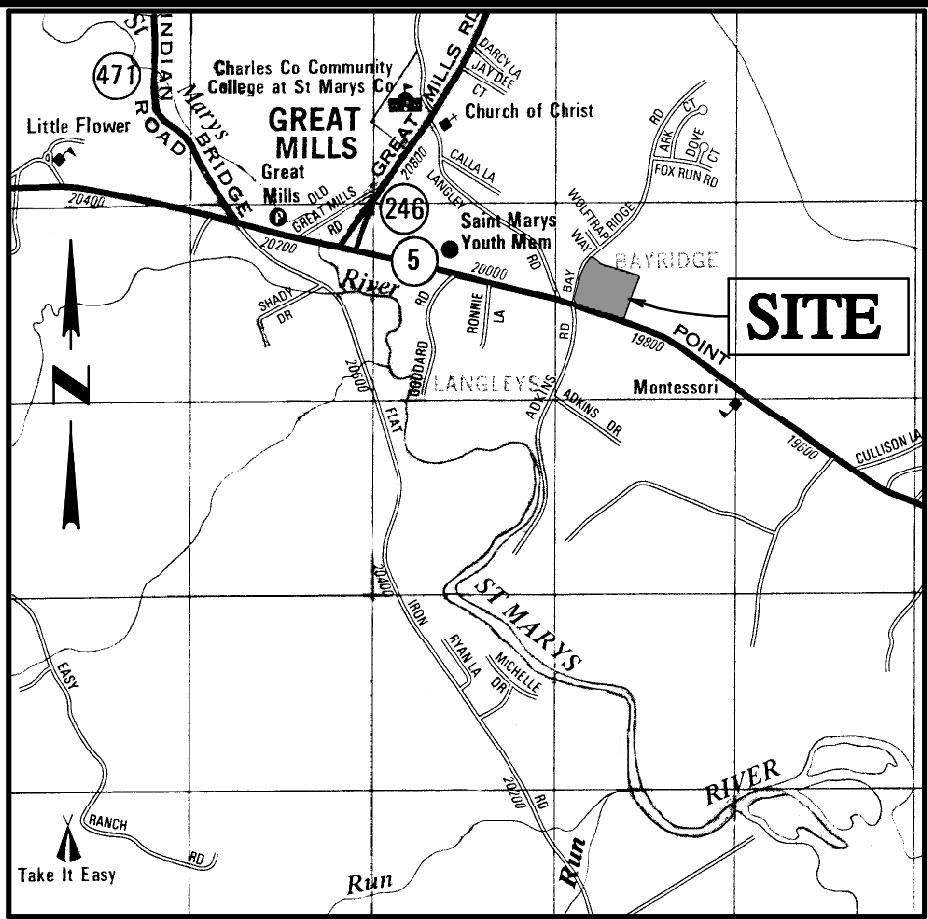


# Concept Site Plan: Bay Ridge Estates – Townhouses

## Concept Stormwater Management & Sediment & Erosion Control Plan

Tax Map 51, Block 13, Parcel 605, Section 1, Outparcel A  
Eighth Election District St. Mary's County, Maryland



Vicinity Map

Scale: 1"= 2,000'

### Concept Site Plan Notes

Date: 03-08-2019

1. Owner: Eugene N. St. Clair and John L. Mathen  
40111 Army Navy Way  
Leonardtown, Maryland 20650  
301.451.1500
2. Consultant: Civil Engineer  
Mehaffey & Associates, P.C.  
P.O. Box 2450  
Leonardtown, MD, 20650  
301.415.0406 fax 301.415.2822
3. Surveyor  
LSR, Inc.  
P.O. Box 2340  
Leonardtown, MD, 20650  
(301) 415-2238

#### 4. Property Data:

Property Address: Bay Ridge Outparcel A  
Point Lookout Road at Bay Ridge Road  
Great Mills, MD 20653

- Tax map 0051, Block 0013, Parcel 0605, Section 1, Outparcel A  
Property Area: 6.62 acres  
8th Election District  
Deed Reference: 4794/0352  
Zoning: Residential (RH)  
Comprehensive Planning District: Lexington Park Development District  
Water category W-3D, Sewer category S-3D  
The property is located in the Lexington Park Development District and is required to connect to public water and sewer service.  
The townhouse dwelling units shall be sprinklered in accordance with NFPA 13-R.
5. Survey performed by LSR, Inc. November 2007. Horizontal datum is based on Maryland State Plane Coordinate System of 1983 (NAD83/41). Contours and spot elevation are referenced to the North American Vertical Datum (NAVD88). Both datum sets were established by a global positioning system survey performed by LSR, Inc., referencing St. Mary's County Control Monuments. Offsite 2' contours from County LIDAR data 2004.

6. Proposed Use: #14 - Dwelling Unit, Attached (High Intensity)  
Prior to final approval the project must proceed through the subdivision process to designate "Out Parcel A" as a "lot" and not an "out parcel," or in the case of townhouses for sale, then the individual lots must be created as well.

#### DEVELOPMENT STANDARDS (CZO Schedule 32.1):

7. Project Density:  
Base density: 10 units per acre; 20 units with TDRs  
Actual density: 60 units/6.62 acres = 9.06 units per acre
8. Yard setbacks per Schedule 32.1:  
a. 50-ft front yard (Point Lookout Road - Arterial)  
b. 35-ft front yard (Bay Ridge Road - Major Collector)  
c. 25-ft standard front yard  
d. 10-ft side yard  
e. 20-ft rear yard  
f. 15 ft from single-family lots
9. Building height: 35 feet
10. Landscape ratio required: 15% minimum (0.99 ac.)  
Landscape ratio provided: 30.0% (area of bufferyards, 2.0 ac, 87,250 sf)
11. Useable open space required: 120,000 sf (2.15 acres) per SO Schedule 31.2.1.  
Useable open space provided: 160,685 square feet (3.64 acres)
12. Undeveloped open space required: 3.31 acres (50% of 6.62-acre site area)  
Undeveloped open space provided: 4.22 acres
13. Bufferyards: Proposed Use - Residential (H)  
a. "A" 15 ft (adjoining MD Rt. 5 - Arterial)  
b. "A" 15 ft (adjoining Bay Ridge Road - Major Collector)  
c. "B" 65 ft (adjacent to low-intensity residential)
14. Parking Data:  
Spaces Required: 2 spaces per unit x 60 units = 120 spaces  
Spaces Provided: 120  
Loading zones required: 0  
Permanent interior planting (area) required: 10% of 2.42 acres (net parking area) = 0.24 acres  
Permanent interior planting (area) provided: 11.3% of 2.42 acres = 0.33 acres

15. Tree calculations:  
Minimum number of shade trees required on site (CZO Chapter 63.2)  
1 shade tree required per 40 feet of site frontage  
1,000 feet frontage/40 = at least 25 shade trees required on site  
1 shade tree required per 10 parking spaces  
120 required spaces/10 spaces per tree = 12 trees  
Trees required in "A" Bufferyard: 400 linear feet x 2 trees per 100 feet = 8 trees  
Trees required in "B" Bufferyard: 1080 linear feet x 4 trees per 100 feet = 43 trees  
(See chart, sheet 6, for additional landscaping details.)

Total shade trees required: 25  
Total shade trees provided: 14 (13 in parking area, 61 in bufferyards)

16. A forest stand delineation (FSD) was completed in 2008 and has expired. The FSD will be updated or a new FSD completed and filed with LUGM for review and approval prior to submittal of the major site plan. It is anticipated that a combination of on-site mitigation, off-site mitigation and/or fee in lieu of mitigation will be required for the removal of trees.

17. Property situated in Flood Hazard Zone "X" as shown on FIRM Community Panel #24031C0326F Effective date November 19, 2014

#### METCOM Note:

18. EDU Calculation: One EDU per housing unit (60 EDUs, water and sewer)

#### DPN Note:

19. Environmental Site Design (ESD) of this site will be designed to the Maximum Extent Practical (MEP) using practices from the Maryland Stormwater Design Manual, Volume 1, Chapter 5 (October 2000, revised May 2004). The plan will be submitted and approved by the St. Mary's County Soil Conservation District. See Environmental Analysis.

20. Traffic Generation Computation per CZO 70.7:

60 MF units  
ADT = 60 x 5.86 vtpd per unit = 351.6 vtpd  
AM peak = 60 x 0.44 = 26.4 vtpd  
PM peak = 60 x 0.55 = 33.0 vtpd

PH peak = 60 x 0.55 = 33.0 vtpd

LUGM # 18-132-0022

Concept Stormwater Management & Sediment & Erosion Control Plan Sheet 1 of 6

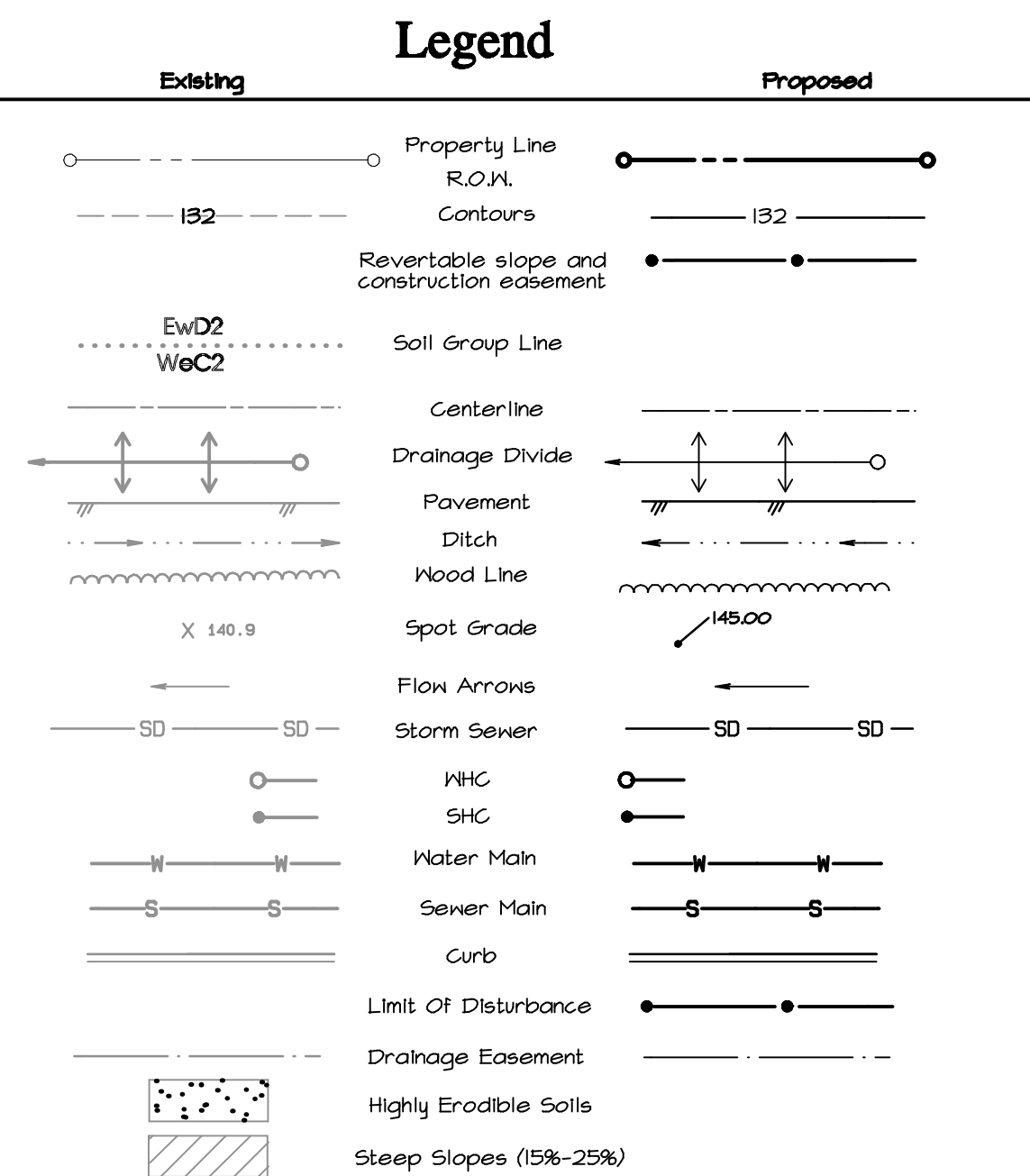
### Cover Sheet

Bay Ridge Estates Section 5

Tax Map 51, Blk. 13, Parcel 605 Outparcel A

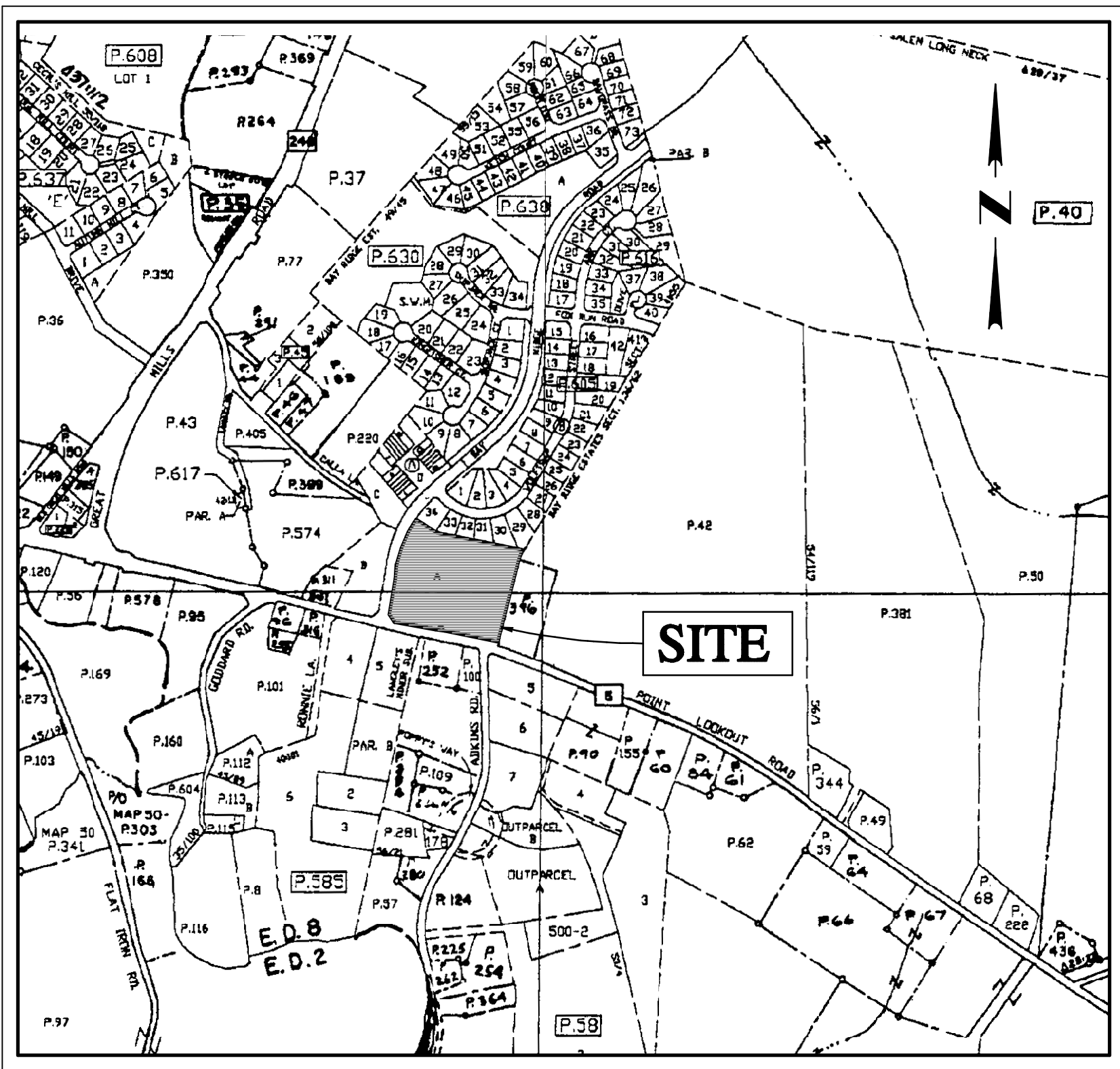
8th Election District

St. Mary's County, MD



### Abbreviations

Adj	Adjacent
Arch	Architect
BC	Back of Curb
Bit	Bituminous
BM	Bench Mark
CMP	Corrugated Metal Pipe
CO	Clean Out
Conc	Concrete
d	Depth
E	Elevation
Elec	Electric
EOP	Edge of Pave
ES	End Section
Eemt	Easement
Ex	Existing
FF	Finished Floor
FL	Flow Line
H	Height
HC	Handicap
HP	High Point
Inv	Invert
L	Length
LP	Low Point
LF	Linear Feet
LOD	Limit of Disturbance
MH	Manhole
Min	Minimum
Prop	Proposed
R	Radius
RCP	Reinforced Conc. Pipe
ROM	Sanitary Sewer
SHC	Sewer House Connection
SD	Storm drain
TBD	To Be Determined
TC	Top of Curb
Tsp	Typical
W	Width
W	With
NHC	Water House Connection



Location Map

Scale: 1"= 600'

### Index of Drawings

Sheet No.	Drawing Title
1	Cover Sheet
2	Existing Conditions & Environmental Features
3	Layout Plan - Buildings and Parking
4	Layout Plan - Utilities - Water, Sanitary & Storm Sewer
5	Concept Stormwater Management and Sediment and Erosion Control
6	Stormwater Management Computations & Narrative Forest Conservation and Landscaping

#### OWNER/DEVELOPER'S CERTIFICATION:

Any clearing, grading, construction or development, or all of these, will be done pursuant to this plan, and all responsible personnel involved in the construction project will have a "Certificate of Training" from a Maryland Department of the Environment approved training program before the beginning the Project.

Eugene N. St. Clair  
Date

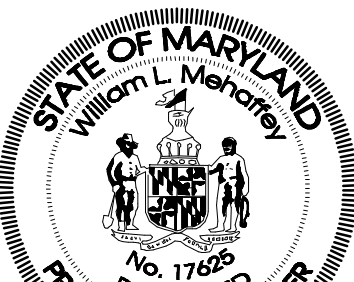
April 26, 2025  
Date

#### CONSULTANT'S CERTIFICATION:

I certify that this Concept Erosion and Sediment Control and Stormwater Management Plan represents all significant natural resources based on my personal knowledge of the site, and that this plan was prepared in accordance with the requirements of the review agencies. I have reviewed this Concept Plan with the owner/developer.

William L. Mehaffey, P.E.  
Date

April 26, 2025  
Date



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. 17625, expiration date 12/31/2025

Approved by: B. Mehaffey	
Drafted by: A. Dairies/S. Wright	
Date: 12-18-2018	Scale: As Shown
Add Fire Hydrant per Fire Protection	06/20/24
Update Cert for Resubmittal	04/24/24
Revise Bay Ridge Road Intersection	08-30-19
Address SCD Comments 05-28-2019	06-02-19
Address TEC Comments	5-21-19
REVISION	DATE

### MEHAFFEY & ASSOCIATES, P.C.

Civil & Environmental Engineering • Land Planning

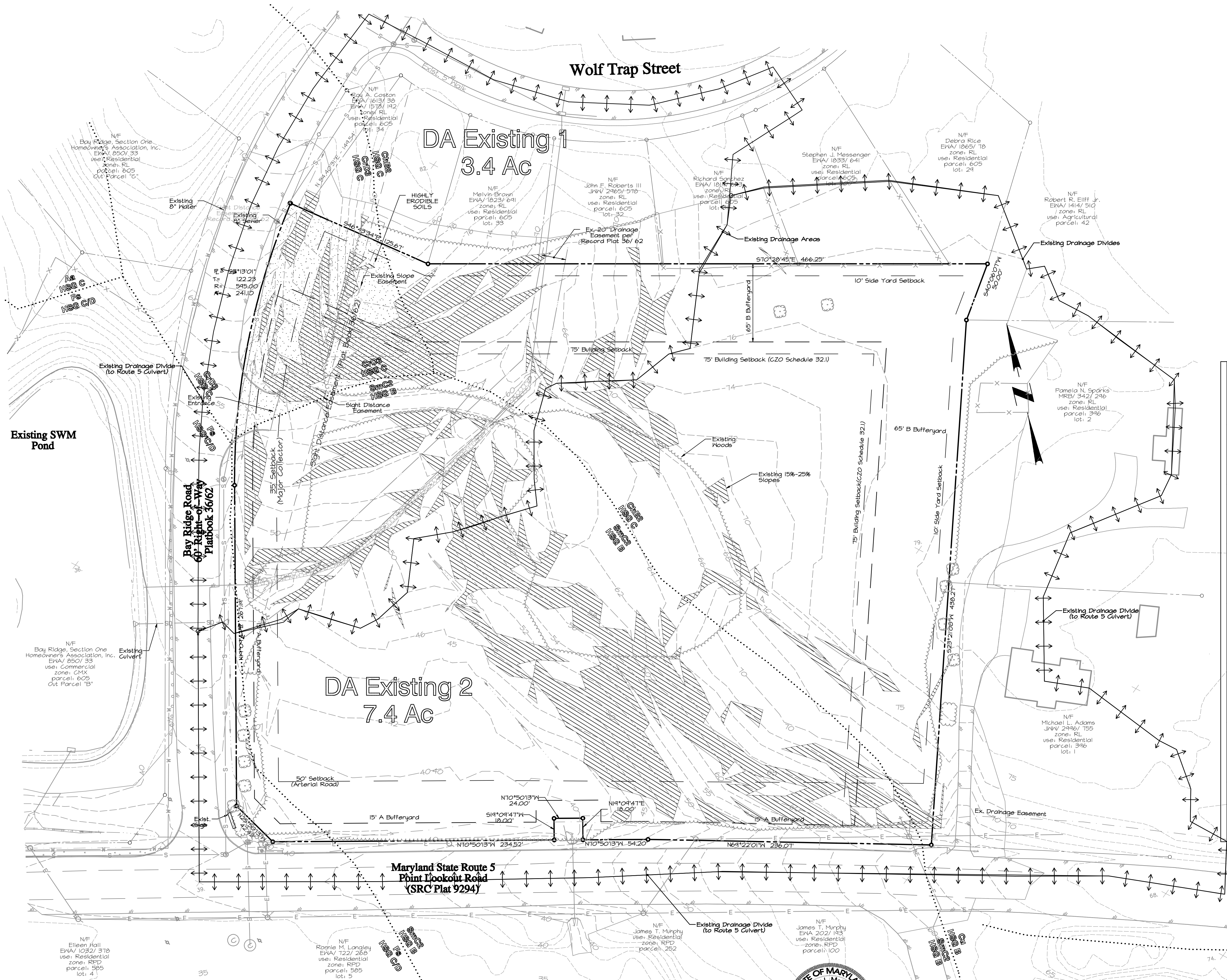
41650 Court House Drive ~ Loker Building ~ Suite 100

PO Box 2450 Leonardtown, Maryland 20650

301.415.0406 Fax 301.415.2822



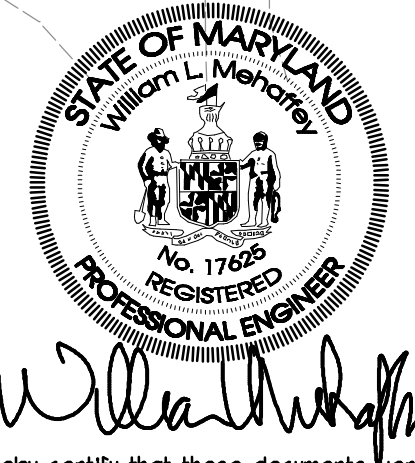
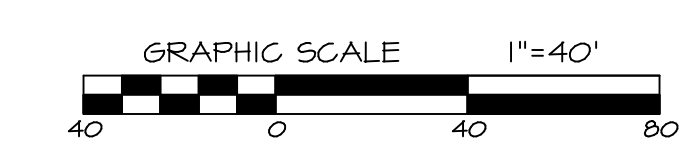




### FIDS Habitat Notes

1. Restrict development to nonforested areas.
2. If forest loss or disturbance is unavoidable, concentrate or restrict development to the following areas:
  - a. the perimeter of the forest (i.e., within 300 feet of the existing forest edge)
  - b. thin strips of upland forest less than 300 feet wide
  - c. small, isolated forests less than 50 acres in size
  - d. portions of the forest with low quality FIDS habitat (i.e., areas that are already heavily fragmented, relatively young, exhibit low structural diversity, etc.)
3. Maximize the amount of forest "interior" (forest area > 300 feet from the forest edge) within each forest tract (i.e., minimize the forest edge:area ratio). Circular forest tracts are ideal and square tracts are better than rectangular or long, linear forests.
4. Minimize forest isolation. Generally, forests that are adjacent, close to, or connected to other forests provide higher quality FIDS habitat than more isolated forests.
5. Limit forest removal to the "footprint" of houses and to that which is necessary for the placement of roads and driveways.
6. Minimize the number and length of driveways and roads.
7. Roads and driveways should be as narrow as possible; preferably less than 25 feet in width and 15 feet in width, respectively.
8. Maintain forest canopy closure over roads and driveways.
9. Maintain forest habitat up to the edges of roads and driveways; do not create or maintain mowed grassy berms.
10. Maintain or create wildlife corridors.
11. Do not remove or disturb forest habitat during April-August, the breeding season for most FIDS. This seasonal restriction may be expanded to February-August if certain early nesting FIDS (e.g., Barred Owl) are present.
12. Landscape homes with native trees, shrubs and other plants and/or encourage homeowners to do so.
13. Encourage homeowners to keep pet cats indoors or, if taken outside, kept on a leash or inside a fenced area.
14. In forested areas reserved from development, promote the development of a diverse understory by removing livestock from forested areas and controlling white-tailed deer populations. Do not mow the forest understory or remove woody debris and snags.
15. Afforestation efforts should target:
  - a. riparian or streamside areas that lack woody vegetative buffers,
  - b. forested riparian areas less than 300 feet wide, and
  - c. gaps or peninsulas of nonforested habitat within or adjacent to existing FIDS habitat.

Forest Conservation Worksheet 2.1		date
Bay Ridge Estates		12/05/18
Note: Use 0 for all negative numbers that result from calculations.		
<b>Net Tract Area</b>		
A. Total tract area		A = 6.62
B. Deductions (critical area, area restricted by local ordinance or program)		B = 0.00
C. Net Tract Area (Total Tract (A) - Deductions (B))		C = 6.62
<b>Land Use Category:</b> mixed use & PUD		
D. Afforestation Threshold	net tract area (C) * 20%	D = 1.32
E. Conservation Threshold	net tract area (C) * 20%	E = 1.32
<b>Existing Forest Cover</b>		
F. Existing Forest Cover within the Net Tract Area		F = 5.29
<b>G. Area of Forest above Conservation Threshold</b>		
If the Existing Forest Cover (F) is greater than the Conservation Threshold (E), then		
G = F - E, otherwise, G = 0.		
Breakeven Point		
H. Breakeven Point (amount of forest that must be retained so that no mitigation is required)		
(1) If the Area of the Forest above the Conservation Threshold (G) is greater than 0, then		
H = (0.2 * the area of the Forest above Conservation Threshold (G) - the Conservation Threshold (E))		
(2) If the Area of Forest Above the Conservation Threshold (G) is equal to 0, then		
H = Existing Forest Cover		
I. Forest Clearing Permitted Without Mitigation		
I = Existing Forest Cover (F) - Breakeven point (H)		
<b>Proposed Forest Clearing</b>		
J. Total Area of Forest to be Cleared		J = 4.61
K. Total Area of Forest to be Retained		K = 0.68
<b>Planting Requirements</b>		
If the Total Area of Forest to be retained (K) is at or above the Breakeven Point (H), no		
Planting is required and no further calculations are necessary (L=0, M=0, N=0, P=0)		
Otherwise, calculate the planting requirement(s) as follows:		
<b>L. Reforestation for Clearing Above the Conservation Threshold</b>		
(1) If the Total Area of Forest to be Retained (K) is greater than the		
Conservation Threshold (E), then L = the Area of Forest to be Cleared (J) * 0.25.		
(2) If the Forest to be Retained (K) is less than or equal to the Conservation Threshold (E)		
then L = Area above Conservation Threshold (G) * 0.25		
<b>M. Reforestation for Clearing Below the Conservation Threshold</b>		
(1) If Existing Forest Cover (F) is greater than the Conservation Threshold (E) and the		
Forest to be Retained (K) is less than or equal to the Conservation Threshold (E),		
then M = 2.0 * (Conservation Threshold (E) - Forest to be Retained (K))		
(2) If the Existing Forest Cover (F) is less than or equal to the Conservation Threshold (E)		
then M = 2.0 * Forest to be Cleared (J)		
<b>N. Credit for Retention Above the Forest Conservation Threshold</b>		
If the Area of Forest to be Retained (K) is greater than the Conservation Threshold (E),		
Then N = K - E		
<b>P. Total Reforestation Required</b> P = L + M - N		
<b>Q. Total Afforestation Required</b>		
If Existing Forest Cover (F) is less than the Afforestation Threshold (D), then,		
Q = Afforestation Threshold (D) - Existing Forest Cover (F)		
<b>R. Total Planting Required</b> R = P + Q		
Forest Conservation Worksheet		C:5



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. 17625, expiration date 12/31/2025

Approved by: B. Mehaffey	
Drafted by: A. Dairies/S. Wright	
Date: 12-10-2018	Scale: As Shown
Add Fire Hydrant per Fire Protection	
Update Cart for Resubmittal	
Revise Bay Ridge Road Intersection	
Address SCD Comments 05-28-2019	
Address TEC Comments	
REVISION	DATE

**MEHAFFEY & ASSOCIATES, P.C.**  
Civil & Environmental Engineering • Land Planning  
41650 Court House Drive ~ Loker Building ~ Suite 100  
PO Box 2450 Leonardtown, Maryland 20650  
301.475.0406 Fax 301.475.2822

LUGM # 18-132-0022

Concept Stormwater Management & Sediment & Erosion Control Plan **Sheet 2 of 6**

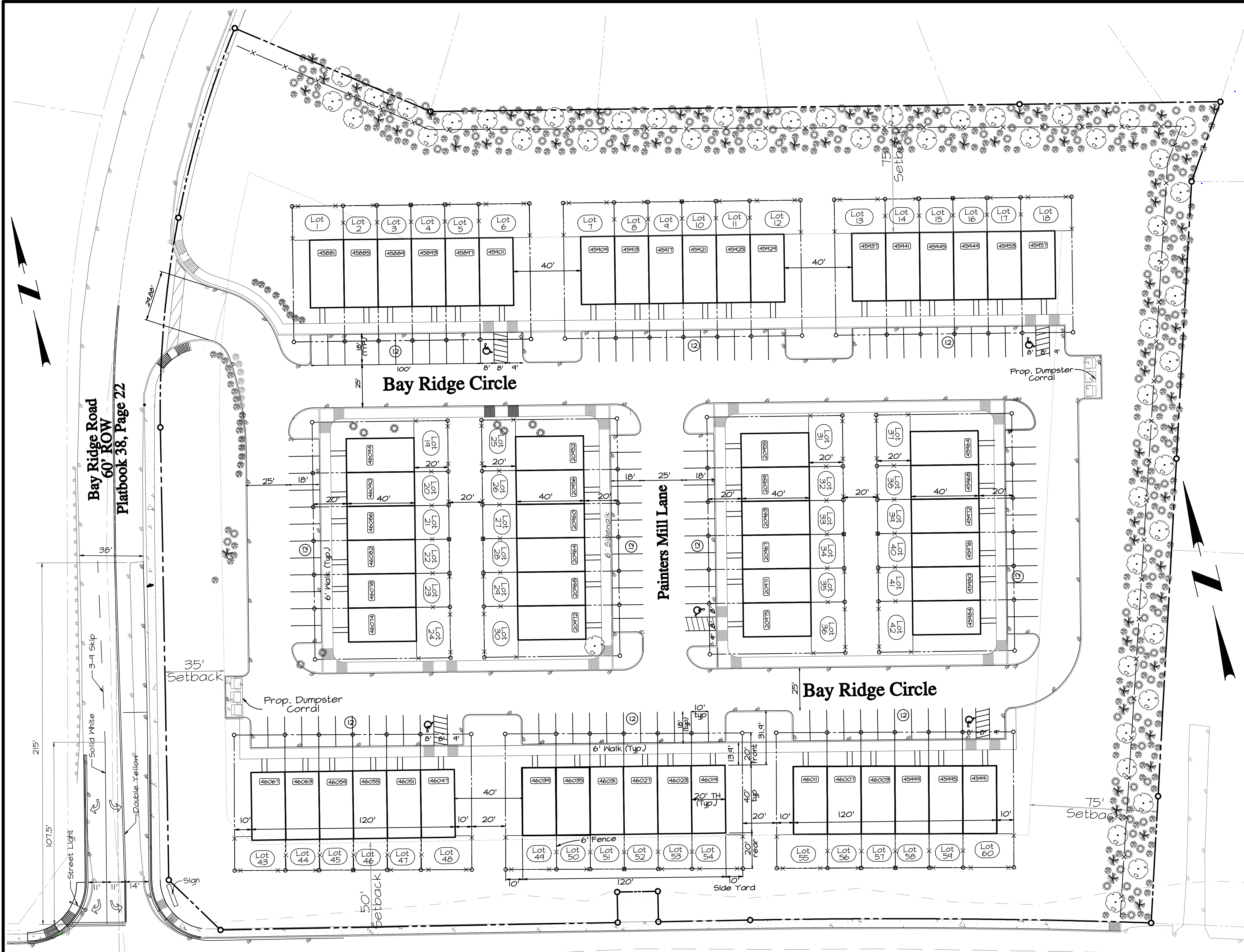
Existing Conditions & Environmental Features

**Bay Ridge Estates Section 5**

Tax Map 51, Blk. 13, Parcel 605 Outparcel A

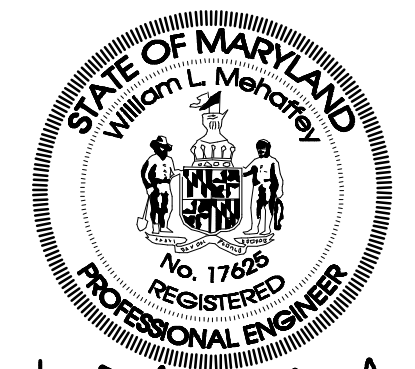
8th Election District **St. Mary's County, MD**





Maryland State Route 5 – Point Lookout Road  
(SRC Plat 9294)

Concept Layout Plan - Buildings & Parking

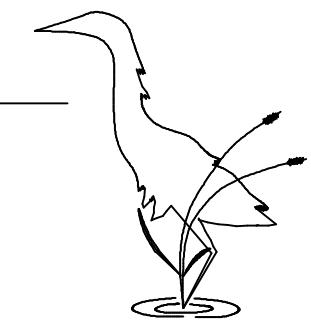


I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed Professional Engineer under the laws of the state of Maryland, license no. 17622, expiration date 12/31/2025

Designed By: W. Mehaffey	
Drafted By: S. Wright/A. Daylies	
Date: 12-18-2018	Scale: As Shown
Add Fire Hydrant per Fire Protection	06-20-24
Update Cert for Resubmittal	04-24-24
Revise Bay Ridge Intersection	08-14-19
Address LUGM Comments	07-31-19
Address TEC Comments	05-21-19
Revision	DATE

**MEHAFFEY & ASSOCIATES, P.C.**  
Civil & Environmental Engineering • Land Planning

41650 Courthouse Drive, Suite 100 ~ P.O. Box 2450  
Leonardtown, Maryland 20650  
301.475.0406 Fax 301.475.2822



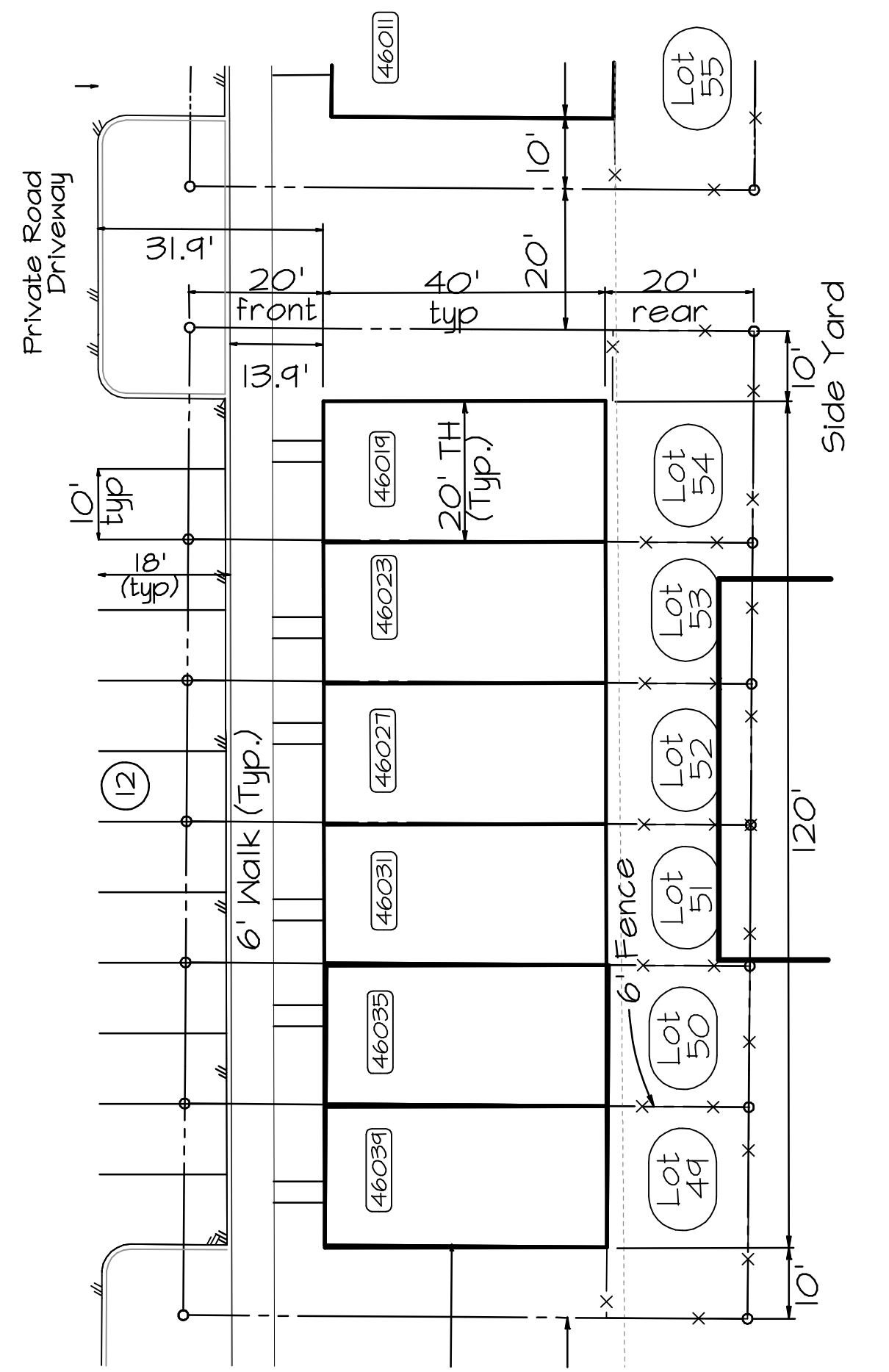
Concept SWM & Sediment & Erosion Control Plan  
LUGM FILE # 18-132-0022 Sheet 3 of 6

Concept Layout Plan - Buildings & Parking

**Bay Ridge Estates**

for : Eugene St. Clair  
Tax map 51, Block 13, Parcel 605

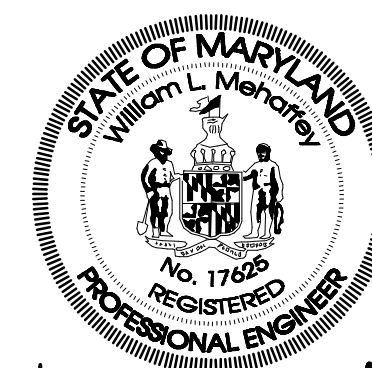
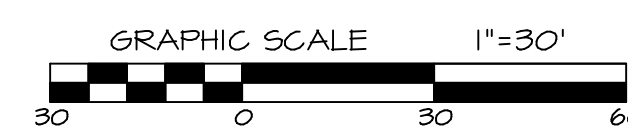
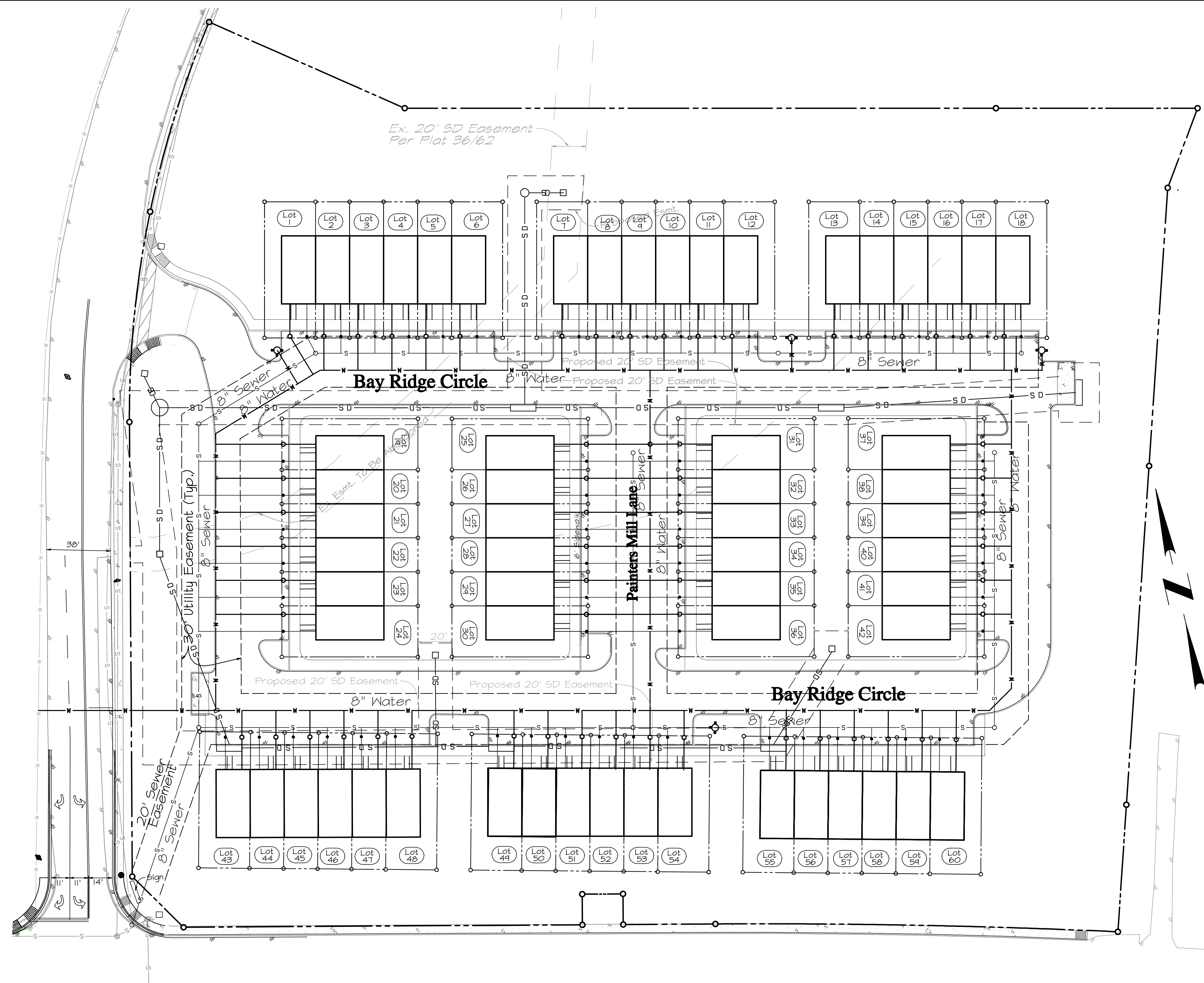
Eighth Election District St. Mary's County, Maryland



Typical Detail  
6-Unit Townhouse Plan

Scale: 1" = 20'

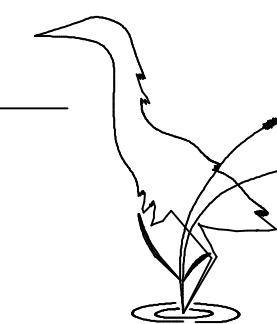




I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed Professional Engineer under the laws of the state of Maryland, license no. 17625, expiration date 12/31/2025

Designed By: W Mehaffey	
Drafted By: S Wright/A Daylies	
Date: 12-18-2018	Scale: As Shown
Add Fire Hydrant per Fire Protection	06-20-24
Update Cert for Resubmittal	04-24-24
Revise Bay Ridge Intersection	08-14-19
Address LUGM Comments	07-31-19
Address TEC Comments	05-21-19
Revision	DATE

**MEHAFFEY & ASSOCIATES, P.C.**  
 Civil & Environmental Engineering • Land Planning  
 41650 Courthouse Drive, Suite 100 ~ P.O. Box 2450  
 Leonardtown, Maryland 20650  
 301.475.0406 Fax 301.475.2822



Concept SWM & Sediment & Erosion Control Plan  
 LUGM FILE # 18-132-0022 Sheet 4 of 6

Utility Plan - Water, Sanitary Sewer  
 and Drainage Plan

**Bay Ridge Estates**

for : Eugene St. Clair  
 Tax map 51, Block 13, Parcel 605

Eighth Election District St. Mary's County, Maryland



## Stormwater Management Narrative

The Bay Ridge Estates project has been designed following the "Maryland 2000 Stormwater Management Design Manual" as currently revised, as required by the Stormwater Management Act of 2010. The site design will implement Environmental Site Remediation to Maximum Extent Practicable as demonstrated by the supporting analysis and computations. The Concept SWM plan presented has addressed runoff from all proposed roof-top surfaces and some of the paved areas with ESD practices. Some treatment of the ESDV is proposed to be treated in the existing pond. The existing pond was originally designed to treat this site from a control of the 2 and 10 year storm events.

The total computed ESDV = 204,351 cubic feet at PE = 1.0 inches.

The proposed design provides ESDV = 201,533 cubic feet at PE = 1.35 inches.

It is proposed that the difference of PE = 0.45 inches be treated in the existing wetpond to treat part of the channel protection volume. Since the pond was designed to control the 10-year storm for the development condition for the entire drainage area.

The entire ESDV has not been achieved by the proposed design; however, since the subject property is in the Lexington Park Development District and is zoned RH, the proposed project is being designed with a permitted use (attached single family - townhouse), and the development density has been reduced from the maximum of 20 units per acre to the allowable development density of 10 units per acre by right, and at the beginning of the Bay Ridge Estates development (1982) the existing pond on the opposite side of Bay Ridge Road was designed to treat stormwater from this property and other lands in Section I. It is proposed to treat as much of the ESDV as practicable, and provide the remainder of the treatment volume in the existing pond.

The design engineer is familiar with the site by field verification, visual observation, review and analysis of topography, and various public data sources mapping natural features.

- Downstream natural resources have been protected by the use of ESD devices, and the existing pond. No disturbance is proposed in an environmentally sensitive area.
- The site and parking have been graded to maintain existing flow patterns, to the extent practical.
- Impervious surfaces have been reduced by reducing the intensity of the project and the reduction of parking spaces to not exceed the number required by the ZCO.
- An engineered erosion and sediment control plan is to be provided with the development design and final site plan. Construction will be sequenced to avoid impact to stormwater management devices.
- The site has been analyzed to establish the required ESD Volume (ESDV) and Target PE. All suitable on-site open spaces are being used for ESD treatment. Many of the open spaces are being treated with M-6 bio-swales as a primary treatment and as pre-treatment for the existing pond. A Rain Garden (M-1) is proposed on each townhouse lot. The design computes the ESDV for a typical rain garden and the treatment volume is multiplied by the number of units where it is being used in the Summary Table.

### SUITABILITY FACTORS:

The site area is an undeveloped and partially cleared. Soil types are Chillum - CH2 (H56 B) - 5MC2 (H56 B), and Fallington F5 (H56 B) in the development areas and with some CR23 (H50 C) in the Northwest corner of the site, where there a small bit of proposed construction for the entrance and slight distance grading. There are some slopes between 15% to 25% located on the site. The site is being mass graded to achieve a pad site of 2% to 5%.

M-6 Bio-swales: 65-1 through 65-4.

Bio-swale are designed and drainage areas are limited to 1 acre. These devices are treating off-site areas and the contributing drainage areas are over 0.5 acres. The drainage area make the use of other ESD devices inappropriate since devices such as micro-bioretentation and landscape infiltration the drainage areas are appropriate for smaller areas.

The concept design uses bio-swales and grass swales along the rear of the buildings and perimeter of the parking lots where there is a need to convey stormwater to a drainage structure to limit the excessive concentration of surface water. Then the stormwater can be captured in a closed drainage system after treatment of at least pre-treatment.

The bio-swales are proposed in the soils classified as Sassafras, Chillum, and Fallington soils (all of these soils are listed H56 "B". B type soils are well suited for bio-swales.

M-6 Rain Gardens: R5-1 through R5-60.

A rain garden is proposed for each townhouse unit. The drainage area to each is 1,200 square feet which is less than the recommended 2,000 square feet, the slopes in the front yards will be graded to less than 5%. Landscape infiltration could also be used in these spaces.

## Erosion and Sediment Control Notes

- The Contractor shall notify M.D.E., Enforcement Division at telephone number 410.531.3510 at least 48 hours prior to commencing Clearing or Grading activities. The Contractor may mail Notice to M.D.E., Sediment and Stormwater Administration, 1800 Washington Blvd. 4th floor suite 440 Baltimore, Maryland 21230-1706.
- Approval by M.D.E., Sediment and Stormwater Administration, 1800 Washington Blvd. 4th floor suite 440 Baltimore, Maryland 21230-1706, shall be requested upon completion of the installation of the perimeter erosion controls and before proceeding with any other earth disturbance or grading.
- Approval shall be requested upon final stabilization of all sites before removal of sediment controls.
- Specifications for erosion control practices shall be the "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL" by the Maryland Department of the Environment.
- Following initial soil disturbance or redistribution, permanent or temporary stabilization shall be completed within:
  - Three calendar days for all perimeter controls, dikes, swales, ditches, perimeter slopes and all slopes greater than 3 horizontal to 1 vertical (3:1) and
  - Seven days as to all disturbed or graded areas in the project site.
- Temporary Seeding Schedule:

Species	Minimum Seeding Rates lbs per acre	lbs/1,000 sf	Planting Depth (in)	2/- 4/30	5/- 8/14	8/- 11/30
barley	122	2.50	1/4-1/2	X	-	by 10/15
oats	46	1.00	1/4-1/2	X	-	X
rye	140	3.22	1/4-1/2	X	-	X
Barley or rye plus Foxtail Millet	150	3.45	1/4-1/2	X	X	X

10-10-10 fertilizer shall be applied at 600 lbs per acre.  
Lime shall be applied at 2 tons per acre or 100 lbs/1,000 SF.

Other mixes may be used as recommended by the Soil Conservation District.

Soil preparation shall comply with Section B of the "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL".

- Permanent Seeding Schedule:

Species	Minimum Seeding Rates lbs per acre	lbs/1,000 sf	Planting Depth (in)	Recommended application dates
Tall fescue 75% Canada bluegrass 10% KY bluegrass 10% redtop 5%	150	3.40	.25-.50	03/01 - 05/15 06/15 - 11/15
Keeping lovegrass 17% Serotia lespedeza 83%	4 20	0.40 0.46	.25-.50	03/01 - 05/15 05/16 - 06/14
* Tall fescue 75% Kentucky Bluegrass 10% redtop 5%	80 40 150	2.00 1.00 3.40	.25-.50	03/01 - 05/15 06/15 - 11/15

\* To be used for the slope stabilization at the stream crossing.

Fertilizer application rate: 10-20-20, 40 lbs/ac or 2.0 lbs/1,000 SF.  
K2O 175 lbs/ac or 4.0 lbs/1,000 SF.  
K2O 175 lbs/ac or 4.0 lbs/1,000 SF.

Lime application rate: 2 tons/ac, or 100 lbs/1,000 SF.

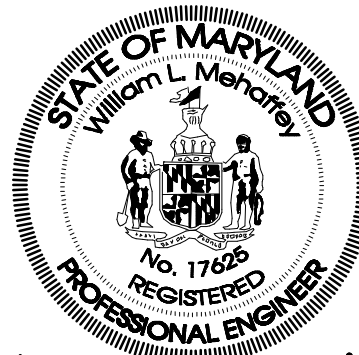
Soil preparation shall comply with Section B of the "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL".

\*\* Other mixes may be used as recommended by the Soil Conservation District.

## ESC Preliminary Sequence of Construction

Erosion and Sediment Control  
Preliminary Sequence of Construction.

- Install perimeter control devices.
  - 2 Sediment Traps.
  - Stabilized Construction Entrance.
- Rough grade site and install inlets, inlet protection, and storm drains.  
Install water, sanitary sewer, and other site features.
- Grading for parking, buildings and utilities.
  - Construct building and parking that is possible while sediment traps are in place.
  - As grading proceeds, reduce size of sediment traps to allow for grading to continue.
- Final grading and stabilization.
- Installation of Storm Water Management devices.



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. 17625, expiration date 12/31/2025

Designed By: W MehaFFEY	
Drafted By: S Wright/A Dayries	
Date: 12-18-2018	Scale: As Shown
Add Fire Hydrant per Fire Protection	06-20-24
Update Cert for Resubmittal	04-24-24
Revise Bay Ridge Intersection	08-14-19
Address LUGM Comments	07-31-19
Address TEC Comments	05-21-19
Revision	DATE

## MEHAFFEY & ASSOCIATES, P.C.

Civil & Environmental Engineering • Land Planning

41650 Courthouse Drive, Suite 100 ~ P.O. Box 2450

Leonardtown, Maryland 20650

301.475.0406 Fax 301.475.2822

Concept SWM & Sediment & Erosion Control Plan

LUGM FILE # 18-132-0022 Sheet 5 of 6

Concept Storm Water Management

Bay Ridge Estates

for : Eugene St. Clair

Tax map 51, Block 13, Parcel 605

Eighth Election District

St. Mary's County, Maryland



## Stormwater Management Design Computations

### Data Input for ESDv Computations

#### Bay Ridge Estates

Date: 06/30/19

#### Site Data

Parcel Area	288,044 SF	8.61 Ac	(Area is whole parcel)
Site Area (Study Area)	270,396 SF	8.21 Ac	(SA is same as Limit of Disturbance)

Subdrainage Areas	building	pavement	sidewalks	Total (SF)
1	30,608	0.70	4,400	6,000
2	27,205	0.82	2,400	3,000
3	41,896	0.96	0	8,500
4	19,221	0.44	0	2,500
5	31,783	0.73	2,800	3,500
6	30,474	0.70	4,800	6,200
7	31,256	0.72	7,600	8,400
8	12,000	0.28	0	2,700
9	12,161	0.28	4,800	2,700
10	590	0.01	400	450
11	270,396	8.21	16,440	7,750

Total 507,590 SF 11.65 Ac 139,835 SF

#### Subdrainage Areas - Details

Area (SF)	I (%)	Rv = (0.05+0.009* I)
1	30,608	16.3
2	27,205	11.0
3	41,896	15.5
4	19,221	31.0
5	31,783	11.0
6	30,474	20.3
7	31,256	27.0
8	12,000	62.5
9	12,161	61.7
10	590	76.3
11	270,396	31.7

Total 507,590 27.5 % 0.298

#### A. Determine Pre-Development Conditions

Soil Group	HSG	RCN	Area (SF)	Percent	RCN * Area
A	38	0	0	0.0%	0
B	55	267,763	99%	14,728,065	
C	70	20,281	7%	1,416,270	
D	77	0	0%	0	

Total 288,044 SF check area 16,146,335

RCN = 56

#### B. Determine Target PE using Table 5.3

Pc= Rainfall Target Pe Using Table 5.3

Rv = (0.05+0.009\* I) 0.298

#### C. Compute Qe

Qe= Runoff depth used to size ESD practices

Qe= Pe x Rv

ESDv= Qe x A/12 = (Pe)(Rv)(A)/12 = 22,685 cf

If this volume is provided with ESD devices then MEP is achieved

Note: A rain garden is proposed for each lot. The value computed in this spread sheet is multiplied by the number of lots.

## Stormwater Management Design Computations

### ESDv - Summary Table

#### Bay Ridge Estates

Date: 06/30/19

Site Area =	507,590 SF
Pc =	1.44 inches
Target ESDv =	18,085 CF
Re =	5,469 CF
Adjusted Target ESDv =	12,615 CF
Target ESDv (prorated by DA) = ESDv - (target) x Sub DA / DA (total)	
Sub Area 10 =	60 lots

#### Summary Table

ESD Type	Sub-DA #	Area (sf)	Impervious Area (sf)	Impervious %	Rv	Target Pe (inches)	Actual Pe (inches)	Re, (cf)	ESD, (cf)	ESDv, (cf)	ESDv, (cf)	ESDv, (cf)
M-8	1	30,608	5,000	16.3	0.20	1.44	0.22	330	90	1,287	1,091	1,377
M-8	2	27,205	3,000	11.0	0.15	1.44	0.16	293	58	676	961	947
M-8	3	41,896	6,500	15.5	0.19	1.44	0.21	451	120	1,041	1,826	1,854
M-8	4	19,221	3,900	31.0	0.33	1.44	0.48	207	126	476	1,611	1,476
M-8	5	31,783	3,500	11.0	0.15	1.44	0.20	342	112	790	1,872	1,106
M-8	6	30,474	6,200	20.3	0.23	1.44	0.26	328	104	757	1,740	1,658
M-8	7	31,256	8,425	27.0	0.29	1.44	0.32	337	135	777	1,553	1,688
M-8	8	12,000	7,500	62.5	0.61	1.44	0.75	120	120	298	1,473	1,715
M-8	9	12,161	7,500	61.7	0.61	1.44	0.74	131	80	302	1,473	1,717
M-8	10	590	450	76.3	0.74	1.44	0.83	6	1176	15	5,622	1,201
treated in pond	11	270,396	85,800	31.7	0.34	1.44		2914	0	6,720	0	9,634
Total		507,590	139,835	27.5				5,469	2,119	12,615	19,438	19,325

Design Note: Sub Drainage Area 10 is a typical design for a rain garden, a raingarden is proposed on each townhouse lot.

The values shown in the Target Re, and ESDv, columns are for 1 lot; the values shown in the Design column is the design value multiplied by the number of lots.

## Stormwater Management Design Computations

### ESDv - Summary Table

#### Bay Ridge Estates

Date: 06/30/19

Site Area =	507,590 SF
Pc =	1.80 inches
Target ESDv =	22,685 CF
Re =	5,469 CF
Adjusted Target ESDv =	17,215 CF
Target ESDv (prorated by DA) = ESDv - (target) x Sub DA / DA (total)	
Sub Area 10 =	60 lots

#### Summary Table

ESD Type	Sub-DA #	Area (sf)	Impervious Area (sf)	Impervious %	Rv	Target Pe (inches)	Actual Pe (inches)	Re, (cf)	ESD, (cf)	ESDv, (cf)	ESDv, (cf)	ESDv, (cf)
M-8	1	30,608	5,000	16.3	0.20	1.80	0.22	330	90	1,038	1,287	1,366
M-8	2	27,205	3,000	11.0	0.15	1.80	0.16	293	58	923	961	1,218
M-8	3	41,896	6,500	15.5	0.19	1.80	0.21	451	120	1,421	1,826	1,854
M-8	4	19,221	5,950	31.0	0.33	1.80	0.48	207	124	652	1,611	1,476
M-8	5	31,783	3,500	11.0	0.15	1.80	0.20	342	112	1,079	1,872	1,420
M-8	6	30,474	6,200	20.3	0.23	1.80	0.26	328	104	1,034	1,740	1,362
M-8	7	31,256	8,425	27.0	0.29	1.80	0.32	337	135	1,060	1,553	1,397
M-8	8	12,000	7,500	62.5	0.61	1.80	0.75	120	120	407	1,473	1,593
M-8	9	12,161	7,500	61.7	0.61	1.80	0.74	131	80	412	1,473	1,593
M-8	10	590	450	76.3	0.74	1.80	0.83	6	1176	20	5,622	1,582
treated in pond	11	270,396	85,800	31.7	0.34	1.80		2914	0	9,171	4,910	21,173
Total		507,590	139,835	27.5				5,469	2,119	17,215	24,348	24,240

Design Note: Sub Drainage Area 10 is a typical design for a rain garden, a raingarden is proposed on each townhouse lot.

The values shown in the Target Re, and ESDv, columns are for 1 lot; the values shown in the Design column is the design value multiplied by the number of lots.

## Stormwater Management Design Computations

### ESDv Computations - Volume and Recharge

#### Bay Ridge Estates

Date: 06/30/19

#### A. Determine RCN and Rv for Development Conditions

Soil Group	HSG	RCN	Area (SF)	Percent	RCN*Area
A	38	0	0	0.0%	0
B	55	267,763	99%	14,728,065	
C	70	20,281	7%	1,416,270	
D	77	0	0%	0	

Total 288,044 SF check area 16,146,335

Weighted RCN = 56

#### Subdrainage Areas - Details

Area (SF)	I (%)	Rv = (0.05+0.009* I)	Description of Area	Proposed Treatment
1	30,608	16.3	area off rear of building	M-8 Bio-Swale
2	27,205	11.0	area off rear of building	M-8 Bio-Swale
3	41,896	15.5	area off rear of building	M-8 Bio-Swale
4	19,221	31.0	area at the east end of site	M-8 Bio-Swale
5	31,783	11.0	area off rear of building	M-8 Bio-Swale
6	30,474	20.3	area off rear of building	M-8 Bio-Swale
7	31,256	27.0	east side of Bay Ridge Road	M-8 Bio-Swale
8	12,000	62.5	area between rear bldg	M-8 Bio-Swale
9	12,161	61.7	area between rear bldg	M-8 Bio-Swale
10	590	76.3	typical rain garden in front yard	M-7 Rain Garden (typical)

11 270,396 31.7 0.34 treated off-site exist pond

Total 507,590 27.5 %

#### B. Determine Target PE using Table 5.3

Pc= Rainfall Target Pe Using Table 5.3

Rv = (0.05+0.009\* I) 0.298

#### C. Compute Qe and Target ESDv

Qe= Runoff depth

Qe= Pe x Rv

Qe= 0.636 inches

Target ESDv= Qe (A) / 12 = 22,685 cf

If this volume is provided with ESD devices then MEP is achieved

ESDv to be prorated to subdrainage areas based on drainage area

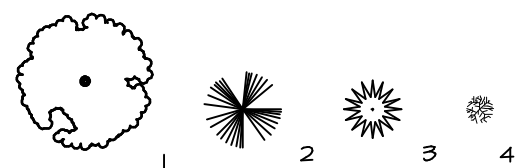
#### D. Compute Recharge Volume (Re-) Requirements

Site Area (A)	270,396 SF
Site Area (A)	11.65 Acres
Impervious Area	139,835 SF
Impervious Area	3.21 Acres
I (%) (Impervious)	51.7 %
Rv = (0.05+0.009* I)	0.515
Re = (ESDv/Rv)/A/12	0.2268 ac-ft
Re v	5,469 cf

Adjusted Target ESDv= 17,215 cf

Target ESDv less Recharge volume

GRAPHIC SCALE 1"=40'

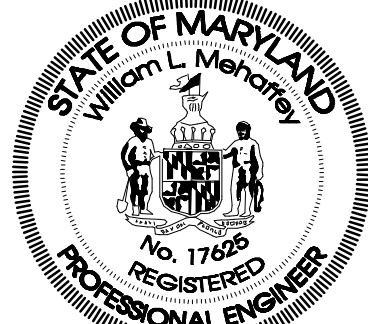


## BUFFERYARD AND INTERIOR LANDSCAPING REQUIREMENTS

SYMBOL	NAME - SUGGESTIVE SPECIES	TYPE	COMMENT/DESCRIPTION	QUANTITIES "A"	"B"	Interior Landscaping
1	RED MAPLE, WILLOW OAK, PIN OAK, TULIP TREE	CANOPY	1-2" CALIPER, BALL & BURLAP	10	43	12 *
2	AMER. HOLLY, DOGWOOD, CRABAPPLE, SNOWBELL	UNDERSTORY	4-5" HEIGHT, BALL & BURLAP	36	54	--
3	WHITE CEDAR, WHITE PINE, VIRGINIA PINE	EVERGREEN	4-5" HEIGHT, BALL & BURLAP	--	119	--
4	JUNIPER, AZALEA, JAPANESE HOLLY, NEEDLE	SHRUBS	1-3 GALLON CONTAINER	40	260	--
	POINT HOLLY					

THE OWNER RESERVES THE RIGHT TO MAKE SUBSTITUTIONS OF PLANT MATERIALS, ACTUAL SPECIFICATIONS, SIZE, AND NAME OF PLANT MATERIAL TO BE SUBMITTED TO LUGM, PRIOR TO APPROVAL.

EXISTING TREE COVER MAY BE USED TO MEET THE PLANTING REQUIREMENT.



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. 17626, expiration date 12/31/2025

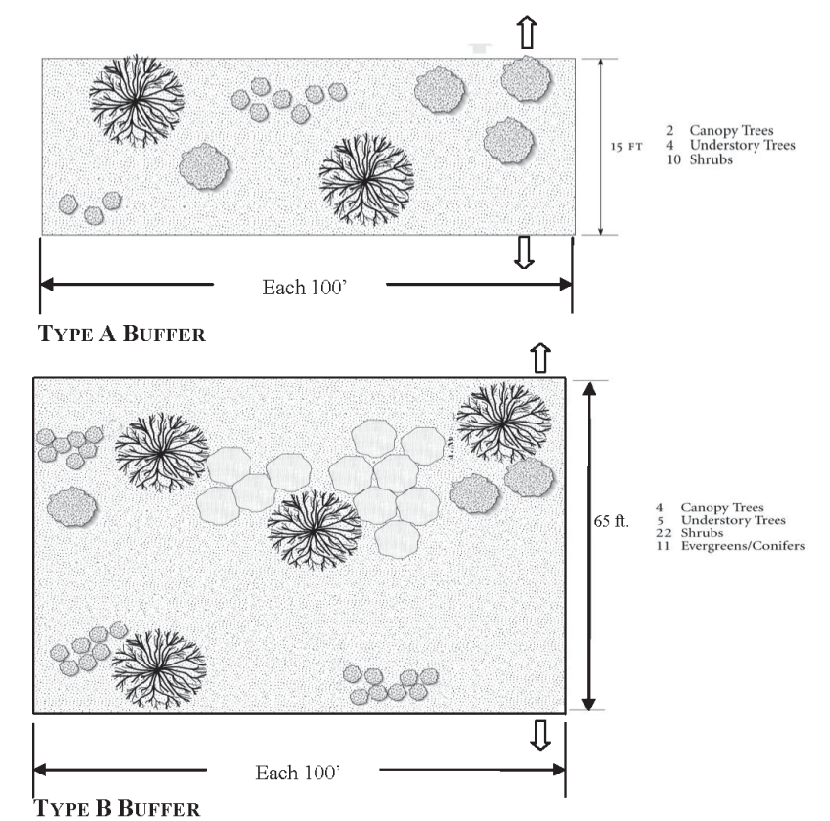
Designed By:	W. MehaFFEY
Drafted By:	S. Wright/A. Daylies
Date:	12-10-2018
Scale:	As Shown
Add Fire Hydrant per Fire Protection	06-20-24
Update Cert for Resubmittal	04-24-24
Revise Bay Ridge Intersection	08-14-19
Address LUGM Comments	07-31-19
Address TEC Comments	05-21-19
Revision	DATE

## Schedule 63.3.a: Buffer Yard Standards (See illustration on facing page)

Buffer yard minimum width <sup>1</sup>	Buffer Yard Types		
	A	B	C
Canopy trees (per 100 lineal feet)	2	4	5
Under story trees (per 100 lineal feet)	4	5	7
Evergreen trees and shrubs-min. 4' tall (per 100 lineal feet)	-	11	14
Shrubs (per 100 lineal feet)	10	22	27
Berm height	-	- <sup>1</sup>	6 feet <sup>2,3</sup>
Fence <sup>4</sup>	-	- <sup>1</sup>	6 feet <sup>2,3,4</sup>

1. No fences are required as part of buffer yards A and B.

St. Mary's County Comprehensive Zoning Ordinance Article 6 DEVELOPMENT STANDARDS AND APPROVALS



## Concept SWM & Sediment & Erosion Control Plan

LUGM FILE # 18-132-0022 Sheet 6 of 6

## SWM Computations & Landscaping

### Bay Ridge Estates

for: Eugene St. Clair

Tax map 51, Block 13, Parcel 605

Eighth Election District St. Mary's County, Maryland

## MEHAFFEY & ASSOCIATES, P.C.

### Civil & Environmental Engineering • Land Planning

41650 Courthouse Drive, Suite 100 ~ P.O. Box 2450

Leonardtown, Maryland 20650

301.475.0406 Fax 301.475.2822

