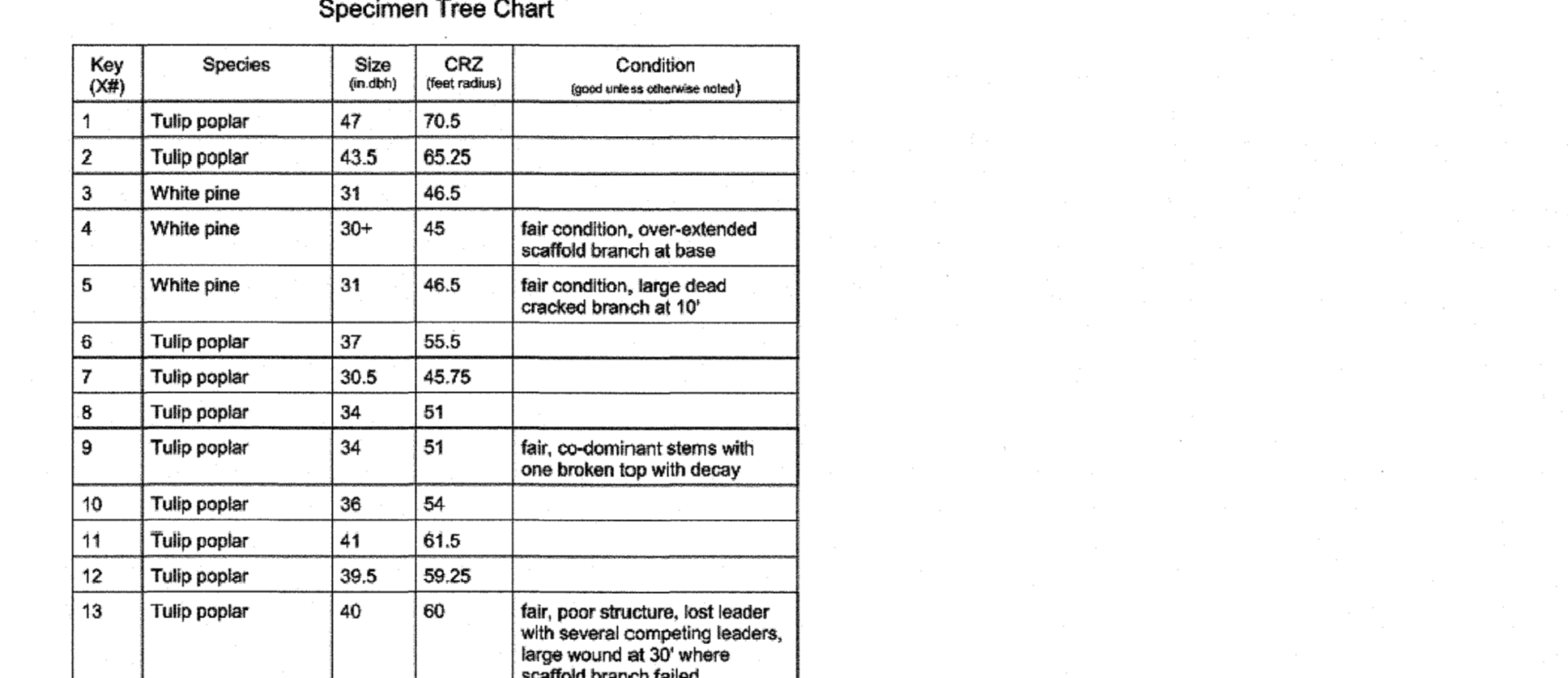
SITE AREA:	13.07	AC
TARGET Pct:	3.00	PERCENT
SITE IMPERVIOUS:	0.99	
SITE Rv:	0.0553	
SITE ESDv:	2622	

Rv=0.05+0.0099  
 Pn=0.0107 rainfall  
 Pn max=1yr rainfall=2.6"  
 Pn max=2yr rainfall=2.6"

DRAINAGE #	% IMPERV	Rv	DA (SF)	DA (AC)	1.0" VOLUME	MAXIMUM VOLUME	VOLUME PROVIDED	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS	Depth	Porosity
A	0.40	0.0536	153929	3.53	687	1786	647	609	0.01	3.52	NON STRUCTURAL PRACTICE - NON ROOFTOP DISCONNECT		
B	0.01	0.0501	147349	3.38	615	1598	664	9	0.00	3.38	NON STRUCTURAL PRACTICE - NON ROOFTOP DISCONNECT		
	0.01	0.0501	63284	1.45	264	686	264	4	0.00	1.45	ESDv		
	0.01	0.0501	84065	1.93	351	912	400	5	0.00	1.93	MBR2 - MICROSCALE MICRO-BIORETENTION (M-6)		
	0.01	0.0501	83213	1.91	347	903	400	7	0.00	1.91	MBR2 - MICROSCALE MICRO-BIORETENTION (M-6)		
	0.01	0.0501	29705	0.68	124	322	322	2	0.00	0.68	MBR2 - MICROSCALE MICRO-BIORETENTION (M-6)		
	0.01	0.0501	103653	2.38	489	1125	624	9	0.00	2.38	NON STRUCTURAL PRACTICE - NON ROOFTOP DISCONNECT		
	0.01	0.0501	21608	0.50	90	234	90	2	0.00	0.50	ESDv		
	0.01	0.0501	82045	1.88	342	890	533	7	0.00	1.88	MBR2 - MICROSCALE MICRO-BIORETENTION (M-6)		
TOTAL	0.12	0.0511	517849	11.89	2205	5784	2097	686	0.01	11.87			

**Specimen Tree Chart**

Key (X#)	Species	Size (in dbh)	CRZ (feet radius)	Condition (ground unless otherwise noted)
1	Tulip poplar	47	70.5	
2	Tulip poplar	43.5	65.25	
3	White pine	31	46.5	
4	White pine	30+	45	fair condition, over-extended scaffold branch at base
5	White pine	31	46.5	fair condition, large dead cracked branch at 10'
6	Tulip poplar	37	55.5	
7	Tulip poplar	30.5	45.75	
8	Tulip poplar	34	51	
9	Tulip poplar	34	51	fair, co-dominant stems with one broken top with decay
10	Tulip poplar	38	54	
11	Tulip poplar	41	61.5	
12	Tulip poplar	39.5	59.25	
13	Tulip poplar	40	60	fair, poor structure, lost leader with several competing leaders, large wound at 30' where scaffold branch failed



**MICROBIORETENTION NOTES:**  
 1. ONLY THE SIDES OF MICROBIORETENTION ARE TO BE WRAPPED IN FILTER FABRIC. FILTER FABRIC BETWEEN LAYER OR AT THE BOTTOM OF THE MICROBIORETENTION WILL CAUSE THE MBR TO FAIL, AND THEREFORE SHALL NOT BE INSTALLED.  
 2. WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH.  
 3. PROVIDE 5" MINIMUM SPACING BETWEEN UNDER DRAIN AND PERFORATED PIPE THROUGH STONE RESERVOIR OR SPACE PIPE EQUALLY ACROSS BOTTOM FOR SMALL BIOS. (SEE PLANS)



**ENVIRONMENTAL CONCEPT PLAN  
 STORMWATER MANAGEMENT & SITE  
 NOTES AND DETAILS**

TPE MD HO93, LLC  
 6838 GUILFORD ROAD, CLARKSVILLE, MD 21029  
 DEED L 18597 F.362  
 ROBERT C. COLE TRUSTEE - LOT 1  
 PLAT NO. 23328 HOWARD COUNTY, MARYLAND

**VOGEL ENGINEERING  
 TIMMONS GROUP**

3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043  
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

DESIGN BY: RHV  
 DRAWN BY: IMH  
 CHECKED BY: RHV  
 DATE: DECEMBER 2021  
 SCALE: AS SHOWN  
 W.O. NO.: 45912

PROFESSIONAL CERTIFICATE  
 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. EXPIRATION DATE: 09-27-2022

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