

Rainbow Drive/Thompson Road, Briggs Chaney Middle School Bus Lot, Preliminary/Final Water Quality Plan, MR2016023

JP Joshua Penn, Planner Coordinator, Joshua.Penn@montgomeryplanning.org, 301-495-4546

fib Frederick Vernon Boyd, Master Plan Supervisor, Fred.Boyd@montgomeryplanning.org, 301-495-4654

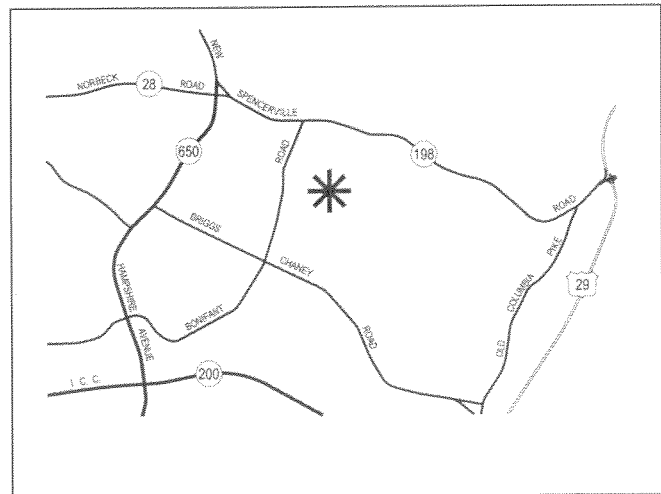
KRR Kipling Reynolds AICP, Chief Area 3, Kipling.Reynolds@montgomeryplanning.org, 301-495-4645

Completed: 05/27/16

Description

- B. **Preliminary/Final Water Quality Plan MR2016023: Upper Paint Branch Special Protection Area**
Reconstruction of the bus lot for Briggs Chaney Middle School. Construction includes a 26-foot wide asphalt driveway and associated sidewalks from the current bus lot to the intersection of Rainbow Drive and Thompson Road. Southwest of the intersection of Rainbow Drive and Thompson Road, in Silver Spring.

- Master Plan: 1997 Cloverly Master Plan
- Applicant: Montgomery County Department of Transportation
- Filing Date: April 15, 2016



Summary

- The review of this Mandatory Referral is in two parts:
Item A - Mandatory Referral MR2016023, discussed as a separate staff report, and
Item B - Preliminary/Final Water Quality Plan MR2016023.
- Staff recommends approval of the Preliminary/Final Water Quality Plan with conditions (Item B).
- This project is located within the Upper Paint Branch Special Protection Area (SPA) and on publicly owned property. Approval of a water quality plan is required under Section 19-62 of the Montgomery County Code. The Planning Board must take separate action on the Preliminary/Final Water Quality Plan (Item B) prior to taking action on the Mandatory Referral.
- This project will provide a new one-way bus lane entering from Rainbow Drive and exiting on to Thompson Lane and eliminating the single entrance bus loop currently servicing the school.

RECOMMENDATION

Approval of the Preliminary/Final Water Quality Plan. Subject to the following condition:

1. The impervious surfaces are limited to the area as shown on the Impervious Surface Plan Portion of the Preliminary/Final Water Quality Plan.

SITE DESCRIPTION

The project is located on the north side of the Briggs Chaney Middle School, directly in front of the existing building. At the existing bus loop entrance, there are woods on both sides of the existing drive. The proposed work focuses on the east side of the existing drive outside of the wooded area. The rest of the area contains a line of trees dominated by white pines, as well as an open grassy area.

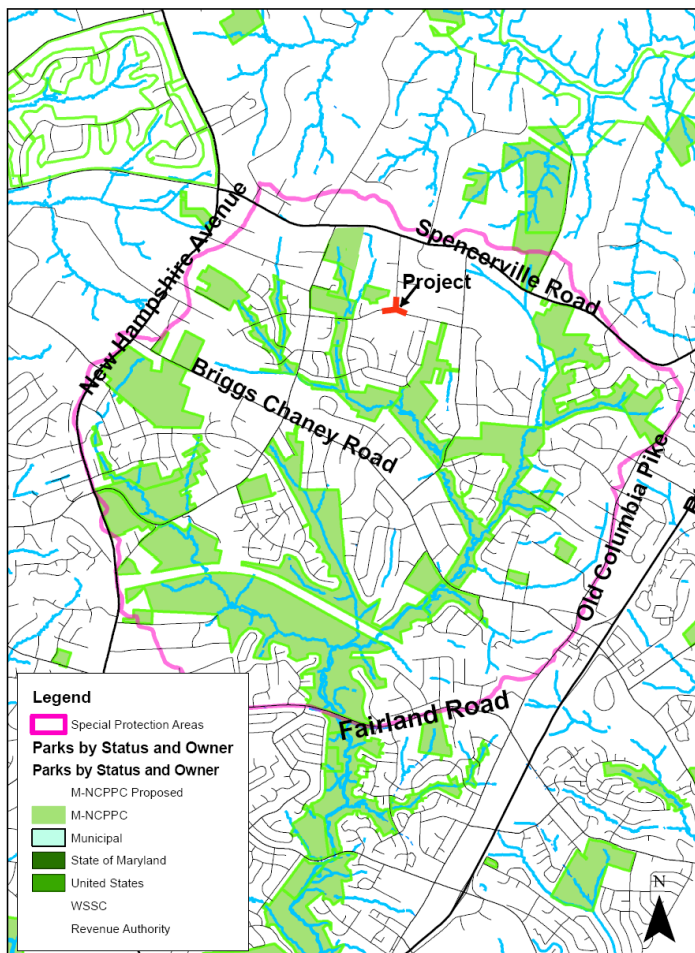


Figure 1. Project Location and Surrounding Area

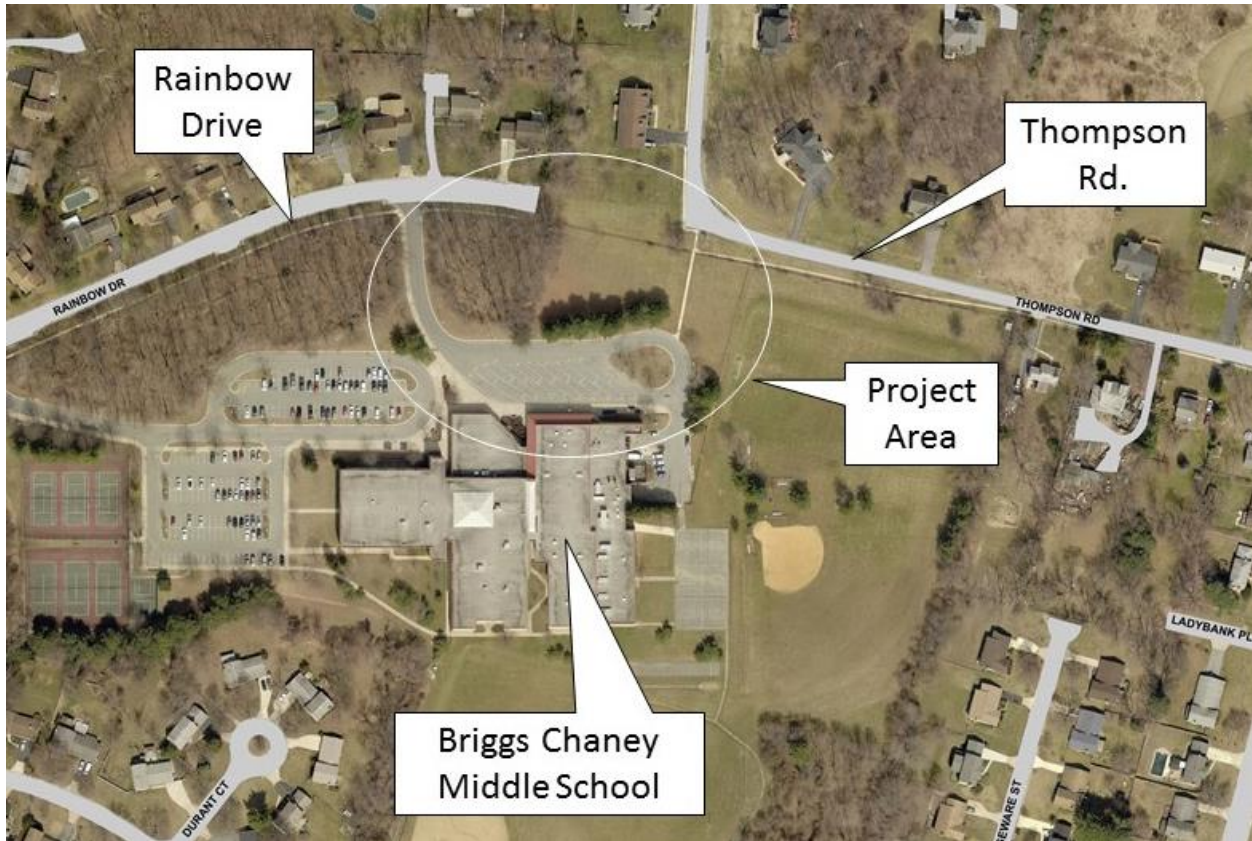


Figure 2. Project Area

PROJECT DESCRIPTION

The project provides a 26-foot-wide asphalt driveway from the intersection of Rainbow Drive and Thompson Road to the bus lot. The addition of the driveway creates a one-way bus drive, eliminating the single entrance/exit loop that exists currently. The project also provides a 6-foot to 8-foot-wide concrete sidewalk along the proposed driveway. A bio-swale with 9'-2" of bottom width and a 3:1 side slope will be constructed between the proposed driveway and the sidewalk. A grass swale that is 4'-6" wide with a 3:1 side slope will be constructed behind and along the curb just north of the school building for stormwater management purposes.

The Planning Board's action on the Preliminary/Final Water Quality Plan is regulatory and binding. The Planning Board must act on the Preliminary/Final Water Quality Plan before it finalizes its recommendations on the Mandatory Referral.

A. FOREST CONSERVATION PLAN ANALYSIS AND FINDINGS

The Application meets the requirements of Chapter 22A of the Montgomery County Forest Conservation Law.

Review for Conformance to the Forest Conservation Law

The Application meets the requirements of Chapter 22A of the Montgomery County Forest Conservation Law. The Application is exempt from submission of a forest conservation plan. A forest conservation exemption (#42016065E) was granted under the provisions of Section 22A-5(t) as “a modification to an existing non-residential developed property ...” M-NCPPC staff confirmed the exemption in a letter dated November 4, 2015 (Attachment A).

Environmental Guidelines

The project area does not contain any environmental buffers, streams, and other sensitive features. The project is within the Upper Paint Branch watershed, a USE III designation. The Countywide Stream Protection Strategy (CSPS) rates the water quality in this watershed as in good condition.

The project proposes no forest removal, no impacts to the Stream Valley Buffer (SVB), and no impacts to the 100-Year-Floodplain. There are no environmental impacts associated with the Muncaster Mill Road Sidewalk project.

B. SPA WATER QUALITY PLAN ANALYSIS AND FINDINGS

The Application meets the Water Quality Plan requirements of Chapter 19 of the Montgomery County Code and the impervious requirements of the Upper Paint Branch Environmental Overlay Zone.

Review for Conformance to the Special Protection Area Requirements

This project is located within the Upper Paint Branch SPA and on publicly owned property. It is required to obtain approval of a water quality plan under Section 19-62(c) of the Montgomery County Code. This section of the code states:

Publicly owned property. Before engaging in any land-disturbing activity on publicly owned property in an area designated as a special protection area, the applying agency or department should prepare a combined preliminary and final water quality plan.

As part of the requirements of the Special Protection Area law, a SPA Water Quality Plan should be reviewed in conjunction with a Mandatory Referral. Under Section 19-65 of the law, the Montgomery County Department of Permitting Services (MCDPS) and the Planning Board have different responsibilities in the review of a Water Quality Plan. MCDPS has reviewed and conditionally approved the elements of the water quality plan under its purview. The Planning Board’s responsibility is to determine if environmental buffer protection, SPA forest conservation and planting requirements, and limits on impervious surfaces have been satisfied.

County DPS Special Protection Area Review Elements

In a letter dated April 21, 2016, MCDPS has conditionally approved the elements of the SPA Preliminary/Final Water Quality Plan under its purview with a synopsis provided below (Attachment B).

Site Performance Goals

As part of the Preliminary/Final Water Quality Plan, the following performance goals were established for the Property:

1. Maintain stream baseflow.
2. Sediment loading is to be minimized during construction; redundant erosion control treatments may be required.

Stormwater Management

Stormwater management for the Project will be provided by non-rooftop disconnection, a bio-swale, and a grass swale.

Sediment Control

An engineered sediment control plan must be submitted for this project prior to permitting.

BMP Monitoring

Montgomery County Department of Environmental Protection (DEP) determined that because of the small size of the project and other ongoing monitoring in the SPA, no monitoring would be required for this project.

Planning Board Special Protection Area Review Elements

Staff recommends Planning Board approval of the elements of the SPA Water Quality Plan under its purview.

Environmental Buffer Protection

A Natural Resources Inventory and Forest Stand Delineation (NRI/FSD) was included as part of the Forest Conservation Exemption Request #42016065E, which was approved by Staff on November 4, 2015. There are no streams, floodplains, wetlands, or environmental buffers affected by the Project.

Impervious Surfaces

A main goal for development in all SPAs is to reduce the amount of impervious surfaces. Impervious surface restrictions for development projects in the Upper Paint Branch SPA are set forth in the Environmental Overlay Zone for the Upper Paint Branch SPA. The Environmental Overlay Zone has an 8 percent imperviousness limit for new development projects. It also allows for existing impervious surfaces that exceed the 8 percent imperviousness limit to remain or be reconstructed.

Section 59-C-18.152(a)(1) of the Environmental Overlay Zone states:

“(1) Any development must not result in more than 8 percent impervious surface of the total area under application for development.

- (A) Any impervious surface lawfully existing pursuant to a building permit issued before July 31, 2007 that exceeds the 8 percent restriction, may continue or be reconstructed under the development standards in effect when the building permit was issued.”

Since this project includes the reconstruction and expansion of existing bus loop, and the imperviousness of the school site currently exceeds 8 percent of the project area, staff has determined that Section 59-C-18.152(a)(1) of the Environmental Overlay Zone applies to the project.

In order for the project to minimize the net increase of impervious surfaces over the existing level, MCDOT proposes the removal of excess imperviousness from old bus loop configuration. The final project design will create 1,219 square feet of new impervious surfaces.

In order to meet the standard of no net increase of impervious surfaces over the existing level, MCDOT would have to remove 1,219 square feet of additional impervious surfaces in the SPA or utilize impervious credits in the Montgomery County Public Schools (MCPS) impervious surface bank (Parcel P712 part of MR2009707). MCPS has written a letter authorizing MCDOT to utilize the credits needed to accomplish the Rainbow Drive/Thompson Road, Briggs Chaney Middle School Bus Lot project.

The Rainbow Drive/Thompson Road, Briggs Chaney Middle School Bus Lot will have no effective net gain of imperviousness and is in compliance with the Upper Paint Branch Environmental Overlay Zone.

CONCLUSION

Staff recommends the Planning Board approve the Preliminary/Final Water Quality Plan with conditions specified above.

ATTACHMENTS

- A. Forest Conservation Exemption
- B. Department of Permitting Services (MCDPS) Preliminary/Final Water Quality Plan approval letter
- C. Water Quality Report and Appendices
- D. MCPS Letter authorizing Impervious bank usage, dated May 12, 2016
- E. Impervious Surface Plan



MONTGOMERY COUNTY PLANNING DEPARTMENT
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

November 4, 2015

Mr. Bruce E. Johnston, Chief
Montgomery County Dept. of Transportation
100 Edison Park Dr., 4th Floor
Gaithersburg, MD 20878

Re: Briggs Chaney Middle School; Forest Conservation Exemption 42016065E;
Bus Lot Reconstruction

Based on the review by staff of the Montgomery County Planning Department, the Forest Conservation Exemption Request submitted on November 4, 2015 for the plan identified above, is confirmed. The project site is exempt from Article II of the Montgomery County Code, Chapter 22A (Forest Conservation Law), Section 22A-5(t) because the site is a modification to an existing non-residential developed property: (1) no more than 5,000 square feet of forest is ever cleared at one time or cumulatively after an exemption is issued, (2) the modification does not result in the cutting, clearing, or grading of any forest in a stream buffer or located on property in a special protection area which must submit a water quality plan, (3) the modification does not require approval of a preliminary plan of subdivision, and (4) the modification does not increase the developed area by more than 50% and the existing development is maintained.

A pre-construction meeting is required after the limits of disturbance have been staked prior to clearing and grading. The MCPS representative, construction superintendent, forest conservation inspector, private arborist, and Montgomery County Department of Permitting Services sediment control inspector shall attend this meeting. If you have any further questions you may contact me at david.wigglesworth@montgomeryplanning.org.

Sincerely,

A handwritten signature in black ink that reads "David Wigglesworth".

David Wigglesworth
Sr. Planner
Development Applications & Regulatory Coordination

CC: 42016065E
Rebecca Park (MCDOT)
Brett Linkletter (MCDOT)



DEPARTMENT OF PERMITTING SERVICES

Isiah Leggett
County Executive

Diane R. Schwartz Jones
Director

April 21, 2016

Ms. Rebecca Park, P.E.
Capital Projects Manager, DOT-DTE
100 Edison Park Drive, 4th Floor
Gaithersburg, Maryland 20878

Re: **COMBINED PRELIMINARY/FINAL WATER QUALITY PLAN** Request for Rainbow Drive-Thompson Road Bus Lot Reconstruction
SM File #: 281669
Tract Size/Zone: 0.99 acres/Access Drive
Total Concept Area: 0.99 acres
Parcel(s): P090
Watershed: Upper Paint Branch

Dear Ms. Park:

Based on a review by the Department of Permitting Services Review Staff, the Combined Preliminary/Final Water Quality Plan for the above mentioned site is **acceptable**. The plan proposes to meet required water quality goals via the use of a bio swale and a grass swale.

The following **items** will need to be addressed **during** the final stormwater management design plan stage:

1. A detailed review of the stormwater management computations will occur at the time of detailed plan review.
2. An engineered sediment control plan must be submitted for this development.
3. Landscaping shown on the approved Landscape Plan as part of the approved Site Plan are illustrative purpose only and may be changed at the time of detailed plan review of the Sediment Control/Storm Water Management plans by the Mont. Co. Department of Permitting Services, Water Resources Section.

This list may not be all-inclusive and may change based on available information at the time.

Payment of a stormwater management contribution in accordance with Section 2 of the Stormwater Management Regulation 4-90 **is not required**.

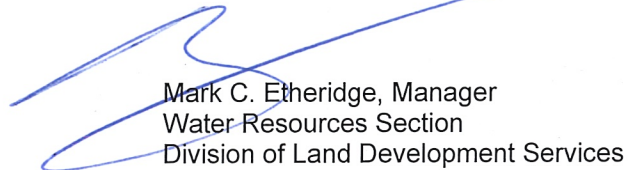
This letter must appear on the final stormwater management design plan at its initial submittal. The concept approval is based on all stormwater management structures being located outside of the Public Utility Easement, the Public Improvement Easement, and the Public Right of Way unless specifically approved on the concept plan. Any divergence from the information provided to this office; or additional information received during the development process; or a change in an applicable Executive

Ms. Rebecca Park, P.E.
April 21, 2016
Page 2 of 2

Regulation may constitute grounds to rescind or amend any approval actions taken, and to reevaluate the site for additional or amended stormwater management requirements. If there are subsequent additions or modifications to the development, a separate concept request shall be required.

If you have any questions regarding these actions, please feel free to contact Leo Galanko at 240-777-6424.

Sincerely,



Mark C. Etheridge, Manager
Water Resources Section
Division of Land Development Services

MCE: lmg

cc: C. Conlon
SM File # 281669

ESD Acres:	0.99
STRUCTURAL Acres:	N/A
WAIVED Acres:	N/A

PRE AND FINAL WATER QUALITY REPORT

**RAINBOW DRIVE-THOMPSON ROAD
BUS LOT RECONSTRUCTION**

CIP No. 501511

Prepared by



**Department of Transportation
Division of Transportation Engineering
Transportation Planning and Design Section**

**100 Edison Park Drive, Fourth Floor
Gaithersburg, Maryland**

**January 13, 2016
Revised April 4, 2016**

BACKGROUND

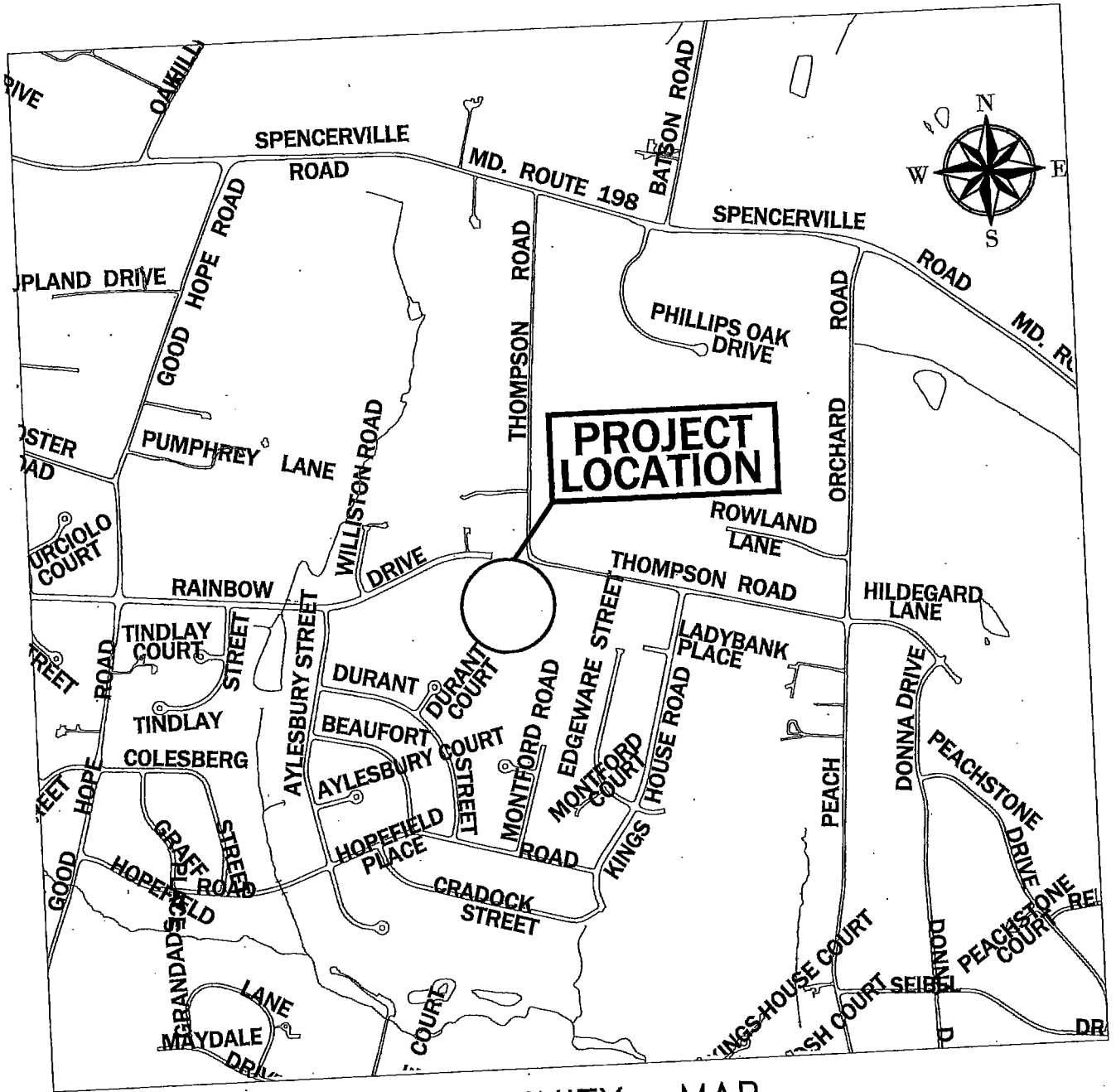
The project provides the reconfiguration of the bus lot and addition of a new driveway at Briggs Chaney Middle School (BCMS) in Cloverly as agreed upon between Montgomery County Department of Transportation (MCDOT) and Montgomery County Public School (MCPS) in exchange of granting MCDOT easement for Rainbow Drive-Thompson Road Connection (CIP No. 501511). The roadway construction was completed in fall 2015. The location of the project site is shown in Figure 1.

STUDY AREA

The project site is located in the Upper Paint Branch Special Protection Area (SPA). The Environmental Overlay Zone for the Upper Paint Branch SPA restricts development to no more than 8% of the project site or no more than existing percentage of imperviousness if the existing imperviousness is greater than 8%. As shown in the computations in Appendix A, the net additional impervious area is 1,219 ft². The total project site which is defined by Limit of Disturbance (LOD) line is 43,081 ft² and its 8% is 3,447 ft². The net additional impervious area is less than 8% of the project. As per Appendix E, Preliminary/Final Water Quality Plans for Rainbow Drive Sidewalk and Pavement Removal (CIP No. 506747) was approved by DPS in May 26, 2010. The project created 3,476 ft² of credit for the pavement removal.

PROJECT PURPOSE

The project reconfigures the bus lot at BCMS and adds a driveway to the bus lot for traffic improvement. The addition of the driveway creates a one-way bus loop. The



VICINITY MAP
SCALE : 1" = 1000'

one-way bus loop was requested by MCPS in exchange of their easement dedication to the County for the roadway construction portion of Rainbow Drive-Thompson Road Connection. The roadway construction is adjacent to the school. Phase I of the roadway construction was completed in November 2015 and Phase II of the roadway construction will start in Winter 2016 immediately after the completion of the relocation of the underground cables by Verizon.

PROJECT SCOPE

The project provides a 26-foot wide asphalt driveway from the intersection of Rainbow Drive and Thompson Road to the bus lot at BCMS. The driveway will be superelevated from Station 0+95 to Station 2+25 with curb and gutters proposed on both sides of the driveway. The project also provides a six-foot wide concrete sidewalk along the proposed driveway with 12 feet width of buffer and an eight-foot wide concrete sidewalk without any buffer. There will be a five feet and two inches wide bio-swale between the proposed driveway and the sidewalk for stormwater management through Environmental Site Design (ESD). There will be openings in the curb and gutter to allow the runoff from the driveway to flow into the proposed bio-swale. For safe conveyance of possible overflows from the bio-swale, a new storm drain system will be installed between the outfall of the swale and the existing storm drain system. In addition, a four and a half feet wide flat bottom grass ditch is proposed behind and along the curb of the bus parking lot for another ESD facility.

In addition, the project widens the existing driveway to the school along the east side of the driveway by an average of three feet. There will also be a removal of a

portion of the existing bus lot to comply with the impervious restrictions of the Environmental Overlay Zone for the Upper Paint Branch SPA.

The bus lot would be reconfigured for traffic to enter at the existing driveway and would exit at the proposed driveway at the intersection Rainbow Drive and Thompson Road.

SOILS

The Montgomery County 2007 Web Soil Survey by the USDA's Natural Resource Conservation Services (NRCS) was used to delineate the hydrologic soil groupings. The entire project site is Glenelg silt loam which is a NRCS hydrologic soil Group B. The soil map with delineations of soil groups is included in Appendix B.

ENVIRONMENTAL

The project is located in Left Fork of the Upper Paint Branch SPA. The Upper Paint Branch SPA Map is included in Appendix C. No wetlands are located within the project site. The project site is located in neither the 100-year nor 500-year floodplains as shown in the FEMA Flood Insurance Rate Map (FIRM Panel 380, Map Number 24031C0380D. A copy of the FIRM is included in Appendix D.

METHODOLOGY

For ESD practice, a bio-swale was designed between the proposed driveway and the sidewalk. The bio-swale is 127 feet long and five feet and two inches wide at its bottom with 3:1 side slopes and 2.8% longitudinal slope. The media layer of the bio-

swale is composed of 24" planting medium, 6" sand layer and 12" gravel layer. The bio-swale will have 25 feet length of 6" PVC pipe for under drain in the gravel layer down to the outfall of the bio-swale.

The bio-swale was sized to treat the runoff within Drainage Area E. As per the computations in Appendix A, the target Runoff Volume (ESD_v) for the bio-swale is 914 ft³. As per the computation, the Max ESD_v that can be restored and the Min ESD_v that must be restored in the facility are 1,320 ft³ and 507 ft³ respectively. The ESD_v treated by the bio-swale meets the target ESD_v and is in the range of Max ESD_v and Min ESD_v. The Maximum ESD flow velocity for the 1-year storm is 0.88 fps which is less than 1 fps.

The grass swale behind and along the curb of the bus lot was designed to treat the runoff within Drainage Area G for ESD practice. The grass swale is 150 feet long and four and a half feet wide at its bottom with 3:1 side slopes and 1.6% longitudinal slope. As per the computations in Appendix A, the Target ESD_v for the grass swale is 55 ft³ and the grass swale treats 56 ft³ for ESD_v. The flow velocity from one-year storm is 0.27 fps which is less than 1 fps.

Please note that due to the site constraint, the grass swale was designed behind and along the curb at the bus lot rather than along the curb of the widening of the existing driveway.

EROSION & SEDIMENT CONTROL DESIGN

The erosion & sediment control concept is to minimize sediment loading through quick stabilization of the project site. An inlet protection will be installed at each

proposed inlet. Silt fences will be installed as shown on the plans. Sod will be used in all areas that require grass stabilization.

WATER QUALITY MONITOR PLAN

No water quality monitor requirements are anticipated.

APPENDIX A

COMPUTATIONS

Imperviousness Computation

Project Area = 43,081 ft²

Net Proposed Impervious Area = 1,219 ft²

8% of Project Area = 3,447 ft² > 1,219 ft²

Ex. Impervious Area = 19,155 - 4,560 - 1,121 + 109 + 291 + 280 + 1,089 = 17,485 ft²

% Ex. Imperviousness = 17,485 / 43,081 = 41%

% Proposed Imperviousness = 1,219 / 43,081 = 2.8%

ESD Facility Design

Drainage Area E

Type: **Proposed Bio-Swale**

Location: **Sta. 0+99.50 to Sta. 2+26.50**

Buffer between the proposed driveway and the proposed sidewalk

1. Total Drainage Area = 38,844 ft²
Impervious Area = 13,040 ft²
% Imperviousness = 13,040 / 38,844 = 33.5%
2. Rainfall Target (P_E)
P_E = 1.8" (Based on Hydrologic Soil Group B and 33.5% Imperviousness)
3. Target Runoff Volume (ESD_v)
R_v = 0.05 + 0.009(I) = 0.05 + 0.009 (33.5) = 0.35
A = 17,407 ft² (Area of LOD within Drainage Area E)
ESD_v = P_E x R_v x A / 12 = 1.8 x 0.35 x 17,407 / 12 = 914 ft³
4. Maximum Volume that can be stored in the Facility:
ESD_v (MAX) = P_E x R_v x A / 12 = 2.6" x 0.35 x 17,407 / 12 = 1,320 ft³
5. Minimum Volume that must be stored in the Facility:
ESD_v (MIN) = P_E x R_v x A / 12 = 1.0" x 0.35 x 17,407 / 12 = 507 ft³
6. Size of Bio-Swale
Length = 127 ft
Width = 5'-2"
Media Layer Depth = 3.5 ft
Porosity of Media layer = 0.4
7. ESD_v Treated by the Bio-Swale
127 ft x 5.17 ft x 3.5 ft x 0.4 = 919 ft³ > 914 ft³

Since the proposed ESD_v exceeds the minimum storage required, the swale is acceptable.

ESD Facility Design

Drainage Area G

Type: Proposed Grass Swale
Location: Sta. 15+00 to Sta. 13+50
Located behind and along the bus lot

1. Total Drainage Area = 86,806 ft²
Impervious Area = 15,229 ft²
% Imperviousness = 15,229 / 86,806 = 17.5%
2. Rainfall Target (P_E)
P_E = 1.2" (Based on Hydrologic Soil Group B and 17.5% Imperviousness)
3. Target Runoff Volume (ESD_v)
R_v = 0.05 + 0.009(I) = 0.05 + 0.009 (17.5) = 0.21
A = 2,615 ft² (Area of LOD within Drainage Area G)
ESD_v = P_E x R_v x A / 12 = 1.2 x 0.21 x 2,615 / 12 = 55 ft³
4. Size of Grass Swale
Length = 150 ft
Width = 4.5 ft
5. ESD_v Treated by the Grass Swale
150 ft x 4.5 ft x 1 inch = 56.25 ft³ > 55 ft³

Peak Discharge For Water Quality Storm
Bio- Swale

Curve Number (CN)

$$P_E = 1.0''$$

$$R_v = 0.05 + 0.009(I) = 0.05 + 0.009(33.5) = 0.35$$

$$Q_a = P \times R_v = 1.0'' \times 0.35 = 0.35$$

$$CN = 91 \quad (\text{Based on Equation in Appendix D.10 of 2000 Maryland SWM Manual})$$

Peak Discharge for Water Quality Volume

$$T_c = 7 \text{ min} = 0.12 \text{ hr}$$

$$I_a = (200/CN)^{-2} = (200/91)^{-2} = 0.20$$

$$I_a / P = 0.20 / 1 = 0.20$$

$$q_u = 930 \text{ csm/in}$$

$$Q_p = q_u \times A \times Q_a = 930 \text{ csm/in} \times 0.000624 \text{ mi}^2 \times 0.35'' = 0.20 \text{ cfs}$$

Peak Discharge For Water Quality Storm
Grass Swale

Curve Number (CN)

$$P_E = 1.0''$$

$$R_v = 0.05 + 0.009(I) = 0.05 + 0.009(17.5) = 0.21$$

$$Q_a = P \times R_v = 1.0'' \times 0.21 = 0.21$$

$$CN = 86 \quad (\text{Based on Equation in Appendix D.10 of 2000 Maryland SWM Manual})$$

Peak Discharge for Water Quality Volume

$$T_c = 10 \text{ min} = 0.17 \text{ hr}$$

$$I_a = (200/CN)^{-2} = (200/86)^{-2} = 0.33$$

$$I_a / P = 0.33 / 1 = 0.33$$

$$q_u = 730 \text{ csm/in}$$

$$Q_p = q_u \times A \times Q_a = 730 \text{ csm/in} \times 0.000094 \text{ mi}^2 \times 0.21'' = 0.014 \text{ cfs}$$

Worksheet

Worksheet for Trapezoidal Channel

Project Description	
Worksheet	Bio-Swale-Bus L
Flow Element	Trapezoidal Cha
Method	Manning's Form
Solve For	Channel Depth

Input Data	
Mannings Coeffic	0.035
Slope	028000 ft/ft
Left Side Slope	3.00 V : H
Right Side Slope	3.00 V : H
Bottom Width	5.17 ft
Discharge	0.20 cfs

Results	
Depth	0.04 ft
Flow Area	0.2 ft ²
Wetted Perim	5.26 ft
Top Width	5.20 ft
Critical Depth	0.04 ft
Critical Slope	0.054844 ft/ft
Velocity	0.88 ft/s <i>< 1 fps</i>
Velocity Head	0.01 ft
Specific Energ	0.06 ft
Froude Numb	0.74
Flow Type	Subcritical

Worksheet Worksheet for Trapezoidal Channel

Project Description	
Worksheet	Grass Swale-Bus <i>Lot</i>
Flow Element	Trapezoidal Channel
Method	Manning's Form
Solve For	Channel Depth

Input Data	
Mannings Coeff	0.035
Slope	016000 ft/ft
Left Side Slope	3.00 V : H
Right Side Slope	3.00 V : H
Bottom Width	4.50 ft
Discharge	0.01 cfs

Results	
Depth	0.01 ft
Flow Area	0.1 ft ²
Wetted Perim	4.52 ft
Top Width	4.51 ft
Critical Depth	0.01 ft
Critical Slope	0.094983 ft/ft
Velocity	0.27 ft/s <i>< 1 fps</i>
Velocity Head	1.15e-3 ft
Specific Energ	0.01 ft
Froude Numb	0.45
Flow Type	Subcritical

Worksheet Worksheet for Circular Channel

Project Description

Worksheet	I-1C to I-1D
Flow Element	Circular Chann
Method	Manning's Forr
Solve For	Channel Dept

Input Data

Mannings Coeff	0.013
Slope	010000 ft/ft
Diameter	15 in
Discharge	0.70 cfs

Results

Depth	0.28 ft
Flow Area	0.2 ft ²
Wetted Perime	1.23 ft
Top Width	1.04 ft
Critical Depth	0.33 ft
Percent Full	22.2 %
Critical Slope	0.005227 ft/ft
Velocity	3.45 ft/s
Velocity Head	0.18 ft
Specific Energ	0.46 ft
Froude Numbe	1.37
Maximum Disc	6.95 cfs
Discharge Full	6.46 cfs
Slope Full	0.000117 ft/ft
Flow Type	supercritical

Worksheet Worksheet for Circular Channel

Project Description

Worksheet	I-1D to EX-MH 14
Flow Element	Circular Chann
Method	Manning's Forr
Solve For	Channel Depth

Input Data

Mannings Coeffic	0.013
Slope	008000 ft/ft
Diameter	15 in
Discharge	3.89 cfs

Results

Depth	0.75 ft
Flow Area	0.8 ft ²
Wetted Perime	2.22 ft
Top Width	1.22 ft
Critical Depth	0.80 ft
Percent Full	60.1 %
Critical Slope	0.006679 ft/ft
Velocity	5.05 ft/s
Velocity Head	0.40 ft
Specific Energ	1.15 ft
Froude Numbe	1.12
Maximum Disc	6.21 cfs
Discharge Full	5.78 cfs
Slope Full	0.003627 ft/ft
Flow Type	supercritical

Thompson - Phase II

11/30/15

Drainage Area A

$$\text{Total Area} = 40,079 \text{ ft}^2 = .92 \text{ acre}$$

$$\text{Impervious area} = 30,991 \text{ ft}^2 = .71 \text{ acre}$$

$$\text{Lawn} = .21 \text{ acre}$$

$$C = \frac{.9(.71) + .55(.21)}{.92} = .82^* \Rightarrow T_c = 5 \text{ min}$$

* B ~~HSG~~ HSG, 2-7%
(5% slope)

$$Q_{10} = C i_{10} A = (.82)(7.07 \text{ in/hr})(.92 \text{ ac}) \\ = \underline{5.33 \text{ cfs}}$$

Drainage Area B

$$\text{Total Area} = 32,168 \text{ ft}^2 = .74 \text{ ac}$$

$$\text{Impervious area} = 996 + 5,632 = .15 \text{ ac}$$

$$\text{Lawn} = .59 \text{ ac}$$

$$C = \frac{.9(.15) + .65(.59)}{.74} = .70 \Rightarrow T_c = 7 \text{ min}$$

* HSG: B, slope
7-7%

$$Q_{10} = C i_{10} A = (.70)(6.52 \text{ in/hr})(.74 \text{ ac}) = \underline{3.38 \text{ cfs}}$$

Drainage Area C

$$\text{Total Area} = 20,143 \text{ ft}^2 = .46 \text{ ac}$$

$$\text{Impervious area} = .12 \text{ ac}$$

$$\text{Lawn} = .34 \text{ ac}$$

$$C = \frac{.9(.12) + .65(.34)}{.46} = .72 \Rightarrow T_c = 7 \text{ min}$$

$$Q_{10} = C i_{10} A = (.72)(6.52 \text{ in/hr})(.46 \text{ ac}) = \underline{2.16 \text{ cfs}}$$

Drainage Area D

$$\text{Total Area} = 19,245 \text{ ft}^2 = .44 \text{ ac}$$

$$\text{Impervious area} = 1,792 + 994 = 2,786 \text{ ft}^2 = .06 \text{ ac}$$

$$\text{Lawn} = .38 \text{ ac}$$

$$C = \frac{.9(.06) + .55(.38)}{.44} = .60 \Rightarrow T_c = 10 \text{ min}$$

$$Q_{10} = C i_{10} A = (.60)(5.85 \text{ in/hr})(.44 \text{ ac}) = \underline{1.54 \text{ cfs}}$$

Drainage Area E (ex. Condition)

$$\text{Total Area} = 37,947 \text{ ft}^2 = .87 \text{ ac}$$

$$\text{Impervious area} = 9761 \text{ ft}^2 - 1,283 = 8,478 \text{ ft}^2 = .19 \text{ ac}$$

$$\text{Lawn} = .68 \text{ ac}$$

$$C = \frac{.9(.19) + .55(.68)}{.87} = .63 \Rightarrow T_c = 10 \text{ min}$$

$$Q_{10} = C_{10} A = (.63)(5.85 \text{ in/hr})(.87 \text{ ac}) = \underline{3.21 \text{ cfs}}$$

Drainage Area E (proposed Condition)

$$\text{Total Area} = 37,947 + 897 = 38,844 \text{ ft}^2 = .89 \text{ ac}$$

$$\text{Impervious area} = 11,243 + 1,797 = .30 \text{ ac}$$

$$\text{Lawn} = .59 \text{ acre}$$

$$C = \frac{.9(.30) + .55(.59)}{.89} = .67 \Rightarrow T_c = 7 \text{ min}$$

$$Q_{10} = C_{10} A = (.67)(6.52)(.89) = \underline{3.89 \text{ cfs}}$$

Drainage Area F (ex. condition)

$$\text{Total Area} = 88,769 \text{ ft}^2 = 2.04 \text{ acres}$$

$$\text{Impervious area} = 68,337 + 8,387 - 1,250 = 1.73 \text{ acre}$$

$$\text{Lawn} = .31 \text{ acre}$$

$$C = \frac{.9(1.73) + .50(.31)}{2.04} = .84 \Rightarrow T_c = 5 \text{ min}$$

$$Q_{10} = C i_{10} A = (.84)(7.07 \text{ in/hr})(2.04 \text{ ac}) = \underline{12.11 \text{ cfs}}$$

Drainage Area F (proposed condition)

$$\text{Total Area} = 2.04 \text{ ac}$$

$$\text{Impervious area} = 68,337 \text{ ft}^2 = 1.57 \text{ ac}$$

$$\text{Lawn} = .47 \text{ ac}$$

$$C = \frac{.9(1.57) + .5(.47)}{2.04} = .81 \Rightarrow T_c = 5 \text{ min}$$

$$Q_{10} = C i_{10} A = (.81)(7.07 \text{ in/hr})(2.04 \text{ ac}) \\ = \underline{11.68 \text{ cfs}}$$

Drainage Area G (ex Condition)

$$\text{Total Area} = 86,806 \text{ ft}^2 = 1.99 \text{ acres}$$

$$\text{Impervious area} = 7,378 \text{ ft}^2 + 2,130 + 3,972 + 617 \\ = 14,097 \text{ ft}^2 = .32 \text{ ac}$$

$$\text{Lawn} = 1.67 \text{ ac}$$

$$C = \frac{.9(.32) + .55(1.67)}{1.99} = .606 \Rightarrow T_c = 10 \text{ min}$$

$$Q_{10} = C_{i_{10}} A = (.606)(5.85 \text{ in/hr})(1.99 \text{ ac}) = \underline{7.05 \text{ cfs}}$$

Drainage Area G (Proposed Condition)

$$\text{Total Area} = 1.99 \text{ ac}$$

$$\text{Impervious area} = 14,097 \text{ ft}^2 + 1,132 = 15,229 \text{ ft}^2 \\ = .35 \text{ ac}$$

$$\text{Lawn} = 1.64 \text{ ac}$$

$$C = \frac{.9(.35) + .55(1.64)}{1.99} = .612 \Rightarrow T_c = 10 \text{ min}$$

$$Q_{10} = C_{i_{10}} A = (.612)(5.85 \text{ in/hr})(1.99 \text{ ac}) \\ = \underline{7.12 \text{ cfs}}$$

Drainage Area H (ex. Condition)

$$\text{Total Area} = 25,657 + 887 = 26,544 \text{ ft}^2 = .61 \text{ ac}$$

$$\text{Impervious area} = 1,548 \text{ ft}^2 + 935 \text{ ft}^2 + 2,508 \text{ ft}^2 \\ = 4,991 \text{ ft}^2 = .11 \text{ ac}$$

$$\text{Lawn} = .50 \text{ ac}$$

$$C = \frac{.9(.11) + .55(.50)}{.61} = .61 \Rightarrow T_c = 10 \text{ min}$$

$$Q_{10} = C i_{10} A = (.61)(5.85 \text{ in/hr})(.61 \text{ ac}) = \underline{2.18 \text{ cfs}}$$

Drainage Area H (proposed Condition)

$$\text{Total Area} = 25,657 \text{ ft}^2 = .59 \text{ ac}$$

$$\text{Impervious area} = 2,508 \text{ ft}^2 + 3,714 + 828 = .16 \text{ ac}$$

$$\text{Lawn} = .43 \text{ ac}$$

$$C = \frac{.9(.16) + .55(.43)}{.59} = .64 \Rightarrow T_c = 10 \text{ min}$$

$$Q_{10} = C i_{10} A = (.64)(5.85 \text{ in/hr})(.59 \text{ ac}) = \underline{2.21 \text{ cfs}}$$

Drainage Area I

$$\text{Total Area} = 107,054 \text{ ft}^2 = 2.46 \text{ acres}$$

$$\begin{aligned} \text{Impervious area} &= 9,622 + 3,108 + 4,888 + 4,286 \\ &\quad + 3,068 + 1,992 + 4,433 + 2,036 \\ &= 33,433 \text{ ft}^2 = .77 \text{ acre} \end{aligned}$$

$$\text{Lawn} = 1.69 \text{ acre}$$

$$C = \frac{.9(.77) + .55(1.69)}{2.46} = .66$$

$$T_c = T_t + \frac{L-100}{60V} = \frac{10 \text{ min}}{1 \text{ min}} + \frac{690-100}{6(7 \text{ fps})} = 21 \text{ min}$$

$$Q_{10} = C i_{10} A = (.66)(3.97 \text{ in/hr})(2.46 \text{ ac}) = \underline{6.45 \text{ cfs}}$$

Drainage Area J

$$\text{Total Area} = 89,114 \text{ ft}^2 = 2 \text{ acres}$$

$$\text{Impervious area} = 20,229 \text{ ft}^2 = .46 \text{ acre}$$

$$\text{Lawn} = 1.54 \text{ acres}$$

$$C = \frac{.9(.46) + .55(1.54)}{2} = .63 \Rightarrow T_c = 10 \text{ min}$$

$$\begin{aligned} Q_{10} &= C i_{10} A = (.63)(5.85 \text{ in/hr})(2 \text{ acres}) \\ &= \underline{7.37 \text{ cfs}} \end{aligned}$$

Drainage Area E1 (Drains into I-1C)

$$\text{Total Area} = 6,704 \text{ ft}^2 = .15 \text{ acre}$$

$$\text{Lawn} = 1,646 \text{ ft}^2 = .038 \text{ acre}$$

$$\text{Impervious Area} = 5,058 \text{ ft}^2 = \del{.038} .11 \text{ acre}$$

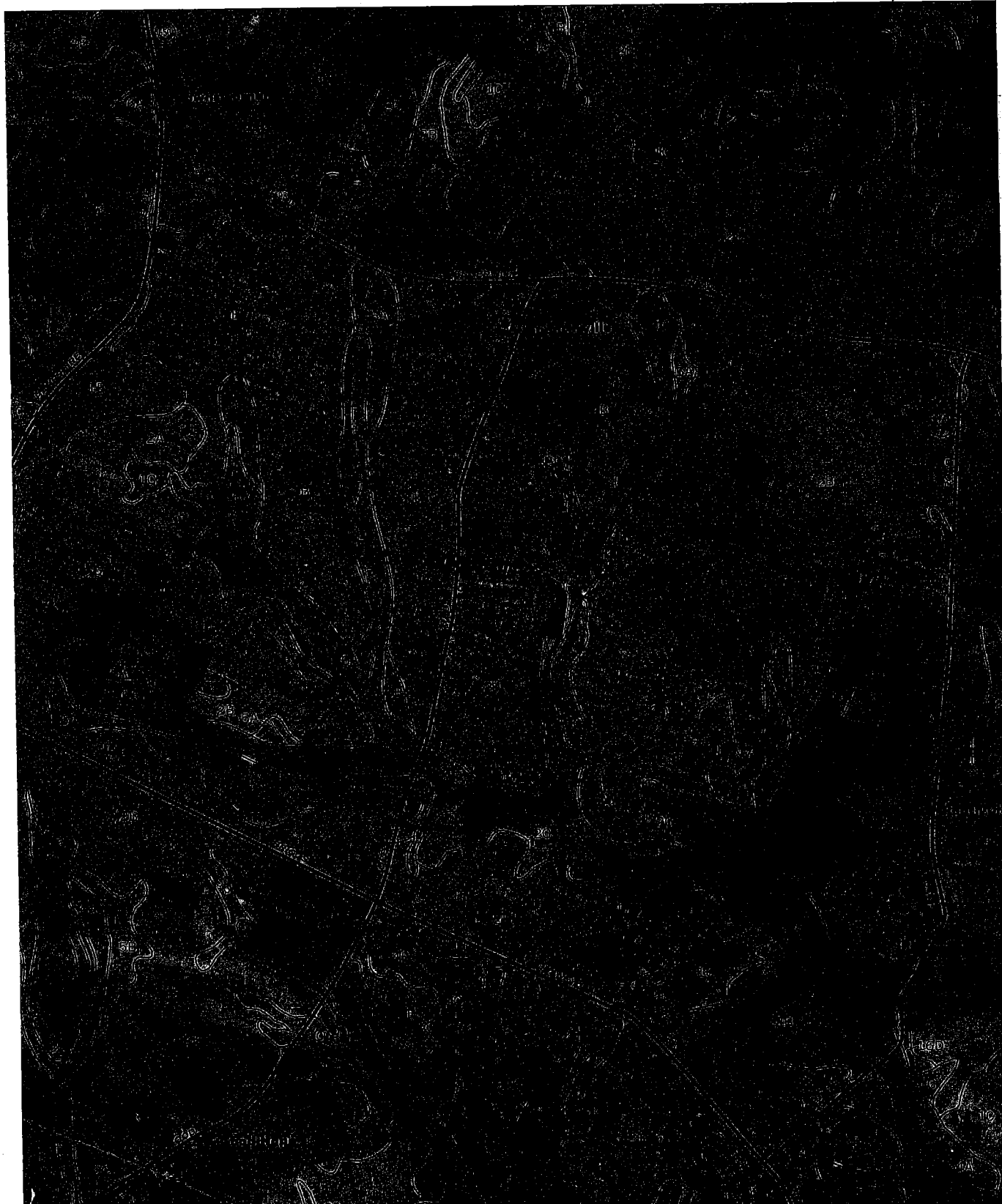
$$C = \frac{.9(.11) + .25(.038)}{.15} = .72 \Rightarrow T_c = 7 \text{ min}$$

$$\bar{i}_{10} = 6.52 \text{ in/hr}$$

$$Q_{10} = C \bar{i}_{10} A = (.72)(6.52 \text{ in/hr})(.15 \text{ ac}) = \underline{\underline{.7 \text{ cfs}}}$$

APPENDIX B
SOIL MAP

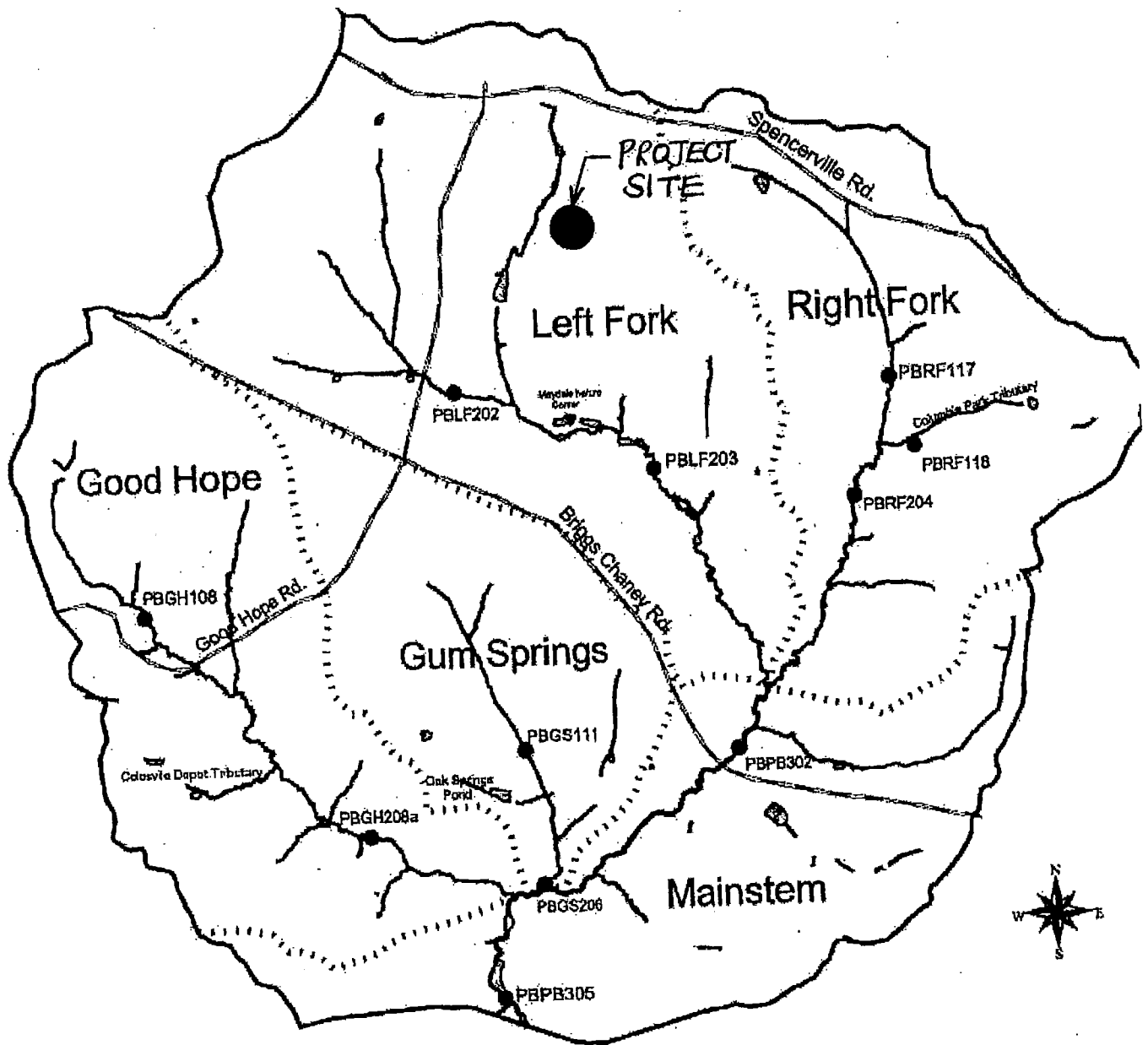
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE



Map Unit Legend

Montgomery County, Maryland (MD031)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2B	Glenelg silt loam, 3 to 8 percent slopes	42.9	95.3%
6A	Baile silt loam, 0 to 3 percent slopes	2.1	4.7%
Totals for Area of Interest		45.0	100.0%

APPENDIX C
UPPER PAINT BRANCH SPA
MAP



Upper Paint Branch Special Protection Area map

APPENDIX D
FEMA FLOOD INSURANCE
MAP



MAP SCALE 1" = 1000'



NFP

PANEL 0380D

FIRM
FLOOD INSURANCE RATE MAP
MONTGOMERY COUNTY,
MARYLAND
AND INCORPORATED AREAS

PANEL 380 OF 480
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:	NUMBER	PANEL	SUFFIX
MONTGOMERY COUNTY	240046	0380	D

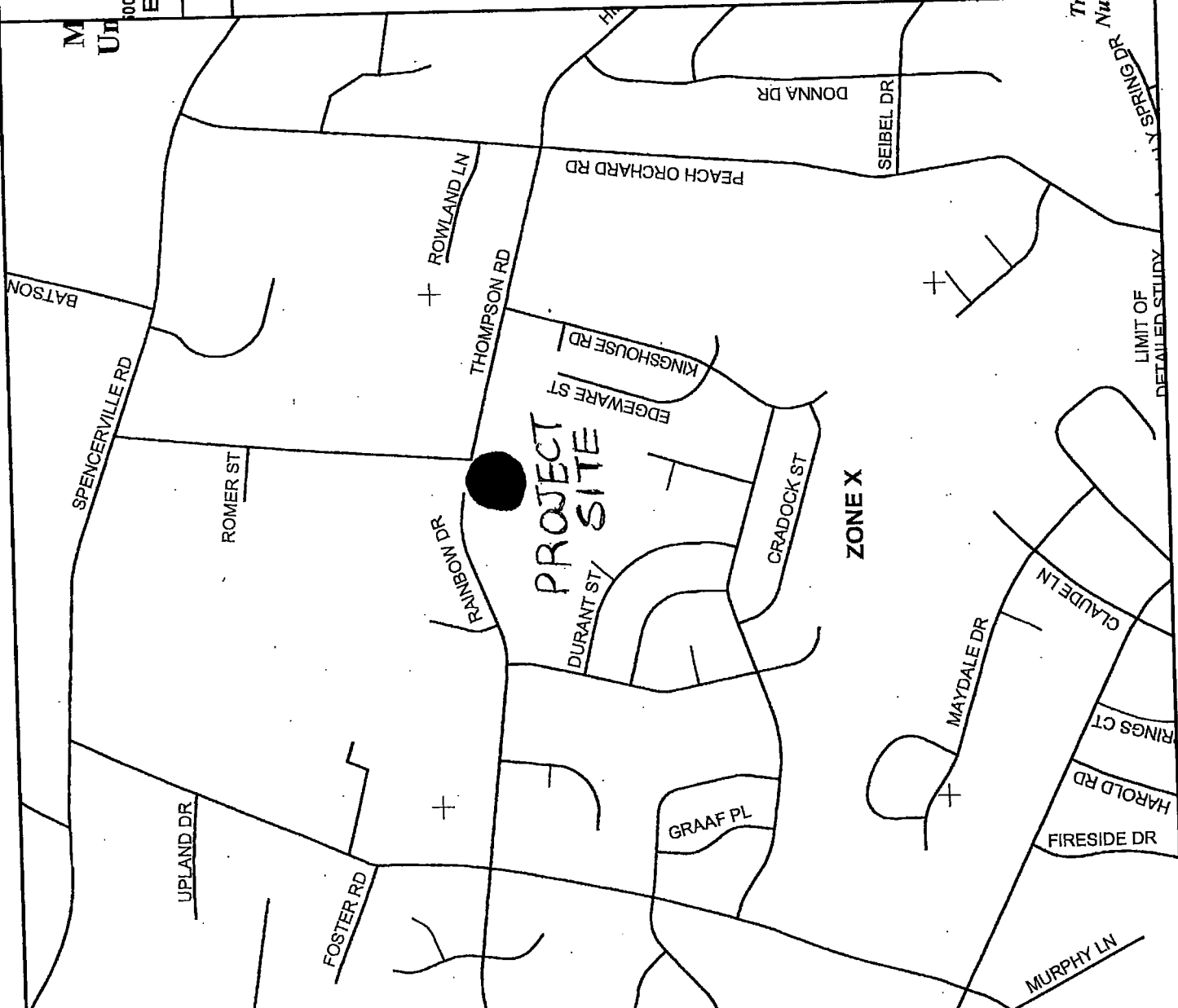
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number above should be used on insurance applications for the subject community.

MAP NUMBER
24031C0380D

EFFECTIVE DATE
SEPTEMBER 29, 2006

FEDERAL EMERGENCY MANAGEMENT AGENCY

NATIONAL FLOOD INSURANCE PROGRAM



This is an official copy of a portion of the above referenced flood map. It was extracted using F-Map On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

APPENDIX E
RAINBOW DRIVE SIDEWALK
AND PAVEMENT REMOVAL
(CIP NO. 506747)

PRE & FINAL WATER QUALITY PLAN
RAINBOW DRIVE SIDEWALK AND
PAVEMENT REMOVAL

CIP NO. 506747



PREPARED BY:

MONTGOMERY COUNTY
DEPARTMENT OF TRANSPORTATION

MARCH 2010

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
I. INTRODUCTION	1
II. PURPOSE	1
III. STORMWATER MANAGEMENT CONCEPT	1
IV. EROSION AND SEDIMENT CONTROL CONCEPT	2
V. WATER QUALITY MONITORING PLAN	2
VI. IMPERVIOUS PAVEMENT REMOVAL PLAN	2
VII. SUMMARY	3

Appendix A – Impervious Pavement Removal Calculations

I. INTRODUCTION

The Montgomery County Department of Transportation (DOT) is preparing contract documents to construct a four foot wide pervious sidewalk adjacent to Rainbow Drive from Valencia Street to Good Hope Road. The sidewalk length is approximately 2,000 linear feet. The sidewalk will be constructed within the existing right of way for Rainbow Drive.

DOT will also remove existing roadway pavement at various locations along Rainbow Drive. The Rainbow Drive existing pavement width is 36 feet wide. Rainbow Drive is a two lane closed section with parking available on both sides of the road. The proposed pavement removal will reduce the pavement width by 6 feet in some locations and 12 feet in other locations. The pavement removal locations were selected in areas that would not eliminate parking adjacent to residential properties.

The project site is located in the Upper Paint Branch Special Protection Area (SPA). The Environmental Overlay Zone for the Upper Paint Branch SPA restricts development to no more than 8 percent of the project site. The pavement removal is required to meet the 8 percent for the project site.

DOT is also fulfilling the pavement removal requirement for the sidewalk that was constructed in September 2008 adjacent to Cape May Road and Good Hope Road. The Cape May and Good Hope Road sidewalk project is also located in the Upper Paint Branch SPA. The pavement removal requirement from Cape May Road and Good Hope Road sidewalk is 10,453 square feet. Any pavement removal above the requirements for Rainbow Drive Sidewalk and Cape May Road and Good Hope Road Sidewalk projects will be used for the Thompson Road project that is also located in the special protection area.

II. PURPOSE

The purpose of the water quality plan is to identify potential impacts and protect the existing water quality within the Upper Paint Branch SPA. The water quality plan includes a stormwater management concept and a sediment and erosion control concept for the project.

III. STORMWATER MANAGEMENT CONCEPT

The stormwater management concept is based on the revisions to Maryland Department of the Environment Stormwater Design Manual 2000. As discussed in the pre-application meeting held on February 17, 2010, the pervious sidewalk will constitute the stormwater management for the project.

The sidewalk will be constructed of 4" thick pervious concrete. A 2" thick layer of washed number 57 stone and a 6" thick layer of washed number 3 coarse aggregate will

provide stormwater treatment beneath the pervious sidewalk. The site soils are well suited for infiltration as a stormwater management practice. The hydrologic soil groups within the project area are predominantly type 6A Baile silt loam and 2B Glenelg silt loam. There is a portion that is less than 200 linear feet of type 16D Brinklow-Blocktown channery silt loam.

IV. EROSION AND SEDIMENT CONTROL CONCEPT

The erosion and sediment control concept is to minimize sediment loading through quick stabilization of the project site. Quick stabilization methods during construction shall include:

1. Small work zones identified in the construction sequence.
2. Sod for new pervious areas at the pavement removal locations.
3. Silt fence between the sidewalk construction and existing curb.
4. Inlet protection.

The project plans indicate the location for the silt fence and the curb inlet protection required to meet the quick stabilization goal.

V. WATER QUALITY MONITORING PLAN

Water quality monitoring may be required. Montgomery County Department of Environmental Protection (DEP) and Department of Permitting Services will review the water quality plan to determine if water quality monitoring is required. DEP will develop the water quality monitoring plan if required. Monitoring of water levels or infiltration rates may be required at various locations along the roadway. The goal is to keep sediment and nutrient loading out of the streams.

The project site drains to two monitoring locations in the Left Fork of Paint Branch. The stations have been monitored annually since 1994 and monitoring data are available through 2008. The majority of the project, from approximately Good Hope Road and west, drains to PBLF202. PBLF 202 is in *fair* condition which may be the result of a fish blockage downstream at Maydale Nature Center. A stream restoration and improvement project is planned for this area. Additional stream restoration is proposed at three stream reaches in the PBLF202 watershed as part of mitigation packages for the ICC. Rainbow Drive bisects two of the reaches.

The remainder of the project (from approximately Good Hope Road and east to Briggs Chaney Middle School) flows to PBLF203. PBLF 203 is in *good* condition.

VIII. IMPERVIOUS PAVEMENT REMOVAL PLAN

The Environmental Overlay Zone for the Upper Paint Branch SPA restricts development to no more than 8 percent of the project site or no more than the existing imperviousness, if it is greater than 8 percent. The project site area is defined as the area

between the back of the curb of the existing road and the right of way line along the segment of ROW where the sidewalk will be constructed.

The project has 7,583 square feet of sidewalk (considered an impermeable surface) in a project site area of 38,376 square feet. The allowable amount of impervious pavement is 8 percent of the site area or 3,070 square feet. The amount of proposed sidewalk is greater than the allowable limit. Thus pavement would have to be removed within the Upper Paint Branch SPA so that the net impervious surfaces for the project do not increase the imperviousness over what currently exists within the project site. The amount of pavement to be removed for the Rainbow Drive sidewalk project is 4,512 square feet.

An additional 10,453 square feet of pavement removal is required for the Cape May Drive/Good Hope Road sidewalk project that was constructed in September 2008 by DOT. The pavement removal will be accomplished through this project.

The total amount of pavement removal required for the combined projects is 14,965 square feet. DOT will remove portions of the existing roadway pavement along Rainbow Drive at select location. The pavement narrowing will be located in areas that are not immediately adjacent to residential dwellings in order to minimize lost parking spaces. The pavement removal will also serve as a traffic calming measure along Rainbow Drive.

Any pavement removed above the amount required for Rainbow Drive sidewalk and Cape May Road and Good Hope Road sidewalk requirements may be credited towards other DOT projects within the Upper Paint Branch Special Protection Area. The Thompson Road project is another DOT project located in the special protection area. Appendix A is a tabulation of impervious area for the project.

IX. SUMMARY

The proposed sidewalk construction along Rainbow Drive will consist of 4 feet wide pervious concrete pavement. The pervious sidewalk will constitute the stormwater management for the project. The erosion and sediment control concept is to minimize sediment loading through quick stabilization of the project site. The water quality monitoring plan will be developed by DEP and DPS if required. The total amount of pavement removal required is 14,965 square feet. DOT will remove portions of the existing roadway pavement along Rainbow Drive at select locations.

APPENDIX A

RAINBOW DRIVE

SIDEWALK AND PAVEMENT REMOVAL CALCULATIONS

RAINBOW DRIVE SIDEWALK
and PAVEMENT REMOVAL
SUMMARY

Disturbed Area for Sidewalk Construction (Back of Curb to Right of Way Line)
38,376 sf

Sidewalk Areas
7,583 sf

Allowable Impervious Area (8% of Disturbed Area)
3,070 sf

Amount of Pavement Removal Required for Sidewalk along Rainbow Drive
4,512 sf

Amount of Pavement Removal Required for Sidewalk along Cape May Road and Good Hope Road
10,453 sf

Total Amount of Pavement Removal for combined sidewalk projects
14,965 sf

Total Amount of Pavement to be Removed
18,441 sf

Disturbed Area for Pavement Removal
44,125 sf

Deficit/Credit Pavement Removal
3,476 sf

RAINBOW DRIVE SIDEWALK
and PAVEMENT REMOVAL
PAVEMENT REMOVAL AREAS

Rainbow Dr (Valencia to Wembrough)

934 sf
743 sf
665 sf
582 sf
379 sf

Subtotal 3,303 sf

Rainbow Dr (Wembrough to Langside)

1422 sf
784 sf
1135 sf
1179 sf

Subtotal 4,520 sf

Rainbow Dr (Tindley to Aylesbury)

1285 sf
1199 sf
2278 sf
1800 sf

Subtotal 6,562 sf

Rainbow Dr (end of Rainbow Dr to Snider Lane)

497 sf
338 sf

Subtotal 835 sf

Rainbow Dr (adjacent to Briggs Chaney MS)

1479 sf
1327 sf
213 sf
202 sf

Subtotal 3,221 sf

Total Pavement Removal

18,441 sf

RAINBOW DRIVE SIDEWALK
and PAVEMENT REMOVAL
SIDEWALK AREAS ADDED

Rainbow Drive (Good Hope Road to Langside)

713 sf
160 sf
318 sf
342 sf
404 sf

Subtotal 1937 sf

Rainbow Drive (Langside to Wembrough)

231 sf
1844 sf

Subtotal 2075 sf

Rainbow Drive (Wembrough to Valencia)

587 sf
519 sf
294 sf
1191 sf
337 sf
643 sf

Subtotal 3570 sf

Total Sidewalk Added 7583 sf

RAINBOW DRIVE SIDEWALK
and PAVEMENT REMOVAL
DISTURBED AREAS

Sidewalk

Rainbow Drive (Good Hope Road to Langside)	9,060	sf
Rainbow Drive (Langside to Wembrough)	10,218	sf
Rainbow Drive (Wembrough to Valencia)	19,098	sf
Subtotal Sidewalk	38,376	sf

Pavement Removal

Rainbow Drive (Tindley to Aylesbury)	10,795	sf
	9,586	sf
Rainbow Drive (Langside to Wembrough)	7,458	sf
	1,597	sf
	2,375	sf
Rainbow Drive (Wembrough to Valencia)	5,266	sf
	2,275	sf
	1,178	sf
Rainbow Drive (End of Rainbow Dr adjacent to Park)	3,595	sf
Subtotal Pavement Removal	44,125	sf
Total Disturbed Area (Sidewalk construction)	82,501	sf



MONTGOMERY COUNTY PUBLIC SCHOOLS
MARYLAND
www.montgomeryschoolsmd.org

May 12, 2016



Josh Penn, Planner Coordinator
Montgomery Planning Department
The Maryland-National Capital Park and Planning Commission
8787 Georgia Avenue
Silver Spring, MD 20910

Subject: Briggs Chaney Middle School
Bus Loop Reconstruction Project
CIP#: 501511


Dear Mr. Penn,

This is in response to the impervious pavement calculation for the above referenced project which was brought to my attention by Ms. Park of the Montgomery County Department of Transportation (DOT). The impervious computation plan completed by the DOT indicates that this project will generate a 1219 SF net increase of impervious pavement at the school site located within the Upper Paint Branch Special Protection Area.

To offset this impervious deficit, Montgomery County Public Schools authorizes the use of credits at the Future Briggs Chaney Middle School Land Bank. The land bank was established by a Memorandum of Understanding (MOU), dated April 15, 2010, between the Montgomery County Planning Board of the Maryland-National Capital Park and Planning Commission, and the Board of Education of Montgomery County. The terms of the MOU specify that MCPS shall offset the impervious deficit by a 12.5:1 acre ratio. The 1219 SF impervious deficit multiplied against the 12.5 ratio equates to a .35 acre credit at the encumbered land bank.

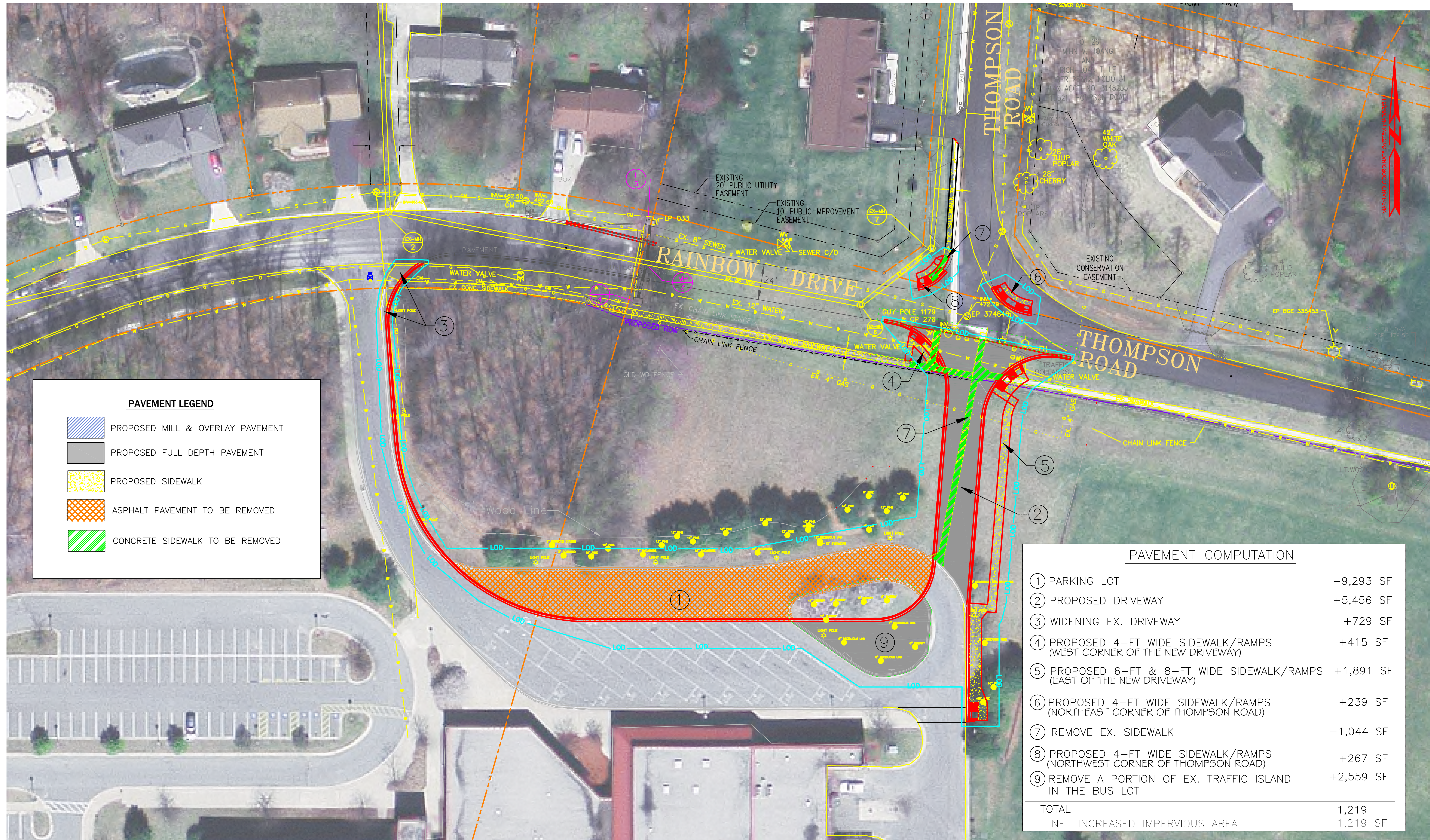
If you have any questions, please contact me at 240-314-1071.

Sincerely,


Boyd Lawrence, AICP
Real Estate Management Specialist

Department of Facilities Management

45 West Gude Drive, Suite 4000 ♦ Rockville, Maryland 20850 ♦ 240-314-1060



PAVEMENT LEGEND

	PROPOSED MILL & OVERLAY PAVEMENT
	PROPOSED FULL DEPTH PAVEMENT
	PROPOSED SIDEWALK
	ASPHALT PAVEMENT TO BE REMOVED
	CONCRETE SIDEWALK TO BE REMOVED

PAVEMENT COMPUTATION

① PARKING LOT	-9,293 SF
② PROPOSED DRIVEWAY	+5,456 SF
③ WIDENING EX. DRIVEWAY	+729 SF
④ PROPOSED 4-FT WIDE SIDEWALK/RAMPS (WEST CORNER OF THE NEW DRIVEWAY)	+415 SF
⑤ PROPOSED 6-FT & 8-FT WIDE SIDEWALK/RAMPS (EAST OF THE NEW DRIVEWAY)	+1,891 SF
⑥ PROPOSED 4-FT WIDE SIDEWALK/RAMPS (NORTHEAST CORNER OF THOMPSON ROAD)	+239 SF
⑦ REMOVE EX. SIDEWALK	-1,044 SF
⑧ PROPOSED 4-FT WIDE SIDEWALK/RAMPS (NORTHWEST CORNER OF THOMPSON ROAD)	+267 SF
⑨ REMOVE A PORTION OF EX. TRAFFIC ISLAND IN THE BUS LOT	+2,559 SF
TOTAL	1,219
NET INCREASED IMPERVIOUS AREA	1,219 SF

MONTGOMERY COUNTY
DEPARTMENT OF TRANSPORTATION
GAITHERSBURG, MARYLAND

RECOMMENDED FOR APPROVAL

Chief, Transportation Planning and Design Section _____ Date _____

APPROVED

Chief, Division of Transportation Engineering _____ Date _____

Designed by: RSP Drawn by: RSP Checked by: _____

IMPERVIOUSNESS COMPUTATIONS PLAN

BRIGGS CHANEY MS BUS LOT RECONSTRUCTION

SCALE 1"=30' DATE: JANUARY 2016

Project No. : 500912 SHEET 1 of 1