Concept Mitigation Plan

for the Proposed Green Ridge Recycling and Disposal Facility

Cumberland and Buckingham Counties, Virginia

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1.0 Introduction

Green Ridge Recycling and Disposal Facility, LLC (Applicant) presents this revised Concept Mitigation Plan (Plan) for compensatory mitigation for unavoidable stream and wetland impacts associated with the proposed Green Ridge Recycling and Disposal Facility (Project) in the following Hydrologic Unit Code (HUC): 02080205 Middle James – Willis.

This Plan is prepared in accordance with the Compensatory Mitigation for Losses of Aquatic Resources; Final Rule issued on April 10, 2008, as detailed in §332.4 (c) of the Federal Register (Volume 73 Number 70).

The Applicant has completed field surveys, analyzed and confirmed impacts, and will secure appropriate compensatory mitigation in accordance with the approach outlined below. As such, the Applicant has prepared this Plan with precise details on compensatory mitigation for the affected HUC, in accordance with the requirements of an Individual Permit (IP) for the proposed Project within the Norfolk District.

Unavoidable permanent impacts to streams and wetlands will occur to accommodate fill and grading for the proposed landfill cell, stormwater management facilities, construction of an entrance road and relocation of Miller Lane and Pine Grove Road.

The Applicant will compensate for the permanent loss of streams and wetlands for the Project through the use of the most environmentally preferable options consistent with the 2008 Mitigation Rule (33 CFR 332.1 et. seq.), the Virginia Code Wetland and Stream Mitigation section (VA Code § 62.1-44.15:23), the Virginia Water Protection Permit Program Regulations (9VAC25-210-116), and current availability.

Permanent losses of streams have been evaluated using the Unified Stream Methodology (USM) in order to assess what the stream compensation requirements are for the permitted stream impacts. Additionally, USM was used to determine the number of credits obtainable through the implementation of stream compensation practices (Attachment A).

The cumulative permanent impacts associated with the Project and compensation requirements are provided in Table 1 below.

Table 1: Project Impact Summary

Resource Type	Amount	Compensation Ratio	Mitigation Requirement
Stream	11,637 LF	USM Forms	**13,106 SCUs**
Wetland	0.02	2:1	**0.04 wetland credits**

1.1 Mitigation Banks

The Applicant looked to purchase commercially available mitigation credits from an IRT-approved mitigation bank as a first option. Where available in sufficient quantity to satisfy the respective mitigation need, in-kind mitigation bank credits would be purchased from mitigation banks with released credits servicing the impact areas where the permanent loss of streams would occur.

The Applicant has completed research to identify mitigation banks with available stream and wetland credits that are able to service the permanent impacts associated with the Project. Based on that research, it was determined that stream and wetland credits from mitigation banking are not sufficient to serve the needs of this project. The Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS) was reviewed to determine credit availability. At the time of review, RIBITS showed that there were 1,404 stream credits available to serve this project (Attachment B). Therefore, there are not enough stream credits available for purchase to support this Project. Additionally, scheduled releases are not enough to provide this Project with the needed credits to achieve the no net loss for the anticipated stream impacts. Accordingly, additional mitigation options detailed below were evaluated.

1.2 In-Lieu Fee Fund

In addition to contacting approved mitigation banks for available credits, the Applicant coordinated with The Nature Conservancy (TNC) for availability of advance stream credits through the Virginia Aquatic Resource Trust Fund (VARTF) in-lieu fee fund. TNC indicated through correspondence that, while advanced stream credits were available within the Middle James, there are not enough to service the entire need for this project.

1.3 Permittee Responsible Mitigation (PRM)

Through the above-mentioned credit availability research and depleted availability of stream and wetland credits in the watershed, it was documented that there are not sufficient credits available within the service area for the proposed project.

Under these circumstances, and pursuant to Virginia Regulations (VA Code § 62.1-44.15:23 and 9VAC25-210-116), Permittee Responsible Mitigation (PRM) represents the most ecologically preferable option, and potentially the only mitigation alternative capable of ensuring no net loss of aquatic resources given the ILF and bank credit supply limitations addressed above. As such, the Applicant's proposed mitigation plan for the Project will be to secure appropriate mitigation via implementation of a PRM in accordance with an approved PRM plan. Permittee Responsible Mitigation allows for on-site, off-site, and in-kind mitigation, that will allow for the credits to come from one source, as opposed to two different mitigation types and multiple banks.

This Compensatory Mitigation Plan has been revised to address the comment response letter from the Department of Environmental Quality dated January 26, 2022. Due to the removal of the Martin Property as part of the proposed PRM, the Boxwood Farms site in Buckingham County is now being included. The proposed stream credits through preservation of some of the residual streams on the Project site will remain as part of the revised Compensatory Mitigation Plan. The Boxwood Farm site is located in eastern Buckingham County along Little Creek Road (Rt. 743) and approximately 11 miles west of the Project site. The proposed mitigation activities on the Boxwood Farm site will include stream restoration and preservation, buffer restoration, wetland enhancement planting, and a comprehensive invasive management plan. The proposed PRM plan, including preservation on the Project site and Boxwood Farms, can provide up to 0.05 wetland credits and 17,966 stream credits along a total of 53,820 linear feet of stream (Attachment C). The Boxwood Farm and Project site, collectively, can provide up to an additional 4,860

stream credits and 0.01 wetland credits than what is required to achieve no net loss. More information on the crediting provision of the revised PRM plan are detailed in further sections below.

1.4 Watershed Approach

The Final Rule (72 FR 19601) states that in general, in-kind mitigation is preferable to out-of-kind mitigation because it is more likely to compensate for the functions and services lost at the impact site. In addition, the District Engineer (DE) must use a watershed approach to establish compensatory mitigation requirements in permits to the extent appropriate and practicable. A watershed approach considers the importance of landscape position and resource type of compensatory mitigation projects for the sustainability of aquatic resource functions within the watershed. The main objective of this approach is to maintain and improve the quantity and quality of wetlands and other aquatic resources in watersheds through strategic selection of compensatory mitigation project sites. The DE may authorize the use of compensatory mitigation projects when an applicant has proposed to create, enhance, or restore an outstanding resource and has provided sufficient scientific and technical analysis to demonstrate that such a project will be successful.

The location of the proposed PRM site relative to the Project's impacts will ensure compensation for the lost functions and services. As such, due to the large scale of the proposed impacts, the estimated surplus of credits that can be provided in the watershed along with anticipated shortage of commercially available stream credits in the larger watershed, the proposed PRM should be ecologically preferable over Bank credits and to limit risks with temporal loss of ecosystem functions with VARTF advanced credits. By adding the Boxwood 404 stream restoration and preservation to the existing completed TMDL project, the amount of contiguous restored or protected stream channel is greatly increased. Buffer improvements through invasive species removal and native vegetation reestablishment will improve the quality of land cover within the watersheds of the headwater tributaries to Little Creek and Randolph Creek. The functional uplift provided by the proposed project will help to alleviate significant levels of stress on biological communities along over six miles of streams in the Randolph Creek watershed.

2.0 Mitigation Plan

2.1 Goals and Objectives

The objective of the proposed PRM is to provide compensatory mitigation in HUC 02080205 for proposed impacts associated with the Project. The goal of the PRM is to restore and preserve the streams and riparian buffers on the Boxwood Farm site and preserve some streams and riparian buffers within the Green Ridge Recycling and Disposal Facility project area. The proposed restoration design will create a more ecologically functional channel pattern, profile, and cross section. This will include channel realignment, in stream bed structures, bank stabilization methods, and native vegetation planting. Riparian buffers on the Boxwood Farm site will be expanded to 300 feet. Preservation streams will remain unaltered, except for bolstering the riparian plantings where needed. The wetland enhancement planting area will be uplifted by removing invasive species and replanting with native wetland species.

2.2 Site Selection

The Boxwood Farm site was originally proposed as part of a larger mitigation bank. The site was included as part of the Mitigation Bank Prospectus submitted to the Interagency Review Team (IRT) in October 2020 but has since been withdrawn from IRT review as part of the bank. A Waters of the U.S. Delineation was completed on the Boxwood Site in August and September 2020. A request for a Preliminary Jurisdictional Determination (PJD) was submitted as part of the Mitigation Bank review process and is pending. A copy of the delineation report, including data sheets and delineation map, are attached for reference and further coordination (Attachment D).

The Boxwood Farm site was purchased under CBAY-VA, LLC in 2018. As such, RES has full control of the property. The property was previously used as a boxwood nursery and other activities included active hay fields and timber management. A portion of the property was timbered in Summer/Winter 2018. The site was initially purchased to complete a TMDL stream project along portions of Randolph Creek and Little Creek. The proposed Mitigation Bank included the residual streams on the site as well as riparian buffers along Randolph and Little Creeks. The buffer requirement for TMDL projects is 35-feet. The Concept Mitigation Plan extends the buffer along the TMDL reaches and residual stream reaches to 300 feet. Approximately 50 acres of riparian buffer restoration are proposed. This includes planting in the hay fields and light planting within timbered areas to promote habitat diversity.

During the feasibility review on the Green Ridge Recycling and Disposal Facility project area and the Boxwood Farm site, streams were assessed and sorted by mitigation type. The proposed stream restoration reaches were chosen based on the level of degradation and the potential ecological lift forecasted with natural channel design. Restoration reaches are typically moderately incised streams that lack bed form diversity and are disconnected from their floodplains. The proposed preservation streams are either in good condition or are in fair condition but located within an intact riparian buffer and therefore the temporal loss of construction impacts is not justified for the limited ecological lift that would be associated with mechanized work in these areas. As noted above, portions of Randolph and Little Creeks were restored as part of a TMDL project. The proposed PRM project, in combination with the TMDL project, will provide ecological uplift on the larger 682-acre Boxwood Farm site and will expand riparian buffer restoration and protection to a watershed scale along a total of 34,907 linear feet of stream channel.

2.3 Site Protection Instrument

The Boxwood PRM site will be protected in perpetuity by a Conservation Easement (CE). The preservation reaches at the Green Ridge Recycling and Disposal Facility project area will be protected in perpetuity by a Declaration of Restrictions. Draft DOR documents, are provided in Attachment E. The final CE and DOR exhibits will be prepared upon final design and provided in the Final PRM plan.

2.4 Baseline Site Information

The Boxwood Farm site is located on a single parcel, with varying land uses and cover. The site is situated along the east and west side of Little Creek Road (State Route 743), approximately eight miles northeast of Dillwyn, Virginia (HUC 02080205). The proposed PRM site is a broad, flat to gently sloping section of undeveloped land. The project area is forested, while much of the property has been cleared of trees and

are maintained as fields for hay production. There are several streams and wetlands located within the project area, which are shown in the Conceptual Mitigation Plan. Surrounding land-use is similarly a mix of agricultural use and forested habitat.

The streams within the proposed PRM project area are impacted by historic land clearing and agriculture practices, resulting in reduced infiltration and increased overland runoff entering the stream channels. The amplified flow and shear stress accelerated the rate of incision in the channel bed, resulting in floodplain disconnection. Incision progressed until bedrock was hit, then the erosive flows began impacting the margins, widening the channels and eroding the banks. Sections of riparian buffer have reforested, but many channels have been left in a state of arrested degradation. Headcutting within the headwater tributaries is dumping sediment into the larger reaches downstream. Through a combination of stream restoration, riparian plantings, preservation, and invasive species management, the overall system can be guided along the channel evolution cycle to a more stable and ecologically functioning stage. Reductions in overland flow and in-channel erosion will decrease excess sediment and nutrient loading in the streams, improving overall water quality.

2.5 Threatened and Endangered Species and Cultural and Historic Resources

RES reviewed information from the U.S. Fish and Wildlife Service (FWS) Information for Planning and Consultation (IPaC) database, the Virginia Department of Conservation and Recreation (DCR) Natural Heritage Database Explorer (NHDE) and the Virginia Department of Wildlife Resources (DWR) Virginia Fish and Wildlife Information Service (VaFWIS) to identify any concerns about potential federal threatened and/or endangered species that may exist within the limits of the project. RES also reviewed DWR's Northern Long Eared Bat Winter Habitat and Roost Tree online applications to determine if known hibernaculum and roosts are located within the vicinity of the project. Lastly, RES reviewed the Center for Conservation Biology's (CCB's) VA Eagle Nest Locator to determine if known bald eagle nests or roosts are located within the vicinity of the project. Based on the review of these databases, this project is not anticipated to have an adverse effect on any threatened or endangered species (Attachment F).

RES reviewed the Department of Historic Resources (DHR) online Virginia Cultural Resource Information System (V-CRIS) to ensure that the project will not affect any historic properties listed, or eligible for listing, in the National Register of Historic Places (NRHP). One architectural resource, The Marshall Place, was identified within the project limits and is considered eligible for listing by DHR. Due to the nature of the project, including stream restoration and riparian buffer planting, the historic property will not be adversely affected by the proposed project (Attachment F).

2.6 Determination of Credits

Proposed stream mitigation credits were determined using the Unified Stream Methodology. The Preliminary USM forms used for crediting calculations can be found in Attachment A. This project has the ability to provide up to 17,966 stream credits (15,396 Boxwood Farm, 2,570 Project Site). Through wetland enhancement at the Boxwood site, this project is able to provide 0.05 wetland credits. A breakdown of the stream and wetland mitigation crediting is summarized in Table 2 on the following page. The proposed

credit requirement for the Green Ridge Disposal and Recycling Facility project is 13,106 stream credits and 0.04 wetland credits, and as such can be fully serviced by this PRM.

Table 2a: Stream Mitigation Crediting – Boxwood Site

Stream Name	Reach ID	Comp. Length (L_c) (feet)	Total Compensation Credit (Total CC) (From Form 3)
RD	RD1	3402	1973
RD	RD1T1	2343	937
RD	RD1T2	2867	1061
RD	RD1T3	2034	976
RD	RD1T4	657	361
RD	RD1T5R1	1929	3048
RD	RD1T5R2	993	268
RD	RD2	4512	1264
RD	RD2T1R1	401	188
RD	RD2T1R2	160	2
RD	RD2T2	177	2
RD	RD2T3	183	2
RD	RD2T4R1	42	0
RD	RD2T4R2	149	1
RD	RD2T5	736	0
LC1	LC1US	1395	307
LC1	LC1T1	541	0
LC1	LC1T2R1	782	305
LC1	LC1T2R2	1523	2117
LC1	LC1T2R3	98	0
LC1	LC1T3R1	214	26
LC1	LC1T3R2	230	5
LC1	LC1T4R1	508	81
LC1	LC1T4R2	90	2
LC1	LC1DS	1199	444
LC1	LC1T5	425	17
LC2	LC2US	3637	1128
LC2	LC2DS	1365	369
LC2	LC2T1	597	251
LC2	LC2T2	1026	102
LC2	LC2DST3R1	404	142
LC2	LC2DST3R2	288	17
	Totals	**34,907**	**15,396**

Table 2b: Stream Mitigation Crediting – Project Site

Stream Name	Reach ID	Comp. Length (L_c) (feet)	Total Compensation Credit (Total CC) (From Form 3)
Muddy Creek	Muddy Creek	2817	394
Unnamed Tributaries to Muddy Creek	ST5	3433	446
Unnamed Tributaries to Muddy Creek	ST6	1008	131
Unnamed Tributaries to Muddy Creek	ST7R1	5305	743
Unnamed Tributaries to Muddy Creek	ST7T1	4460	580
Unnamed Tributaries to Muddy Creek	ST7R2	682	95
Unnamed Tributaries to Muddy Creek	ST11	1208	181
	Totals	**18,913**	**2,570**

Table 2c: Wetland Mitigation Crediting – Boxwood Site

Wetland	Acreage	Crediting Rate	Total Credits
Enhancement	0.32	7:1	0.05

Final credit determinations will be provided upon construction and as-built survey to verify that the total stream and wetland mitigation constructed provides sufficient credits to fulfill the credit requirement and will be further verified based on the areas meeting the required success criteria as approved as part of the Final Mitigation Plan.

2.7 Conceptual Mitigation Work Plan

The USM Forms are provided in Attachment A and the Conceptual Mitigation Plan Set is provided in Attachment C.

2.8 Invasive, Nuisance, and Undesirable Species Management Plan

An invasive species inventory was completed at the Boxwood Farm site in Spring 2021. An invasive inventory map and baseline data tables are provided in Attachment G. A comprehensive invasive management plan has been developed, with specific success criteria, that will yield up to 5,958 stream credits.

2.9 Monitoring Requirements

Please see Section I. in the Draft Monitoring and Maintenance Plan in Attachment H.

2.10 Performance Standards

Please see Section I.B. in the Draft Monitoring and Maintenance Plan in Attachment H.

2.11 Maintenance Plan

Please see Section II. in the Draft Monitoring and Maintenance Plan in Attachment H.

2.12 Adaptive Management Plan

Please see Section IV. in the Draft Monitoring and Maintenance Plan in Attachment H.

2.13 Preliminary Financial Assurances

Please see Section V. in the Draft Monitoring and Maintenance Plan in Attachment H.

2.14 Long-Term Management Plan

The Draft Long-Term Management Plan can be found in Attachment I.

Attachment A

Unified Stream Methodology (USM) Forms

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		3402

Name(s) of Evaluator(s)	Steam Name and Information
BC	RD1- Preservation

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Credits = Stream Length X 1.0

Project Credits: 0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures: — Credit per foot: 0.3 — Credits = Stream Length X 0.3 — Project Credits: 0

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length						0	
	Credit>							
		Habitat structures	Lay back bank	Plantings				
Left Bank	Length						0	
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit (SUM of banks): 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 340,200 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq. Footage		133338	27	194331			
	% Area	0%	39%	0%	57%	0%	0%	96%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting		
Left Bank	Area #	1	2					
	Sq. Footage	47057	71128		217546			
	% Area	14%	21%	0%	64%	0%	0%	99%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.28 — Credit: 0.31 — Lt Bank > 0.34 — Credit: 1055

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq. Footage		69000	78432	391565			
	% Area	0%	20%	23%	115%	0%	0%	158%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Planting	High Q Pres	Low Q Pres	RE	light planting		
Left Bank	Area #							
	Sq. Footage	169530	37264	2975	298816			
	% Area	50%	11%	0.0087461	0.87835374	0	0	149%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.26 — Credit: 0.27 — Lt Bank > 0.28 — Credit: 919

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

ΣLength X Credit) for all areas

Total Compensation Credit Provided by Project: 1973

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		2343

Name(s) of Evaluator(s)	Steam Name and Information
BC	RD1T1- Preservation

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length						0	
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length						0	
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit (SUM of banks): 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 234,300 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage		143938		64918			
	% Area	0%	61%	0%	28%	0%	0%	89%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting		
Left Bank	Area #	1	2					
	Sq, Footage		125868	8695	77867			
	% Area	0%	54%	4%	33%	0%	0%	91%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.20 — Lt Bank > 0.21 — Credit: 0.21 — Project Credits: 492

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage		222850		174362			
	% Area	0%	95%	0%	74%	0%	0%	170%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage		276465	68574	71114			
	% Area	0%	118%	0.29267598	0.303516416	0	0	178%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.22 — Lt Bank > 0.16 — Credit: 0.19 — Project Credits: 445

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project: 937

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		2867

Name(s) of Evaluator(s)	Steam Name and Information
BC	RD1T2- Preservation

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Credits = Stream Length X 1.0 — **Project Credits: 0**

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Credits = Stream Length X 0.3 — **Project Credits: 0**

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 286,700 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage		26203	79674	146107			
	% Area	0%	9%	28%	1%	50%	0%	88%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	Light planting		
Left Bank	Area #	1	2					
	Sq, Footage		44887	53946	146284			
	% Area	0%	16%	19%	51%	0%	0%	85%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.18 — Lt Bank > 0.24 — Credit: 0.21 — **602**

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage			462273	25562			
	% Area	0%	0%	161%	9%	0%	0%	170%
	Credit>	0.19	0.07	0.07	0.2	0.2		
		Heavy Plantir	High Q Pres	Low Q Pres	Re-establishm	light planting		
Left Bank	Area #							
	Sq, Footage		124152	83480	199209			
	% Area	0%	43%	0.29117561	0.694833503	0	0	142%
	Credit >	0.19	0.07	0.07	0.2	0.2		

CREDITS: Rt Bank > 0.13 — Lt Bank > 0.19 — Credit: 0.16 — **459**

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — Σ Length X Credit) for all areas

Total Compensation Credit Provided by Project: 1061

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		2034

Name(s) of Evaluator(s)	Steam Name and Information
BC	RD1T3- Preservation

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 203,400 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage		7	66751	101501			
	% Area	0%	0%	33%	50%	0%	0%	83%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting		
Left Bank	Area #	1	2					
	Sq, Footage	61435	33509	3208	83820			
	% Area	30%	16%	2%	41%	0%	0%	89%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.22 — Lt Bank > 0.30 — Credit: 0.26 — Project Credits: 529

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage			181040	105494			
	% Area	0%	0%	89%	52%	0%	0%	141%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage	239365	7751	58420	27043			
	% Area	118%	4%	0.2872156	0.132954292	0	0	164%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.17 — Lt Bank > 0.27 — Credit: 0.22 — Project Credits: 447

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project: 976

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		657

Name(s) of Evaluator(s)	Steam Name and Information
BC	RD1T4- Preservation

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 65,700 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage	13868			39394			
	% Area	21%	0%	0%	60%	0%	0%	81%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting		
Left Bank	Area #	1	2					
	Sq, Footage	8947	2		36249			
	% Area	14%	0%	0%	55%	0%	0%	69%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.32 — Lt Bank > 0.27 — Credit: 0.30 — 197

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage	102107	4		16268			
	% Area	155%	0%	0%	25%	0%	0%	180%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage	54037						
	% Area	82%	0%	0	0	0	0	82%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.34 — Lt Bank > 0.16 — Credit: 0.25 — 164

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project: 361

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		1929

Name(s) of Evaluator(s)	Steam Name and Information
BC	RD1T5R1 - Restoration

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 1929 | Credit per foot: 1 | Project Credits: 1929

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures: | Credit per foot: 0.3 | Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work			
	Credit Per Length	Pick One Per Length					May Be Cumulative Per Length
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques			Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1			0.09

Right Bank	Length							0	
	Credit>	0.1	0.1	0.09					
		Habitat struct	Lay back bank	Plantings					
Left Bank	Length							0	
	Credit >	0.1	0.1	0.09					

CREDITS: Rt Bank > 0.00 | Lt Bank > 0.00 | Credit: SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 192,900 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2						
	Sq. Footage	19036	30809		112743				
	% Area	10%	16%	0%	58%	0%	0%	84%	
	Credit>	0.38	0.14	0.07	0.4	0.29			
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting			
Left Bank	Area #	1	2						
	Sq. Footage		35006		112395				
	% Area	0%	18%	0%	58%	0%	0%	76%	
	Credit>	0.38	0.14	0.07	0.4	0.29			

CREDITS: Rt Bank > 0.29 | Lt Bank > 0.26 | Credit: 0.28 | 540

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #								
	Sq. Footage	2640			313417				
	% Area	1%	0%	0%	162%	0%	0%	164%	
	Credit>	0.19	0.07	0.07	0.2	0.15			
		Heavy Plantir	High Q Pres	Low Q Pres					
Left Bank	Area #								
	Sq. Footage	8		8	253681				
	% Area	0%	0%	4.3149E-05	1.31509067	0	0	132%	
	Credit >	0.19	0.07	0.07	0.2	0.15			

CREDITS: Rt Bank > 0.33 | Lt Bank > 0.26 | Credit: 0.30 | 579

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0

ΣLength X Credit) for all areas

Total Compensation Credit Provided by Project: 3048

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		993

Name(s) of Evaluator(s)	Steam Name and Information
BC	RD1T5R2- Preservation

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Credits = Stream Length X 1.0

Project Credits: 0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Credits = Stream Length X 0.3

Project Credits: 0

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: SUM of banks: 0

Project Credits: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 99,300 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2						
	Sq, Footage		12023	40998					
	% Area	0%	12%	41%	0%	0%	0%	53%	
	Credit>	0.38	0.14	0.07	0.4	0.29			
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting			
Left Bank	Area #	1	2						
	Sq, Footage		40943	6953	26478				
	% Area	0%	41%	7%	27%	0%	0%	75%	
	Credit>	0.38	0.14	0.07	0.4	0.29			

CREDITS: Rt Bank > 0.05 — Lt Bank > 0.17 — Credit: 0.11

Project Credits: 109

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #								
	Sq, Footage			19621					
	% Area	0%	0%	20%	0%	0%	0%	20%	
	Credit>	0.19	0.07	0.07	0.2	0.15			
		Heavy Plantir	High Q Pres	Low Q Pres					
Left Bank	Area #								
	Sq, Footage		12660	33901	130779				
	% Area	0%	13%	0.3414026	1.317010953	0	0	179%	
	Credit >	0.19	0.07	0.07	0.2	0.15			

CREDITS: Rt Bank > 0.01 — Lt Bank > 0.30 — Credit: 0.16

Project Credits: 159

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

ΣLength X Credit) for all areas

Total Compensation Credit Provided by Project: 268

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		4512

Name(s) of Evaluator(s)	Steam Name and Information
BC	RD2 Preservation

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
	Habitat struct	Lay back bank	Plantings					
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit (SUM of banks): 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 451,200 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2						
	Sq. Footage	90700	72004		74294				
	% Area	20%	16%	0%	16%	0%	0%	53%	
	Credit>	0.38	0.14	0.07	0.4	0.29			
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planitng			
Left Bank	Area #	1	2						
	Sq. Footage	53897	183146	19080	4124				
	% Area	12%	41%	4%	1%	0%	0%	58%	
	Credit>	0.38	0.14	0.07	0.4	0.29			

CREDITS: Rt Bank > 0.16 — Lt Bank > 0.11 — Credit: 0.14 — 632

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #								
	Sq. Footage	12845	70224		121284				
	% Area	3%	16%	0%	27%	0%	0%	45%	
	Credit>	0.19	0.07	0.07	0.2	0.15			
		Heavy Plantir	High Q Pres	Low Q Pres	RE-Forest	light planitng			
Left Bank	Area #								
	Sq. Footage	228360	260819		16090	182174			
	% Area	51%	58%	0	0.035661422	0.40375429	0	152%	
	Credit >	0.19	0.07	0.07	0.2	0.15			

CREDITS: Rt Bank > 0.07 — Lt Bank > 0.20 — Credit: 0.14 — 632

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

ΣLength X Credit) for all areas

Total Compensation Credit Provided by Project: 1264

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		401

Name(s) of Evaluator(s)	Steam Name and Information
BC	RD2T1R1 Preservation

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures: — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit (SUM of banks): 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 40,100 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage		22993					
	% Area	0%	57%	0%	0%	0%	0%	57%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planitng		
Left Bank	Area #	1	2					
	Sq, Footage	16085	10544					
	% Area	40%	26%	0%	0%	0%	0%	66%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.08 — Lt Bank > 0.19 — Credit: 0.14 — Project Credits: 56

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage	32241	31149		659			
	% Area	80%	78%	0%	2%	0%	0%	160%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage	85062	17755			5154		
	% Area	212%	44%	0	0	0.12852543	0	269%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.21 — Lt Bank > 0.45 — Credit: 0.33 — Project Credits: 132

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project: 188

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		160

Name(s) of Evaluator(s)	Steam Name and Information
BC	RD2T1R2 Restoration

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Credits = Stream Length X 1.0

Project Credits: 0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Credits = Stream Length X 0.3

Project Credits: 0

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00; Lt Bank > 0.00; Credit = SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Project Credits: 0

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 16,000 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2						
	Sq, Footage								
	% Area	0%	0%	0%	0%	0%	0%	0%	
	Credit>	0.38	0.14	0.07	0.4	0.29			
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting			
Left Bank	Area #	1	2						
	Sq, Footage		2828						
	% Area	0%	18%	0%	0%	0%	0%	18%	
	Credit>	0.38	0.14	0.07	0.4	0.29			

CREDITS: Rt Bank > 0.00; Lt Bank > 0.02; Credit = 0.01

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Project Credits: 2

Outside First 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #								
	Sq, Footage								
	% Area	0%	0%	0%	0%	0%	0%	0%	
	Credit>	0.19	0.07	0.07	0.2	0.15			
		Heavy Plantir	High Q Pres	Low Q Pres					
Left Bank	Area #								
	Sq, Footage								
	% Area	0%	0%	0	0	0	0	0%	
	Credit >	0.19	0.07	0.07	0.2	0.15			

CREDITS: Rt Bank > 0.00; Lt Bank > 0.00; Credit = 0.00

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Project Credits: 0

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

ΣLength X Credit) for all areas

Project Credits: 0

Total Compensation Credit Provided by Project: 2

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		177

Name(s) of Evaluator(s)	Steam Name and Information
BC	RD2T2 Restoration

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00; Lt Bank > 0.00; Credit: SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 17,700 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2						
	Sq, Footage				1017				
	% Area	0%	0%	0%	6%	0%	0%	6%	
	Credit>	0.38	0.14	0.07	0.4	0.29			
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planitng			
Left Bank	Area #	1	2						
	Sq, Footage								
	% Area	0%	0%	0%	0%	0%	0%	0%	
	Credit>	0.38	0.14	0.07	0.4	0.29			

CREDITS: Rt Bank > 0.02; Lt Bank > 0.00; Credit: 0.01; Project Credits: 2

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #								
	Sq, Footage								
	% Area	0%	0%	0%	0%	0%	0%	0%	
	Credit>	0.19	0.07	0.07	0.2	0.15			
		Heavy Plantir	High Q Pres	Low Q Pres					
Left Bank	Area #								
	Sq, Footage								
	% Area	0%	0%	0	0	0	0	0%	
	Credit >	0.19	0.07	0.07	0.2	0.15			

CREDITS: Rt Bank > 0.00; Lt Bank > 0.00; Credit: 0.00; Project Credits: 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project: 2

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		183

Name(s) of Evaluator(s)	Steam Name and Information
BC	RD2T3 Restoration

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 18,300 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting		
Left Bank	Area #	1	2					
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: 0.00 — Project Credits: 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage				1423			
	% Area	0%	0%	0%	8%	0%	0%	8%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0	0	0	0	0%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.02 — Lt Bank > 0.00 — Credit: 0.01 — Project Credits: 2

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project: 2

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		42

Name(s) of Evaluator(s)	Steam Name and Information
BC	RD2T4R1 Preservation

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration | Credit per foot: 1 | Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures | Credit per foot: 0.3 | Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 | Lt Bank > 0.00 | Credit | SUM of banks: 0 | Project Credits: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 4,200 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting		
Left Bank	Area #	1	2					
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.00 | Lt Bank > 0.00 | Credit 0.00 | Project Credits: 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0	0	0	0	0%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.00 | Lt Bank > 0.00 | Credit 0.00 | Project Credits: 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

ΣLength X Credit) for all areas

Total Compensation Credit Provided by Project: 0

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		149

Name(s) of Evaluator(s)	Steam Name and Information
BC	RD2T4R2 Restoration

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 14,900 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage		2250					
	% Area	0%	15%	0%	0%	0%	0%	15%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planitng		
Left Bank	Area #	1	2					
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.02 — Lt Bank > 0.00 — Credit: 0.01 — Project Credits: 1

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Timbered				
Left Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0	0	0	0	0%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: 0.00 — Project Credits: 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project: 1

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		736

Name(s) of Evaluator(s)	Steam Name and Information
BC	RD2T5 Preservation

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration = 1 (Credit per foot) → 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures = 0.3 (Credit per foot) → 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00; Lt Bank > 0.00; Credit = SUM of banks = 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 73,600 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting		
Left Bank	Area #	1	2					
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.00; Lt Bank > 0.00; Credit = 0.00 → 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0	0	0	0	0%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.00; Lt Bank > 0.00; Credit = 0.00 → 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 (*ΣLength X Credit) for all areas*)

Total Compensation Credit Provided by Project = 0

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		1395

Name(s) of Evaluator(s)	Steam Name and Information
BC	LC1US Restoration

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures: — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit (SUM of banks): 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 139,500 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage		60813	0	17388			
	% Area	0%	44%	0%	12%	0%	0%	56%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting		
Left Bank	Area #	1	2					
	Sq, Footage		56939	0	7076			
	% Area	0%	41%	0%	5%	0%	0%	46%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.11 — Lt Bank > 0.08 — Credit: 0.10 — Project Credits: 140

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage		60860	36000	42849			
	% Area	0%	44%	26%	31%	0%	0%	100%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage		99083		15869	45408		
	% Area	0%	71%	0	0.1137549	0.32550433	0	115%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.11 — Lt Bank > 0.12 — Credit: 0.12 — Project Credits: 167

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project: 307

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		541

Name(s) of Evaluator(s)	Steam Name and Information
BC	LC1T1 Preservation

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 54,100 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage			0				
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting		
Left Bank	Area #	1	2					
	Sq, Footage			0				
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: 0.00 — Project Credits: 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0	0	0	0	0%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: 0.00 — Project Credits: 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — Project Credits: 0

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

ΣLength X Credit) for all areas

Total Compensation Credit Provided by Project: 0

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		782

Name(s) of Evaluator(s)	Steam Name and Information
BC	LC1T1 Preservation

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Credits = 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures: — Credit per foot: 0.3 — Credits = 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit (SUM of banks): 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 78,200 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage		73211		775			
	% Area	0%	94%	0%	1%	0%	0%	95%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planitng		
Left Bank	Area #	1	2					
	Sq, Footage		37103		30389			
	% Area	0%	47%	0%	39%	0%	0%	86%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.14 — Lt Bank > 0.22 — Credit: 0.18 — 141

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage		54893	77216	30083			
	% Area	0%	70%	99%	38%	0%	0%	207%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage		60777	81	65267			
	% Area	0%	78%	0.00104046	0.834620803	0	0	161%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.20 — Lt Bank > 0.22 — Credit: 0.21 — 164

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0

ΣLength X Credit) for all areas

Total Compensation Credit Provided by Project: 305

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		1523

Name(s) of Evaluator(s)	Steam Name and Information
BC	LC1T2R2 Low Enhancement

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 1523 — Credit per foot: 1 — Project Credits: 1523

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures: — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work		
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length		
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings	
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09	
Right Bank Length						0
Right Bank Credit>	0.1	0.1	0.09			
	Habitat struct	Lay back bank	Plantings			
Left Bank Length						0
Left Bank Credit >	0.1	0.1	0.09			

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 152,300 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage	0	72682		19836			
	% Area	0%	48%	0%	13%	0%	0%	61%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planitng		
Left Bank	Area #	1	2					
	Sq, Footage		46702	0	104714			
	% Area	0%	31%	0%	69%	0%	0%	99%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.12 — Lt Bank > 0.32 — Credit: 0.22 — 335

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage	8772	88762		71004			
	% Area	6%	58%	0%	47%	0%	0%	111%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage		50310		130391			
	% Area	0%	33%	0	0.856143107	0	0	119%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.14 — Lt Bank > 0.19 — Credit: 0.17 — 259

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project: 2117

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		98

Name(s) of Evaluator(s)	Steam Name and Information
BC	LC1T2R3 Restoration

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00; Lt Bank > 0.00; Credit: SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 9,800 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting		
Left Bank	Area #	1	2					
	Sq, Footage			0				
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.00; Lt Bank > 0.00; Credit: 0.00; Project Credits: 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0	0	0	0	0%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.00; Lt Bank > 0.00; Credit: 0.00; Project Credits: 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project: 0

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		214

Name(s) of Evaluator(s)	Steam Name and Information
BC	LC1T3R1 Preservation

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 21,400 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting		
Left Bank	Area #	1	2					
	Sq, Footage		17191			762		
	% Area	0%	80%	0%	0%	4%	0%	84%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.12 — Credit: 0.06 — Project Credits: 13

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage		1911			14766		
	% Area	0%	9%	0	0	0.6899953	0	78%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.11 — Credit: 0.06 — Project Credits: 13

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

ΣLength X Credit) for all areas

Total Compensation Credit Provided by Project: 26

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		230

Name(s) of Evaluator(s)	Steam Name and Information
BC	LC1T3R20 Restoration

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Credits = Stream Length X 1.0

Project Credits: 0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Credits = Stream Length X 0.3

Project Credits: 0

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: SUM of banks: 0

Project Credits: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 23,000 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2						
	Sq, Footage								
	% Area	0%	0%	0%	0%	0%	0%	0%	
	Credit>	0.38	0.14	0.07	0.4	0.29			
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting			
Left Bank	Area #	1	2						
	Sq, Footage		4555	2					
	% Area	0%	20%	0%	0%	0%	0%	20%	
	Credit>	0.38	0.14	0.07	0.4	0.29			

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.03 — Credit: 0.02

Project Credits: 5

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #								
	Sq, Footage								
	% Area	0%	0%	0%	0%	0%	0%	0%	
	Credit>	0.19	0.07	0.07	0.2	0.15			
		Heavy Plantir	High Q Pres	Low Q Pres					
Left Bank	Area #								
	Sq, Footage								
	% Area	0%	0%	0	0	0	0	0%	
	Credit >	0.19	0.07	0.07	0.2	0.15			

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: 0

Project Credits: 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Project Credits: 0

Total Compensation Credit Provided by Project — 5

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		508

Name(s) of Evaluator(s)	Steam Name and Information
BC	LC1T4R1 Preservation

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration | Credit per foot: 1 | Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures | Credit per foot: 0.3 | Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 | Lt Bank > 0.00 | Credit | SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 50,800 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage			39516				
	% Area	0%	0%	78%	0%	0%	0%	78%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting		
Left Bank	Area #	1	2					
	Sq, Footage		740	27191	1840			
	% Area	0%	1%	54%	4%	0%	0%	59%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.05 | Lt Bank > 0.05 | Credit 0.05 | 25

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage			73053				
	% Area	0%	0%	144%	0%	0%	0%	144%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage		2	80234				
	% Area	0%	0%	1.57940195	0	0	0	158%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.10 | Lt Bank > 0.11 | Credit 0.11 | 56

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0

ΣLength X Credit) for all areas

Total Compensation Credit Provided by Project: 81

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		90

Name(s) of Evaluator(s)	Steam Name and Information
BC	LC1T4R2 Restoration

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit (SUM of banks): 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 9,000 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage				646			
	% Area	0%	0%	0%	7%	0%	0%	7%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting		
Left Bank	Area #	1	2					
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.03 — Lt Bank > 0.00 — Credit: 0.02 — Project Credits: 2

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0	0	0	0	0%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: 0.00 — Project Credits: 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

ΣLength X Credit) for all areas

Total Compensation Credit Provided by Project: 2

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		1199

Name(s) of Evaluator(s)	Steam Name and Information
BC	LC1DS Restoration

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00; Lt Bank > 0.00; Credit (SUM of banks): 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 119,900 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	field	forest	timbered	re-	re-timbe		
	Sq, Footage		15	3171	66712			
	% Area	0%	0%	3%	56%	0%	0%	58%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting		
Left Bank	Area #	1	2					
	Sq, Footage		60069		4819			
	% Area	0%	50%	0%	4%	0%	0%	54%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.22; Lt Bank > 0.09; Credit: 0.16; Project Credits: 192

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage		113727		46410	53108		
	% Area	0%	95%	0%	39%	44%	0%	178%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage		40944		13496	124804		
	% Area	0%	34%	0	0.112559929	1.04090013	0	149%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.21; Lt Bank > 0.20; Credit: 0.21; Project Credits: 252

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project: 444

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		425

Name(s) of Evaluator(s)	Steam Name and Information
BC	LC1T5 Preservation

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration | Credit per foot: 1 | Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures | Credit per foot: 0.3 | Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09
Right Bank Length					0
Right Bank Credit>					
	Habitat struct	Lay back bank	Plantings		
Left Bank Length					0
Left Bank Credit >					

CREDITS: Rt Bank > 0.00 Credit; Lt Bank > 0.00 SUM of banks = 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 42,500 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq. Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting		
Left Bank	Area #	1	2					
	Sq. Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.00 Credit; Lt Bank > 0.00 0.00 = 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq. Footage		42305					
	% Area	0%	100%	0%	0%	0%	0%	100%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq. Footage							
	% Area	0%	0%	0	0	0	0	0%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.07 Credit; Lt Bank > 0.00 0.04 = 17

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0

ΣLength X Credit) for all areas

Total Compensation Credit Provided by Project: 17

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		3637

Name(s) of Evaluator(s)	Steam Name and Information
BC	LC2US Preservation

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: [ ] Credit per foot: 1 → Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures: [ ] Credit per foot: 0.3 → Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00; Lt Bank > 0.00; Credit = SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 363,700 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage	4330	325683		14640			
	% Area	1%	90%	0%	4%	0%	0%	95%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting		
Left Bank	Area #	1	2					
	Sq, Footage	5065	275484		57178			
	% Area	1%	76%	0%	16%	0%	0%	93%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.15; Lt Bank > 0.17; Credit = 0.16 → 582

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage	59786	594987		16772			
	% Area	16%	164%	0%	5%	0%	0%	185%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage	41039	452490		70230			
	% Area	11%	124%	0	0.193100059	0	0	155%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.15; Lt Bank > 0.15 → 546

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 (*ΣLength X Credit) for all areas*)

Total Compensation Credit Provided by Project: 1128

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		1365

Name(s) of Evaluator(s)	Steam Name and Information
BC	LC2DS Restoration

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures: — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit (SUM of banks): 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 136,500 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2						
	Sq, Footage	43708	7335						
	% Area	32%	5%	0%	0%	0%	0%	37%	
	Credit>	0.38	0.14	0.07	0.4	0.29			
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting			
Left Bank	Area #	1	2						
	Sq, Footage	25866	39502						
	% Area	19%	29%	0%	0%	0%	0%	48%	
	Credit>	0.38	0.14	0.07	0.4	0.29			

CREDITS: Rt Bank > 0.13 — Lt Bank > 0.11 — Credit: 0.12 — 164

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #								
	Sq, Footage	104861	23501						
	% Area	77%	17%	0%	0%	0%	0%	94%	
	Credit>	0.19	0.07	0.07	0.2	0.15			
		Heavy Plantir	High Q Pres	Low Q Pres					
Left Bank	Area #								
	Sq, Footage	75795	69712						
	% Area	56%	51%	0	0	0	0	107%	
	Credit >	0.19	0.07	0.07	0.2	0.15			

CREDITS: Rt Bank > 0.16 — Lt Bank > 0.14 — Credit: 0.15 — 205

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project: 369

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		597

Name(s) of Evaluator(s)	Steam Name and Information
BC	LC2T1 Preservation

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration = 1 — Credit per foot = 1 — Project Credits = 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures = 0 — Credit per foot = 0.3 — Project Credits = 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit = SUM of banks = 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 59,700 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage		67619					
	% Area	0%	113%	0%	0%	0%	0%	113%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting		
Left Bank	Area #	1	2					
	Sq, Footage		59941					
	% Area	0%	100%	0%	0%	0%	0%	100%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.16 — Lt Bank > 0.14 — Credit = 0.15 — Project Credits = 90

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage	6574	202039		17992			
	% Area	11%	338%	0%	30%	0%	0%	380%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage		183001		1671			
	% Area	0%	307%	0	0.02799475	0	0	309%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.32 — Lt Bank > 0.22 — Credit = 0.27 — Project Credits = 161

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project = 251

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		1026

Name(s) of Evaluator(s)	Steam Name and Information
BC	LC2T2 Preservation

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration = 1 — Credit per foot = 1 — Project Credits = 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures = 0.3 — Credit per foot = 0.3 — Project Credits = 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit = SUM of banks = 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 102,600 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage		63027					
	% Area	0%	61%	0%	0%	0%	0%	61%
	Credit>	0.38	0.14	0.07	0.4	0.29		
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting		
Left Bank	Area #	1	2					
	Sq, Footage		56658					
	% Area	0%	55%	0%	0%	0%	0%	55%
	Credit>	0.38	0.14	0.07	0.4	0.29		

CREDITS: Rt Bank > 0.09 — Lt Bank > 0.08 — Credit = 0.09 — Project Credits = 92

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage		35555					
	% Area	0%	35%	0%	0%	0%	0%	35%
	Credit>	0.19	0.07	0.07	0.2	0.15		
		Heavy Plantir	High Q Pres	Low Q Pres				
Left Bank	Area #							
	Sq, Footage		3001					
	% Area	0%	3%	0	0	0	0	3%
	Credit >	0.19	0.07	0.07	0.2	0.15		

CREDITS: Rt Bank > 0.02 — Lt Bank > 0.00 — Credit = 0.01 — Project Credits = 10

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project = 102

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		404

Name(s) of Evaluator(s)	Steam Name and Information
BC	LC2DST3R1 Preservation

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration

Credits = Stream Length X 1.0

Credit per foot: 1 — Project Credits: 0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures

Credits = Stream Length X 0.3

Credit per foot: 0.3 — Project Credits: 0

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00; Lt Bank > 0.00; Credit = SUM of banks = 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 40,400 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2						
	Sq, Footage	26853	828						
	% Area	66%	2%	0%	0%	0%	0%	69%	
	Credit>	0.38	0.14	0.07	0.4	0.29			
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting			
Left Bank	Area #	1	2						
	Sq, Footage	5264	3240						
	% Area	13%	8%	0%	0%	0%	0%	21%	
	Credit>	0.38	0.14	0.07	0.4	0.29			

CREDITS: Rt Bank > 0.26; Lt Bank > 0.06; Credit = 0.16 — Project Credits: 65

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #								
	Sq, Footage	69925							
	% Area	173%	0%	0%	0%	0%	0%	173%	
	Credit>	0.19	0.07	0.07	0.2	0.15			
		Heavy Plantir	High Q Pres	Low Q Pres					
Left Bank	Area #								
	Sq, Footage	8858	430						
	% Area	22%	1%	0	0	0	0	23%	
	Credit >	0.19	0.07	0.07	0.2	0.15			

CREDITS: Rt Bank > 0.33; Lt Bank > 0.04; Credit = 0.19 — Project Credits: 77

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project: 142

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102581	Boxwood				10/5/2020		288

Name(s) of Evaluator(s)	Steam Name and Information
BC	LC2DST3R2 Restoration

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work	
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length	
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09

Right Bank	Length							0
	Credit>							
		Habitat struct	Lay back bank	Plantings				
Left Bank	Length							0
	Credit >							

CREDITS: Rt Bank > 0.00; Lt Bank > 0.00; Credit = SUM of banks = 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 28,800 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2						
	Sq, Footage	7557	3998						
	% Area	26%	14%	0%	0%	0%	0%	40%	
	Credit>	0.38	0.14	0.07	0.4	0.29			
		HP- Field	HQP-Forest	LQP-Timbere	RE-Forest	light planting			
Left Bank	Area #	1	2						
	Sq, Footage								
	% Area	0%	0%	0%	0%	0%	0%	0%	
	Credit>	0.38	0.14	0.07	0.4	0.29			

CREDITS: Rt Bank > 0.12; Lt Bank > 0.00; Credit = 0.06 — Project Credits: 17

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community **maintained** — Subtract 0.03
Two vegetative communities **maintained** — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #								
	Sq, Footage								
	% Area	0%	0%	0%	0%	0%	0%	0%	
	Credit>	0.19	0.07	0.07	0.2	0.15			
		Heavy Plantir	High Q Pres	Low Q Pres					
Left Bank	Area #								
	Sq, Footage								
	% Area	0%	0%	0	0	0	0	0%	
	Credit >	0.19	0.07	0.07	0.2	0.15			

CREDITS: Rt Bank > 0.00; Lt Bank > 0.00; Credit = 0.00 — Project Credits: 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>			

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project: 17

Compensation Summary Form (Form 4)

Unified Stream Methodology
for use in Virginia

Project #	Applicant		Date
102581	RES		4/14/2022
Evaluators		HUC	Locality
BC		2080205	

Stream Name	Reach ID	Comp. Length (L_c)	Total Compensation Credit
RD	RD1	3402	1973
RD	RD1T1	2343	937
RD	RD1T2	2867	1061
RD	RD1T3	2034	976
RD	RD1T4	657	361
RD	RD1T5R1	1929	3048
RD	RD1T5R2	993	268
RD	RD2	4512	1264
RD	RD2T1R1	401	188
RD	RD2T1R2	160	2
RD	RD2T2	177	2
RD	RD2T3	183	2
RD	RD2T4R1	42	0
RD	RD2T4R2	149	1
RD	RD2T5	736	0
LC1	LC1US	1395	307
LC1	LC1T1	541	0
LC1	LC1T2R1	782	305
LC1	LC1T2R2	1523	2117
LC1	LC1T2R3	98	0
LC1	LC1T3R1	214	26
LC1	LC1T3R2	230	5
LC1	LC1T4R1	508	81
LC1	LC1T4R2	90	2
LC1	LC1DS	1199	444
LC1	LC1T5	425	17
LC2	LC2US	3637	1128
LC2	LC2DS	1365	369
LC2	LC2T1	597	251
LC2	LC2T2	1026	102
LC2	LC2DST3R1	404	142
LC2	LC2DST3R2	288	17
	Totals	**34,907**	**15,396**

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102528	Green Ridge Stream Mitigation				4/13/2022	Muddy Creek	2817

Name(s) of Evaluator(s)	Steam Name and Information		Project Credits
BCLS	Muddy Creek	Preservation	

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures: — Credit per foot: 0.3 — Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

		Mechanical Bank Work			Biological Bank Work		
		Credit Per Length	Pick One Per Length		May Be Cumulative Per Length		
Activities		Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques		Stream Bank Plantings
Credit per foot per bank		0.1	0.15	0.1	0.1		0.09
Right Bank	Length	0	0	0		0	
	Credit>	0.1	0.1	0.09			
		Habitat struct	Lay back banks	Plantings			
Left Bank	Length	0	0	0		0	
	Credit >	0.1	0.1	0.09			

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 281,700 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage	292195						
	% Area	104%	0%	0%	0%	0%	0%	104%
	Credit>	0.14	0.07	0.38	0.4			
		High Q Pres	Low Q Pres	Heavy Planting	Restablish			
Left Bank	Area #	1	2					
	Sq, Footage	271445						
	% Area	96%	0%	0%	0%	0%	0%	96%
	Credit>	0.14	0.07	0.38	0.4			
		High Q Pres	Low Q Pres	Heavy Planting	Restablish			

CREDITS: Rt Bank > 0.15 — Lt Bank > 0.13 — Credit: 0.14 — 394

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.07	0.07	0.19	0.2			
		High Q Pres	Low Q Pres	Heavy Planting	Restablish			
Left Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0	0	0	0	0%
	Credit >	0.07	0.07	0.19	0.2			
		High Q Pres	Low Q Pres	Heavy Planting	Restablish			

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: 0.00 — 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>		0.2	

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project: 394

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102528	Green Ridge Stream Mitigation				4/13/22	ST5	3433

Name(s) of Evaluator(s)	Steam Name and Information		Project Credits
BCLS	Unnamed Tributaries to Muddy Creek	Preservation	

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 | Credit per foot: 1 | Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures | Credit per foot: 0.3 | Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work		
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length		
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings	
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09	
Right Bank Length	0	0	0			0
Right Bank Credit>	0.1	0.1	0.09			
	Habitat struct	Lay back bank	Plantings			
Left Bank Length	0	0	0			0
Left Bank Credit >	0.1	0.1	0.09			

CREDITS: Rt Bank > 0.00 | Lt Bank > 0.00 | Credit: SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 343,300 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage	322374						
	% Area	94%	0%	0%	0%	0%	0%	94%
	Credit>	0.14	0.07	0.38	0.4			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			
Left Bank	Area #	1	2					
	Sq, Footage	312543						
	% Area	91%	0%	0%	0%	0%	0%	91%
	Credit>	0.14	0.07	0.38	0.4			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			

CREDITS: Rt Bank > 0.13 | Lt Bank > 0.13 | Credit: 0.13 | 446

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.07	0.07	0.19	0.2			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			
Left Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0	0	0	0	0%
	Credit >	0.07	0.07	0.19	0.2			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			

CREDITS: Rt Bank > 0.00 | Lt Bank > 0.00 | Credit: 0.00 | 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>		0.2	

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0

ΣLength X Credit) for all areas

Total Compensation Credit Provided by Project: 446

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102528	Green Ridge Stream Mitigation				4/13/22	ST6	1008

Name(s) of Evaluator(s)	Steam Name and Information		Project Credits
CA	Unnamed Tributaries to Muddy Creek	Preservation	

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 | Credit per foot: 1 | Credit: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures | Credit per foot: 0.3 | Credit: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work		
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length		
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings	
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09	
Right Bank Length	0	0	0			0
Right Bank Credit>	0.1	0.1	0.09			
	Habitat struct	Lay back bank	Plantings			
Left Bank Length	0	0	0			0
Left Bank Credit >	0.1	0.1	0.09			

CREDITS: Rt Bank > 0.00 | Lt Bank > 0.00 | Credit: SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 100,800 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage	78585						
	% Area	78%	0%	0%	0%	0%	0%	78%
	Credit>	0.14	0.07	0.38	0.4			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			
Left Bank	Area #	1	2					
	Sq, Footage	107065						
	% Area	106%	0%	0%	0%	0%	0%	106%
	Credit>	0.14	0.07	0.38	0.4			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			

CREDITS: Rt Bank > 0.11 | Lt Bank > 0.15 | Credit: 0.13 | 131

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.07	0.07	0.19	0.2			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			
Left Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0	0	0	0	0%
	Credit >	0.07	0.07	0.19	0.2			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			

CREDITS: Rt Bank > 0.00 | Lt Bank > 0.00 | Credit: 0.00 | 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>		0.2	

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

ΣLength X Credit) for all areas

Total Compensation Credit Provided by Project: 131

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102528	Green Ridge Stream Mitigation				4/13/22	ST7R1	5305

Name(s) of Evaluator(s)	Steam Name and Information		Project Credits
BCLS	Unnamed Tributaries to Muddy Creek	Preservation	

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 | Credit per foot: 1 | Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures | Credit per foot: 0.3 | Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work		
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length		
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings	
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09	
Right Bank Length	0	0	0			0
Right Bank Credit>	0.1	0.1	0.09			
	Habitat struct	Lay back bank	Plantings			
Left Bank Length	0	0	0			0
Left Bank Credit >	0.1	0.1	0.09			

CREDITS: Rt Bank > 0.00 | Lt Bank > 0.00 | Credit: SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 530,500 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage	479442						
	% Area	90%	0%	0%	0%	0%	0%	90%
	Credit>	0.14	0.07	0.38	0.4			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			
Left Bank	Area #	1	2					
	Sq, Footage	519182						
	% Area	98%	0%	0%	0%	0%	0%	98%
	Credit>	0.14	0.07	0.38	0.4			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			

CREDITS: Rt Bank > 0.13 | Lt Bank > 0.14 | Credit: 0.14 | 743

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.07	0.07	0.19	0.2			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			
Left Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0	0	0	0	0%
	Credit >	0.07	0.07	0.19	0.2			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			

CREDITS: Rt Bank > 0.00 | Lt Bank > 0.00 | Credit: 0.00 | 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>		0.2	

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0

ΣLength X Credit) for all areas

Total Compensation Credit Provided by Project: 743

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102528	Green Ridge Stream Mitigation				4/13/22	ST7T1	4460

Name(s) of Evaluator(s)	Steam Name and Information	
BCLS	Unnamed Tributaries to Muddy Creek	Preservation

Project Credits

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work		
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length		
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings	
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09	
Right Bank Length						0
Right Bank Credit>	0.1	0.1	0.09			
	Habitat struct	Lay back bank	Plantings			
Left Bank Length						0
Left Bank Credit >	0.1	0.1	0.09			

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 446,000 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq. Footage	544122						
	% Area	122%	0%	0%	0%	0%	0%	122%
	Credit>	0.14	0.07	0.38	0.4			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			
Left Bank	Area #	1	2					
	Sq. Footage	282705						
	% Area	63%	0%	0%	0%	0%	0%	63%
	Credit>	0.14	0.07	0.38	0.4			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			

CREDITS: Rt Bank > 0.17 — Lt Bank > 0.09 — Credit: 0.13 — Project Credits: 580

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq. Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.07	0.07	0.19	0.2			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			
Left Bank	Area #							
	Sq. Footage							
	% Area	0%	0%	0	0	0	0	0%
	Credit >	0.07	0.07	0.19	0.2			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: 0.00 — Project Credits: 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>		0.2	

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project: 580

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102528	Green Ridge Stream Mitigation				9/8/21	ST7R2	682

Name(s) of Evaluator(s)	Steam Name and Information		Project Credits
BCLS	Unnamed Tributaries to Muddy Creek	Preservation	

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work		
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length		
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings	
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09	
Right Bank Length	0	0	0			0
Right Bank Credit>	0.1	0.1	0.09			
	Habitat struct	Lay back bank	Plantings			
Left Bank Length	0	0	0			0
Left Bank Credit >	0.1	0.1	0.09			

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 68,200 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage	64691						
	% Area	95%	0%	0%	0%	0%	0%	95%
	Credit>	0.14	0.07	0.38	0.4			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			
Left Bank	Area #	1	2					
	Sq, Footage	67848						
	% Area	99%	0%	0%	0%	0%	0%	99%
	Credit>	0.14	0.07	0.38	0.4			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			

CREDITS: Rt Bank > 0.13 — Lt Bank > 0.14 — Credit: 0.14: 95

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.07	0.07	0.19	0.2			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			
Left Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0	0	0	0	0%
	Credit >	0.07	0.07	0.19	0.2			
		High Q Pres	Low Q Pres	Heavy Plantinc	Restablish			

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: 0.00: 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>		0.2	

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project: 95

Compensation Crediting Form (Form 3)

Unified Stream Methodology for use in Virginia

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	Reach #	Reach Length
102528	Green Ridge Stream Mitigation				4/13/22	ST11	1208

Name(s) of Evaluator(s)	Steam Name and Information	
BCLS	Unnamed Tributaries to Muddy Creek	Preservation

Restoration: Includes Priority 1, 2, and 3 restoration activities. Does not include buffer width.

List Reaches that will receive full Restoration:

Total length of Full Restoration: 0 — Credit per foot: 1 — Project Credits: 0

Credits = Stream Length X 1.0

Enhancement With Instream Structures: Addressing Streambank Stability, Grade Control (Vanes, Weirs, Step-Pools), Constructed Riffles

Discuss Length Affected by Instream Structures (justify length):

Length Affected by Instream Structures — Credit per foot: 0.3 — Project Credits: 0

Credits = Stream Length X 0.3

Enhancement: Addressing Streambank Stability, Entrenchment Ratios, Access to Floodplain

Mitigation Categories

	Mechanical Bank Work			Biological Bank Work		
	Credit Per Length	Pick One Per Length		May Be Cumulative Per Length		
Activities	Habitat Structures	Create Bankfull Bench	Lay Back Banks	Bio-Remediation Techniques	Stream Bank Plantings	
Credit per foot per bank	0.1	0.15	0.1	0.1	0.09	
Right Bank Length	0	0	0			0
Right Bank Credit>	0.1	0.1	0.09			
	Habitat struct	Lay back bank	Plantings			
Left Bank Length	0	0	0			0
Left Bank Credit >	0.1	0.1	0.09			

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: SUM of banks: 0

Σ(Length X Credit) for all areas (banks done separately)

Riparian Areas: Assess the proposed 100 foot buffer on both banks based on the activity proposed. Enter the percentage of area and the credit below. (Widths of buffer above 100' will be determined below)

Activities	Buffer Re-establishment (removal of invasives)	Buffer Planting - Heavy	Buffer Planting - Light	Preservation *High Quality, Restoration, Enhancement*	Preservation *Low Quality*	Buffer area not within preservation width
Credit for 0'-100'	0.4	0.38	0.29	0.14	0.07	0
Credit for beyond 100'	0.2	0.19	0.15	0.07		0

Calculation of "Goal" riparian buffer for each side (SAR length times 100') >>>> 120,800 square feet

WITHIN FIRST 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #	1	2					
	Sq, Footage	130672						
	% Area	108%	0%	0%	0%	0%	0%	108%
	Credit>	0.14	0.07	0.38	0.4			
		High Q Pres	Low Q Pres	Heavy Plantin	Restablish			
Left Bank	Area #	1	2					
	Sq, Footage	118578						
	% Area	98%	0%	0%	0%	0%	0%	98%
	Credit>	0.14	0.07	0.38	0.4			
		High Q Pres	Low Q Pres	Heavy Plantin	Restablish			

CREDITS: Rt Bank > 0.15 — Lt Bank > 0.14 — Credit: 0.15 — Project Credits: 181

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Outside First 100' - Mitigation Categories

One vegetative community maintained — Subtract 0.03
Two vegetative communities maintained — Subtract 0.06
Ensure the sums of % Riparian Blocks equal 100

Right Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0%	0%	0%	0%	0%
	Credit>	0.07	0.07	0.19	0.2			
		High Q Pres	Low Q Pres	Heavy Plantin	Restablish			
Left Bank	Area #							
	Sq, Footage							
	% Area	0%	0%	0	0	0	0	0%
	Credit >	0.07	0.07	0.19	0.2			
		High Q Pres	Low Q Pres	Heavy Plantin	Restablish			

CREDITS: Rt Bank > 0.00 — Lt Bank > 0.00 — Credit: 0.00 — Project Credits: 0

Σ(% Area X Credit) for all areas (banks done separately)
AVE of credit for banks X length of project

Adjustment Factors: These factors are applied as a multiplier to length of a reach for which they apply

Adjustment Factor Categories

Activity	Rare, Threatened, or Endangered Species or Communities	Livestock Exclusion	Watershed Preservation
Credit	0.1 - 0.3	0.1 - 0.3	0.1 - 0.3
Stream Length Affected			
Credit>		0.2	

Credits are cumulative and can apply to more than one reach. Each reach can have more than one Adjustment Factors

Record AF length /credit beneath the AF activity. Provide a narrative explanation of the applicable site conditions that warrant an adjustment and justify the AF credit chosen.

Credits > 0 — *ΣLength X Credit) for all areas*

Total Compensation Credit Provided by Project: 181

Compensation Summary Form (Form 4)

Unified Stream Methodology
for use in Virginia

Project #	Applicant	Date
102528	RES	4/13/2022
Evaluators	**HUC**	**Locality**
BCLS	2080205	Middle James

Stream Name	Reach ID	Comp. Length (L_c)	Total Compensation Credit
Muddy Creek	Muddy Creek	2817	394
Unnamed Tributaries to Muddy Creek	ST5	3433	446
Unnamed Tributaries to Muddy Creek	ST6	1008	131
Unnamed Tributaries to Muddy Creek	ST7R1	5305	743
Unnamed Tributaries to Muddy Creek	ST7T1	4460	580
Unnamed Tributaries to Muddy Creek	ST7R2	682	95
Unnamed Tributaries to Muddy Creek	ST11	1208	181
	Totals	**18,913**	**2,570**

Note: Round all feet & CC's to the nearest whole number.

Attachment B

Mitigation Credit Availability Research

Notice: The credit totals shown do **NOT reflect any credit reservations or pending transactions**.
It is the responsibility of potential purchasers to contact the Sponsor and obtain written confirmation of credit availability.

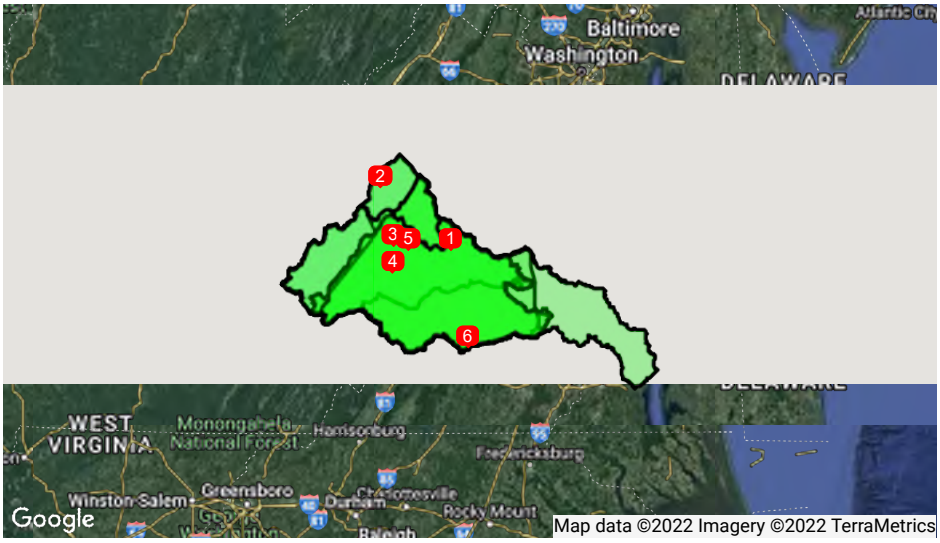
Latitude: 37.5647, **Longitude** -78.1217

State:	Virginia
County:	Cumberland
8-digit Hydrologic Unit Code:	02080205
USFWS Field Office:	Virginia
USACE District:	Norfolk
NOAA Region:	Northeast

Mitigation/Conservation Banks & ILF Sites in Primary Service Area	6
Mitigation/Conservation Banks & ILF Sites in Secondary Service Area	0
Mitigation/Conservation Banks & ILF Sites in Tertiary Service Area	0
ILF Program Advance Credits	1

Search Criteria:
including ONLY approved, public banks, ILF sites, ILF Programs with defined credit classifications
excluding single client banks and ILF sites
including banks and ILF sites with habitat of Riverine
excluding banks, ILF sites and ILF programs with zero available credits
including bank and ILF site service areas of rank Primary, Secondary, Tertiary

Mitigation/Conservation Banks & ILF Sites in Primary Service Area



Bank Name: 1 - Byrd Creek

Bank Type: Private Commercial
Total Acres: 163
Distance to impact: 14 Miles
USACE Permit No: NAO-2000-1533
Bank States: Virginia
Comments: Wetland mitigation bank. Credits are assessed using the Mitigation Ratio Method.
Bank Sponsor: **Byrd Creek, LLC**
1851 Bennington Rd
Rockville, VA 23146

Bank Sponsor POC:

Kelby Morgan
Manager
1851 Bennington Road
Rockville, VA 23146
Email: kmorgan@liesfeld.com
Phone: (804) 749-3276
Fax: (804) 749-4566

Regulatory Bank Manager:

David Knepper
Environmental Scientist
803 Front Street
Norfolk, VA 23510
Email: David.A.Knepper@usace.army.mil
Phone: (757) 201-7488
Fax: (757) 201-7678

Credit Type	Credit Classifications	Assessment Method	Available Credits	Jurisdiction
Stream	Riverine	Unified Stream Methodology	121.00	Federal
Wetland	Wetlands	Ratio	0.06	Federal

Notes:

Bank Name: 2 - Innisfree

Bank Type: Private Commercial
Total Acres: 463
Distance to impact: 53 Miles
USACE Permit No: NAO-2010-01856
Bank States: Virginia
Comments: Stream mitigation bank
Bank Sponsor: **Innisfree Stream Mitigation Bank LLC**
, VA

Bank Sponsor POC:

Peter Traverse
Innisfree Stream Mitigation Bank, LLC
5505 Walnut Level Rd
Crozet, VA 22932
Email: streams@innisfreevillage.org
Phone: (434) 305-8963

Regulatory Bank Manager:

Vincent Pero
CENAO-REG
920 Gardens Blvd. Suite 103-B
Charlottesville, VA 22901
Email: vincent.d.pero@usace.army.mil
Phone: (434) 973-0568

Credit Type	Credit Classifications	Assessment Method	Available Credits	Jurisdiction
Stream	Riverine	Unified Stream Methodology	0.90	Federal
Wetland	Wetlands	Ratio	0.00	-

Notes:

Bank Name: 3 - Lone Oak

Bank Type: Private Commercial
Total Acres: 250
Distance to impact: 31 Miles
USACE Permit No: NAO-2009-1585
Bank States: Virginia
Comments: Stream mitigation bank. Credits are assessed using the Unified Stream Methodology
Bank Sponsor: **Clearwater Mitigation I LLC**
4704 Rolfe Road
Richmond, VA 23226
Email: jparker@clearwaterventuresllc.com
Phone: (804) 819-0474

Bank Sponsor POC:

James Parker
Clearwater Ventures LLC
4704 Rolfe Road
Richmond, VA 23226
Email: jparker@clearwaterventuresllc.com
Phone: (804) 819-0474

Regulatory Bank Manager:

Vincent Pero
CENAO-REG
920 Gardens Blvd. Suite 103-B
Charlottesville, VA 22901
Email: vincent.d.pero@usace.army.mil
Phone: (434) 973-0568

Credit Type	Credit Classifications	Assessment Method	Available Credits	Jurisdiction
Stream	Riverine	Unified Stream Methodology	635.00	Federal

Notes:

Bank Name: 4 - Piedmont Farms

Bank Type: Private Commercial
Total Acres: 1910
Distance to impact: 27 Miles
USACE Permit No: NAO-2009-00080
Bank States: Virginia
Comments: Eastview Farms-stream restoration and enhancement, buffer enhancement.
Fulfillment Farms-stream preservation only
Bank Sponsor: **Mitigation Services Inc**
5367 Telephone Road
Warrenton, VA 20187
Email: jmurnock@res.us
Phone: (540) 905-4245
Cell Phone: (571) 264-3786

Bank Sponsor POC:

Tara Kelly
Senior Environmental Specialist
12811 Randolph Bridge LN
Manassas, VA 20109
Email: tkelly@anglerenvironmental.com
Phone: (703) 393-4844
Fax: (703) 393-2934

Jason Murnock
Raleigh, NC
Email: jmurnock@res.us
Phone: (571) 264-3786

Regulatory Bank Manager:

Julie Hamilton
Environmental Scientist
9100 Arboretum Parkway, Suite 235
Richmond, VA 23236
Email: julie.s.hamilton@usace.army.mil
Phone: (804) 323-3783

Credit Type	Credit Classifications	Assessment Method	Available Credits	Jurisdiction
Stream	Riverine	Unified Stream Methodology	395.00	Federal

Notes:

Bank Name: 5 - White Oak Landing

Bank Type: Private Commercial
Total Acres: 55
Distance to impact: 24 Miles
USACE Permit No: NAO-2008-1043
Bank States: Virginia
Comments: Wetland and stream mitigation bank.
Bank Sponsor: **Harold Hardin**
Paynes Pond LLC
12624 Eagle Ridge Road
Richmond, VA 23233
Email: haroldh@htrsi.com
Phone: (804) 357-7532

Bank Sponsor POC:

Harold Hardin
Paynes Pond LLC
12624 Eagle Ridge Road
Richmond, VA 23233
Email: haroldh@htrsi.com
Phone: (804) 357-7532

Jamie Hudson
Consultant
Virginia Wetland Consulting LC
P.O. Box 206
Quinton, VA 23141
Email: ajh@vawetlandconsulting.com
Phone: (804) 932-3135

Regulatory Bank Manager:

Vincent Pero
CENAO-REG
920 Gardens Blvd. Suite 103-B
Charlottesville, VA 22901
Email: vincent.d.pero@usace.army.mil
Phone: (434) 973-0568

Credit Type	Credit Classifications	Assessment Method	Available Credits	Jurisdiction
Stream	Riverine	STREAM	11.00	Federal
Wetland	Wetlands	Ratio	0.00	Federal

Notes:

Bank Name: 6 - Windrow Farm

Bank Type: Private Commercial
Total Acres: 133
Distance to impact: 31 Miles
USACE Permit No: NAO-2014-0100
Bank States: Virginia
Comments: Stream Compensatory Mitigation Bank in Nottoway County in the James River watershed

Bank Sponsor:

John Shepherd
3949 Hungarytown Raod
Blackstone, VA 23824
Phone: (434) 774-7986

Bank Sponsor POC:

Travis Crayosky
Principal
Stantec
5209 Center Street
Williamsburg, VA 23188
Email: travis.crayosky@stantec.com
Phone: (757) 220-6869
Cell Phone: (757) 810-5609
Fax: (757) 229-4507

Kelby Morgan
Manager
1851 Bennington Road
Rockville, VA 23146
Email: kmorgan@liesfeld.com
Phone: (804) 749-3276
Fax: (804) 749-4566

Regulatory Bank Manager:

Jeanne Richardson
Environmental Scientist
Lynchburg Field Office USACE
PO Box 3100
Lynchburg, VA 24503
Email: jeanne.c.richardson@usace.army.mil
Phone: (434) 384-0182

Credit Type	Credit Classifications	Assessment Method	Available Credits	Jurisdiction
Stream	Riverine	Unified Stream Methodology	241.00	Federal

Notes:

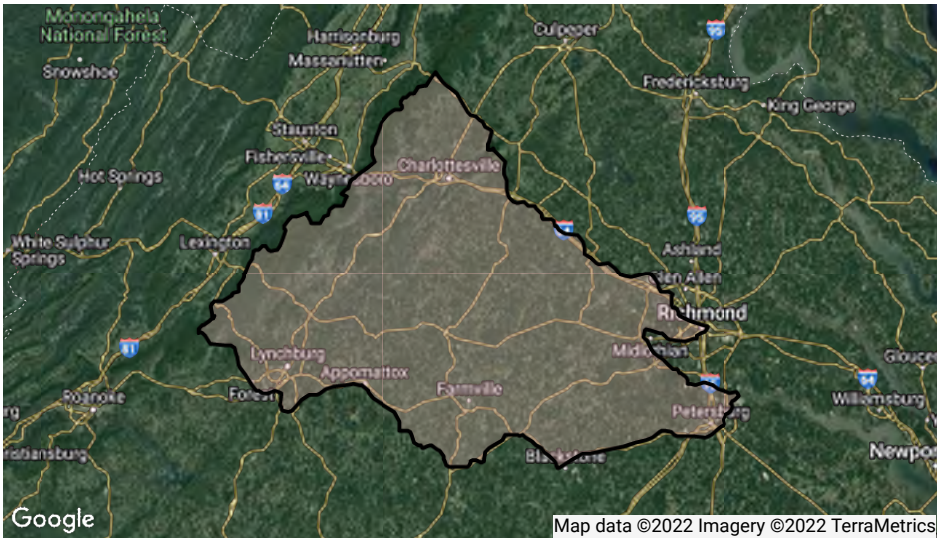
Mitigation/Conservation Banks & ILF Sites in Secondary Service Area

No results found.

Mitigation/Conservation Banks & ILF Sites in Tertiary Service Area

No results found.

ILF Program Advance Credits



Program Name: Virginia Aquatic Resources Trust Fund

Distance to impact: 82 Miles
USACE Permit No: NAO-1995-08595
Program States: Virginia
Program Sponsor: **The Nature Conservancy of Virginia**
490 Westfield Rd
Charlottesville, VA 22901

Program Sponsor POC:

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Operations Program Specialist
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Regulatory Program Manager:

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Environmental Scientist
Lynchburg Field Office USACE
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Lynchburg, VA 24503
Email: jeanne.c.richardson@usace.army.mil
Phone: (434) 384-0182

Credit Type	Service Area	Advance Credits
Non-Tidal	Middle James	0.41
Stream	Middle James	4,655.00

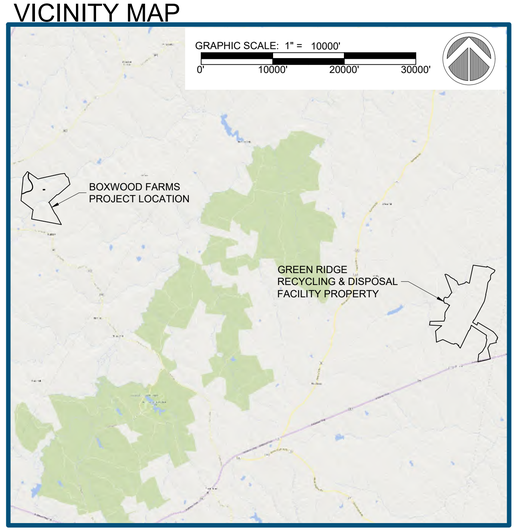
Notes:

Attachment C

Concept Mitigation Plan Set

GREEN RIDGE RECYCLING & DISPOSAL STREAM MITIGATION
BUCKINGHAM AND CUMBERLAND COUNTIES, VA

VICINITY MAP



DATA SOURCES:

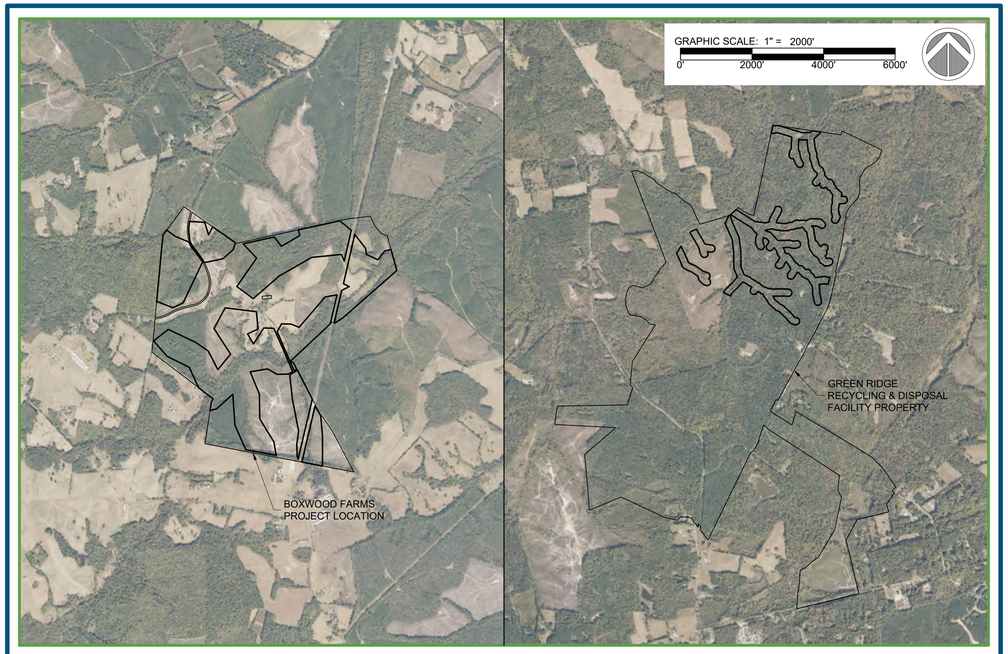
GREEN RIDGE RECYCLING AND DISPOSAL FACILITY PROPERTY: CONTOURS ARE FROM NRCS NED DATA. SURVEY DATA FROM KOONTZ, BRYANT, JOHNSON, AND WILLIAMS

BOXWOOD FARMS PROPERTY: WETLAND DELINEATION OCCURRED ON SEPTEMBER 14, 2020, FOLLOWING THE US ARMY CORPS OF ENGINEERS WETLAND DELINEATION MANUAL. CONTOURS ARE FROM THE USGS 2 FT NED CONTOUR DATA. THE BOUNDARY WAS SURVEYED BY BELL LAND SURVEYS LLC ON MARCH 21, 2019.

SHEET INDEX:

1 - COVER SHEET
2 - BOXWOOD FARMS EXISTING CONDITIONS
3 - BOXWOOD FARMS DESIGN NARRATIVE
4 - BOXWOOD FARMS MITIGATION PLAN
5 - GREEN RIDGE RECYCLING & DISPOSAL FACILITY MITIGATION PLAN
6 - BOXWOOD FARMS MITIGATION CONCEPT OVERALL
7 - LC1T2R2 DESIGN PLAN
8 - RD1T5R1 DESIGN PLAN
9 - DETAILS
10 - DETAILS
11 - PLANTING PLAN
12 - PLANTING SCHEDULES AND NOTES

AERIAL PHOTOGRAPH-PROJECT OVERVIEW



BOXWOOD FARMS OWNER:
NAME: RES, LLC
ADDRESS: 1408 ROSENEATH RD, STE B, RICHMOND, VA 23230
CONTACT: RICK ATKINSON
PHONE NUMBER: 804.729.8989
EMAIL: RATKINSON@RES.US

BOXWOOD FARMS PROPERTY INFO:
BOXWOOD FARMS
SITE ADDRESS: 1928 LITTLE CREEK RD, DILLWYN, VA 23936
PROPERTY ACREAGE: 682.9 ACRES
EASEMENT ACREAGE: 369.2 ACRES
STREAM LENGTH: 34,907 LINEAR FEET

GREEN RIDGE CLIENT/APPLICANT:
GREEN RIDGE RECYCLING & DISPOSAL FACILITY, LLC
12230 DEERHILL RD
MIDLOTHIAN, VA 23112

GREEN RIDGE PROPERTY INFO:
GREEN RIDGE RECYCLING & DISPOSAL
SITE ADDRESS: PINEGROVE RD/MILLER LN, CUMBERLAND, VA
PROPERTY ACREAGE: 1243.4 ACRES
EASEMENT ACREAGE: 23.4 ACRES
STREAM LENGTH: 46,552 LINEAR FEET
PARCEL IDS:
038-00-0A-00-0007
ACREAGE: 163.746 ACRES
ZONING: M2
045-00-0A-00-0001
ACREAGE: 171 ACRES
ZONING: M2
045-00-0A-00-007
ACREAGE: 82 ACRES
ZONING: M2
044-00-0A-00-0021
ACREAGE: 133.18
ZONING: M2
044-00-0A-00-0020
ACREAGE: 58.18
ZONING: M2
037-00-0A-00-0069
ACREAGE: 78
ZONING: M2

MITIGATION TYPE	LINEAR FEET	PROJECTED CREDITS			
		STREAM	BUFFER	INVASIVE MANAGEMENT	TOTAL
COMPLETED TMDL RESTORATION	9,846	0	1,787	628	2,415
404 RESTORATION	3,452	3,452	227	1,485	5,165
PRESERVATION (BOXWOOD)	21,609	0	3,968	3,848	7,816
PRESERVATION (GREEN RIDGE)	18,913	0	2,570	0	2,570
TOTAL	53,820	3,452	8,552	5,962	17,966

WETLAND	ACREAGE	CREDITING RATE	TOTAL CREDITS
ENHANCEMENT	0.32	7:1	0.05

REVISIONS

JOB NUMBER: 102528

GREEN RIDGE RECYCLING & DISPOSAL STREAM MITIGATION

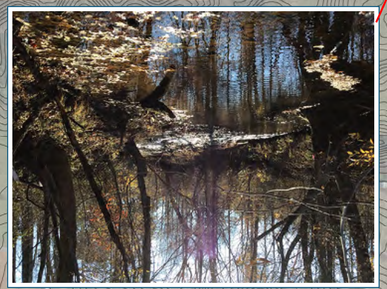
GREEN RIDGE RECYCLING & DISPOSAL STREAM MITIGATION
COVER SHEET
CUMBERLAND AND BUCKINGHAM COUNTIES, VIRGINIA

PROJECT MANAGER:	RA	JOB NUMBER:	102528
DESIGNED:	BCLS/LDS	DESIGN TYPE:	CONCEPT
DRAWN:	TB/LDS/BCLS	DATE:	04/15/22

HGS, LLC. A RES COMPANY
1408 ROSENEATH ROAD,SUITE B, RICHMOND, VIRGINIA 23230
P: 804.353.6017
WWW.RES.US

COVER SHEET 1 OF 12

FILE NAME:R:\Rescad\Projects\102528-Green Ridge Landfill\Plan Sheets\COVER SHEET.dwg DATE: 4/15/2022 2:52 PM BY: Lsokol



res
HGS, LLC, A RES COMPANY
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P: 804.353.6017
WWW.RES.US

GREEN RIDGE RECYCLING & DISPOSAL
STREAM MITIGATION

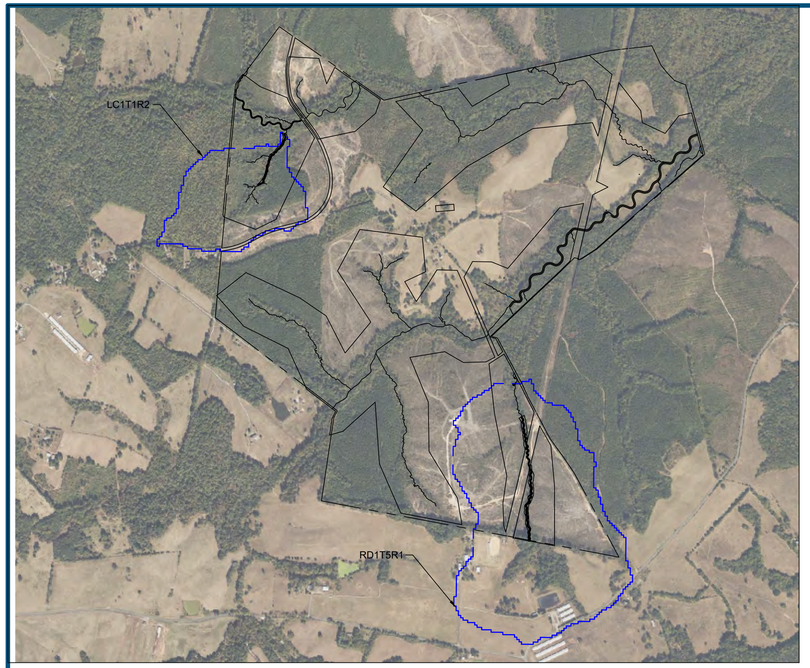
BOXWOOD FARMS
EXISTING CONDITIONS

BUCKINGHAM COUNTY, VIRGINIA

STAMP/SEAL:

REVISIONS:

PROJECT MANAGER:	RA
DESIGNED:	BCLS
DRAWN:	TD / BN
JOB NUMBER:	102528
DESIGN TYPE:	CONCEPT
DATE:	12/17/2021
SHEET NO:	2 OF 12



GRAPHIC SCALE: 1" = 1000'
0' 1000' 2000' 3000'

SUMMARY

UNNAMED TRIBUTARY TO UPPER LITTLE CREEK (LC1T1R2) AND UNNAMED TRIBUTARY TO RANDOLPH CREEK (RD1T5R1) WILL BE RESTORED USING NATURAL CHANNEL DESIGN (NCD) PRINCIPLES BASED ON APPLIED FLUVIAL GEOMORPHOLOGY. THE GOAL OF NCD IS TO PROVIDE NUTRIENT REDUCTIONS AND FUNCTIONAL UPLIFT TO STREAM CHANNELS BY WORKING WITH EXISTING STREAM PROCESSES TO CREATE A CHANNEL THAT IS DYNAMICALLY STABLE UNDER CURRENT HYDROLOGY AND SEDIMENT CONDITIONS. UNNAMED TRIBUTARY TO UPPER LITTLE CREEK (LC1T1R2) AND UNNAMED TRIBUTARY TO RANDOLPH CREEK (RD1T5R1) WILL BE RESTORED TO CREATE A CHANNEL THAT IS DYNAMICALLY STABLE UNDER CURRENT HYDROLOGY AND SEDIMENT CONDITIONS.ADDITIONALLY, REACHES WITHIN THESE TRIBUTARIES (LC1T2R1 & RD1T5R2) WILL BE PRESERVED AND THE RIPARIAN BUFFERS WITH WILL BE RE-ESTABLISHED THROUGH PLANTING WITHIN THE FLOODPLAIN AND UPLAND ZONES.

1.0 WATERSHED AND GEOMORPHIC ANALYSIS

1.1 WATERSHED ASSESSMENT

A WATERSHED HYDROLOGY ANALYSIS FOR LC1T1R2 AND RD1T5R1 WAS PERFORMED TO EVALUATE THE HYDROLOGIC CONTRIBUTIONS TO THE STREAMS FROM ON-SITE AND OFF-SITE AREAS. REGIONAL CURVES, 17B GAGE ANALYSIS, AND HYDRUALIC ANALYSIS WITHIN EXISTING CROSS-SECTIONS WERE ANALYZED TO DETERMINE THE DESIGN DISCHARGE FOR RESTORATION.

THE WATERSHEDS FOR EACH REACH ARE LOCATED WITHIN THE RANDOLPH CREEK WATERSHED (HUC 020802050302). THE COMPLETED WATERSHED ASSESSMENT EXAMINED DRAINAGE AREA, IMPERVIOUS AREA, LAND USE, AND HYDROLOGY WITHIN EACH DRAINAGE AREA. WATERSHED BOUNDARIES CAN BE SEEN IN THE PROVIDED DRAINAGE AREA MAP. A SUMMARY OF THE WATERSHED AND LANDUSE DATA IS PRESENTED IN THE TABLE BELOW. SOME LAND THAT IS CURRENTLY LISTED AS FORESETED WAS LOGGED IN 2018 AND WILL BE REFORESTED AND PROTECTED AS PART OF THIS PROJECT.

DRAINAGE AREA LAND COVER** SUMMARY

REACH	DRAINAGE AREA (MI^2)*	IMPERVIOUS (%)***	WOODS (%)	DEVELOPED/URBAN (%)	CROPLAND(%)
RD1T5R1	0.23	0.33	62.0	0.5	29.5
LC1T1R2	0.079	0.11	99.0	1.0	0.0

*Drainage areas are based upon the full reach, not necessarily the downstream terminus of restoration.
**Landcover based on the NLCD 2011. Percentages may overlap (eg. urban and impervious.)
*** Precentages may not add up to 100%, some overlap expected with urban lands and impervious cover

1.2 BASEMAPPING

TWO FOOT CONTOUR INTERVAL TOPOGRAPHY FROM GIS WAS OBTAINED. ONE FOOT CONTOURS ARE CURRENTLY BEING SURVEYED BY RES AND WILL BE USED FOR LATER STAGES OF DESIGN.

1.3 HYDRAULIC ASSESSMENT

A ONE-DIMENSIONAL HYDRAULIC ANALYSIS WAS COMPLETED FOR EACH EXISTING RIFFLE CROSS-SECTION TO VERIFY BANKFULL DISCHARGE, ANALYZE REFERENCE GEOMORPHOLOGY, AND TO COMPUTE CHANNEL SHEAR STRESS FOR SEDIMENT COMPETENCY DETERMINATION. A SUMMARY FOR EACH EXISTING CROSS-SECTION IS FOUND IN SECTION 1.5.

1.4 BANKFULL VERIFICATION

A TOTAL OF TWO EXISTING CROSS-SECTIONS WERE SURVEYED TO DETERMINE SITE SPECIFIC BANKFULL CHARACTERISTICS. DATA OBTAINED FROM THE EXISTING BANKFULL CHANNEL DIMENSIONS WERE USED AS GUIDANCE FOR DESIGN CROSS-SECTIONS.

A "CONVERGENCE OF EVIDENCE" APPROACH WAS USED TO IDENTIFY THE DESIGN DISCHARGE AND TO VERIFY BANKFULL FOR DESIGN. REGIONAL CURVE INFORMATION, 17B GAGE ANALYSIS AND HYDRAULIC ANALYSIS OF EXISTING CROSS-SECTIONS WERE ANALYZED TO DETERMINE TRENDS TO PINPOINT THE MOST APPROPRIATE DISCHARGE FOR THE PROJECT REACHES.

1.4.1 REGIONAL CURVES FOR BANKFULL FLOW DISCHARGE ESTIMATES

BASED ON THE DRAINAGE AREAS OF LC1T1R2 AND RD1T5R1, THE FOLLOWING PUBLISHED REGIONAL CURVE PREDICT THE DISCHARGE AND DIMENSIONS PROVIDED IN THE TABLE BELOW. THE VA PIEDMONT NON-URBAN CURVE MOST CLOSELY RESEMBLES THE CONDITIONS OF THE SITE, WITH A LOW PERCENTAGE OF URBAN LANDS WITHIN THE WATERSHED AND THE SAME PHYSIOGRAPHIC REGION.

REGIONAL CURVE SUMMARY*

REACH	DRAINAGE AREA (MI^2)	Q_{bkf} (cfs)	A_{bkf} (sf)	W_{bkf} (ft)	D_{bkf} (ft)
RD1T5R1	0.23	10.91	3.60	6.90	0.52
LC1T1R2	0.079	3.95	1.53	4.35	0.35

*Selected the USGS Virginia Piedmont Non-Urban published regional curves.

1.4.2 17B GAGE ANALYSIS

A GAGE ANALYSIS BASED ON THE USGS HYDROLOGY SUBCOMMITTEE 17B BULLETIN WAS USED TO ESTIMATE BANKFULL DISCHARGE FOR LC1T1R2 AND RD1T5R1. SEVEN GAGES IN A SIMILAR REGION WITH SIMILAR IMPERVIOUS COVER WERE CHOSEN FOR THE ANALYSIS AND RUN THROUGH PEAKFQ. REGRESSION EQUATIONS WERE BUILT FOR THE 1.11, 1.25, AND 1.5 YEAR RECURRENCE INTERVALS (RI). THE INDIVIDUAL DRAINAGE AREAS FOR LC1T1R2 AND RD1T5R1 WERE ENTERED INTO THE REGRESSION EQUATIONS TO DETERMINE RELATIVE DISCHARGE BASED ON THE TREND LINE. THESE RESULTS ALIGNED CLOSELY WITH THE VA PIEDMONT REGIONAL CURVE OUTPUT, FURTHER VERIFYING THE DESIGN DISCHARGE SELECTION.

17B GAGE ANALYSIS

REACH	DRAINAGE AREA (MI^2)	1.11-YR (CFS)	1.25-YR (CFS)	1.5-YR (CFS)
RD1T5R1	0.23	11.4	20.3	34.9
LC1T1R2	0.079	4.9	9.2	16.3

1.5 PROJECT REACH GEOMORPHIC ASSESSMENT

A DETAILED GEOMORPHIC SURVEY WAS CONDUCTED ON FEBRUARY 23, 2022, INCLUDING WATER SURFACE AND BED SLOPES, CROSS-SECTION DIMENSIONS, BANKFULL DIMENSIONS, AND BED MATERIAL SIZE. THE GEOMORPHIC SURVEY DATA WAS ANALYZED TO DETERMINE EXISTING HYDRAULIC VARIABLES AND BANKFULL FLOWS. THE CROSS-SECTIONS CHOSEN ARE REPRESENTATIVE OF EXISTING CONDITIONS ONSITE. THESE SECTIONS INCLUDE BANKFULL FORMING FEATURES WHERE THEY WERE APPARENT. GEOMORPHIC SURVEY HYDRAULIC MODELING RESULTS CAN BE FOUND IN THE TABLE BELOW.

GEOMORPHIC XS ASSESSMENT SUMMARY

REACH	DRAINAGE AREA (MI^2)	Q_{bkf} (cfs)	A_{bkf} (sf)	W_{bkf} (ft)	D_{bkf} (ft)	W/D	SLOPE (%)	n	VELOCITY (FPS)	SHEAR STRESS (lb/ft^2)	D50 (mm)	D85 (mm)	THRESHOLD GRAIN SIZE (mm)
RD1T5R1	0.23	14.9	4.5	4.9	0.9	5.4	1.50	0.046	3.30	0.61	14	24	35.0
LC1T1R2	0.079	3.7	1.7	8.1	0.2	37.7	2.8	0.040	2.10	0.34	5.1	110	17.0

DURING THE GEOMORPHIC SURVEY AND SUBSEQUENT SITE WALK, THE SOURCE OF INSTABILITY IN LC1T1R2 AND RD1T5R1 WAS IDENTIFIED AS BEING LINKED TO HISTORIC LAND CLEARING AND PASTURELAND USE AND OVERLAND FLOW FROM SURROUNDING CLEARED HILLSLOPES. THE EXCESSIVE SEDIMENT LOAD HAS CAUSED HIGH NEAR BANK STRESS, INCREASED BANK EROSION, AND HOMOGENOUS STREAMBEDS WITH HIGH BANKS THAT PREVENT FLOW FROM ACCESSING HISTORIC FLOODPLAINS. THE LACK OF BEDFORM DIVERSITY, FREQUENT BANK SCOUR, AND HEADCUTS THROUGHOUT THE CHANNELS PROVIDE POOR HABITAT DIVERSITY THAT IS UNABLE TO SUPPORT A ROBUST BIOLOGICAL COMMUNITY. BANK AND FLOODPLAIN VEGETATION IS POOR OR LACKING. THE BANKS AND VALLEY OF RD1T5R1 ARE COVERED WITH INVASIVE SPECIES, DOMINATED BY RUBUS SP. AND LONICERA JAPONICA. LC1T1R2 IS WITHIN IN STAGE 3 OF THE CHANNEL EVOLUTION MODEL, DEGRADATION. RD1T5R1 IS IN STAGE 4, DEGRADATION AND WIDENING. IT IS ANTICIPATED THAT THE STREAMS WILL CONTINUE TO PUSH AGAINST THEIR STEEP BOUNDARIES, ERODING MASSIVE QUANTITIES OF SEDIMENT THAT WILL BE TRANSPORTED DOWNSTREAM. DUE TO THE ADDITIONAL DEGRADATION AND RECOVERY ANTICIPATED FOR SELF-RECONSTRUCTION, RESTORATION IS NECESSARY TO ESTABLISH STABILITY AND UPGRADE ECOLOGICAL FUNCTION. THE REMAINING REACHES WITHIN THE PROJECT SITE HAVE EITHER ALREADY BEEN RESTORED FOR TMDL OR ARE GEOMORPHICALLY AND ECOLOGICALLY FUNCTIONING WITHIN EXISTING CONDITIONS. THESE PRESERVATION REACHES WILL INCLUDE RIPARIAN BUFFER ENHANCEMENT AND REESTABLISHMENT WHERE APPROPRIATE.

2.0 DESIGN DISCHARGE AND DESIGN METHODOLOGY

THE OVERALL GOAL OF THE PROJECT IS TO RESTORE, TO THE GREATEST EXTENT POSSIBLE, THE ECOLOGICAL FUNCTION FOR THE HIGHLY DEGRADED AQUATIC RESOURCES WITHIN THE SITE. A PRIMARY OBJECTIVE OF ACHIEVING THIS GOAL WILL BE TO GENERATE STREAM CREDITS THAT WILL FULLY MITIGATE AUTHORIZED LOSSES OF STREAMS IN A MANNER THAT BEST CONTRIBUTES TO THE LONG-TERM ECOLOGICAL HEALTH OF THE MIDDLE JAMES-WILLIS WATERSHED.THE BANK WILL ACCOMPLISH THIS OBJECTIVE THROUGH THE IMPLEMENTATION OF VARIOUS MITIGATION MEASURES, INCLUDING STREAM RESTORATION PRESERVATION, REESTABLSIHMENT, AND RIPARIAN BUFFER PLANTING. THE PROPOSED RESTORATION WILL REDUCE ANNUAL LOADINGS OF SEDIMENT AND RECONNECT THE STREAM SYSTEMS WITH THEIR HISTORIC FLOODPLAINS. LC1T1R2 AND RD1T5R1 REQUIRE SIGNIFICANT RESTORATION TO PROVIDE A FRAMEWORK FOR LONG-TERM STABILITY. THIS WILL BE ACCOMPLISHED THROUGH PLANFORM, PROFILE, AND CROSS-SECTION ALTERATIONS TO MEET THE NECESSARY DESIGN REQUIREMENTS. ENTRENCHMENT RATIO CHANGES IN SPECIFIC AREAS WILL BE USED TO CREATE B, C, OR E CHANNELS DEPENDING ON LATERAL CONSTRAINTS SUCH AS EXISTING TREES, BEDROCK, AND SPECIFIC REACH CHARACTERISTICS.

ALL COLLECTED AND COMPUTED DATA WAS INTEGRATED TO DEVELOP A MITIGATION PLAN FOR THE IDENTIFIED STREAM RESTORATION REACHES. THE PRIMARY RESTORATION OBJECTIVE OF SELF-SUSTAINING PLANFORM, CROSS-SECTION, AND PROFILE REQUIRED MULTIPLE DESIGN ITERATIONS. CRUCIAL DESIGN FACTORS INCLUDED BANKFULL DISCHARGE COMPUTATIONS AND VERIFICATION BASED ON SITE SPECIFIC DATA AND WATERSHED INFORMATION, SEDIMENT CONTINUITY AND TRANSPORT, CHANNEL DEPENDENT VARIABLES SUCH AS WIDTH, DEPTH, SLOPE, ETC., AND DESIGN COMPUTATIONS SUCH AS SHEAR STRESS AND HYDRAULIC RESISTANCE. THEREFORE, A MYRIAD OF DESIGN METHODS WERE USED UNTIL CONVERGING EVIDENCE POINTED TO SPECIFIC DESIGN PARAMETERS.

THE DESIGN DISCHARGES WERE SELECTED BASED ON A REVIEW OF THE ABOVE REFERENCED HYDROLOGY DATA AND EXISTING BANKFULL DISCHARGE. THE DESIGN DISCHARGE ANALYSIS SHOWED A TREND IN VALUES, WITH THE VA PIEDMONT REGIONAL CURVE, THE 1.11-YR RI FROM THE GAGE ANALYSIS, AND THE EXISTING BANKFULL DISCHARGES RESULTING IN SIMILAR DISCHARGE VALUES. THESE DISCHARGES WILL PROMOTE MORE FREQUENT FLOODPLAIN ACCESS, REDUCING SHEAR STRESS AND EROSIVE FORCES WITHIN THE CHANNEL AND DISSIPATING ENERGY ACROSS THE FLOODPLAIN AND PROVIDING STORAGE FOR STORM FLOWS. DESIGN DISCHARGES CAN BE FOUND WITHIN THE DESIGN DISCHARGE HYDRAULIC SUMMARY TABLE BELOW.

DESIGN DISCHARGE HYDRAULIC SUMMARY

REACH	DRAINAGE AREA (MI^2)	Qbkf (cfs)	Abkf (sf)	Wbkf (ft)	Dbkf (ft)	W/D	SLOPE (%)	N	VELOCITY (FPS)	SHEAR STRESS (lb/ft^2)	THRESHOLD GRAIN SIZE (mm)
RD1T5R1	0.23	14.70	4.2	7.6	0.6	13.6	2.00	0.040	3.50	0.67	33.0
LC1T1R2	0.079	5.10	1.9	5.0	0.4	13.5	2.20	0.040	2.80	0.49	24.0

LC1T1R2 AND RD1T5R1 WILL BE REALIGNED TO PROVIDE A MORE SUSTAINABLE PLANFORM WITH RIFFLE/POOL OR CASCADE/POOL MORPHOLOGY. GRADE CONTROL STRUCTURES AND BANK PROTECTION WILL BE PROVIDED WHERE NECESSARY.

3.0 FINAL DESIGN

3.1 NATURAL CHANNEL DESIGN

ALL PROPOSED ALIGNMENTS AND DIMENSIONS CAN BE FOUND IN THE CONSTRUCTION DOCUMENTS. PROFILES AND MATERIALS WILL BE DETERMINED IN LATER STAGES OF DESIGN.

3.2 SEDIMENT TRANSPORT ANALYSIS OF PROPOSED DESIGN

SEDIMENT TRANSPORT ANALYSIS WILL BE PROVIDED IN LATER STAGES OF DESIGN.

3.3 INSTREAM STRUCTURES

INSTREAM STRUCTURES ARE BEING UTILIZED AS NECESSARY TO PROMOTE LATERAL AND VERTICAL STABILITY. STREAM CONFLUENCES, HIGH GRADIENT AREAS, AND OTHER POINTS OF HIGHER SHEAR STRESS WILL BE CHOSEN FOR STRUCTURE LOCATIONS. STRUCTURE DETAILS CAN BE FOUND IN THE CONSTRUCTION PLANS.

3.4 VEGETATION DESIGN

HERBACEOUS AND WOODY VEGETATION PROPOSED FOR PLANTING WERE CHOSEN BASED ON EXISTING SITE CONDITIONS AND KNOWLEDGE OF STREAM RESTORATION PROJECTS. ADDITIONALLY, RIPARIAN BUFFER RESTABILSHMENT AND ENHANCMENT WILL OCCUR ALONG THE PRESERVATION REACHES AS WELL AS THE RESTORATION REACHES. DETAILS RELATED TO PERMANENT VEGETATION ESTABLISHMENT CAN BE FOUND WITHIN THE PLANTING PLAN.

4.0 MONITORING AND MAINTENANCE PLANS

MAINTENANCE AND MONITORING (M&M) WILL BE PERFORMED IN ACCORDANCE WITH THE M&M PLAN SUBMITTED AND APPROVED AS PART OF THE MBI.

5.0 OVERALL DESIGN REVIEW AND FUNCTIONAL UPLIFT GOALS/OBJECTIVES

THE PROPOSED RESTORATION OF LC1T1R2 AND RD1T5R1 WILL RESULT IN SIGNIFICANT FUNCTIONAL UPLIFT, INCLUDING HYDRAULIC AND GEOMORPHIC PROPERTIES. ADJUSTMENTS TO THE STREAM CHANNEL DIMENSIONS WILL REDUCE EROSION AND DECREASE SEDIMENT AND NUTRIENT LOADS. THE ADDITION OF THE FLOODPLAIN REDUCES IN-CHANNEL HYDRAULIC STRESSES CURRENTLY CAUSING BANK EROSION. INCREASING DEEP POOL HABITAT AND STABLE RIFFLE HABITAT WILL CREATE MORE DIVERSE HABITAT FOR FISH AND BENTHIC MACROINVERTEBRATES.

GREEN RIDGE PRM
FUNCTIONAL UPLIFT (GOALS AND OBJECTIVES) TABLE

LEVEL, CATEGORY & GOAL	PARAMETER & OBJECTIVE	MEASUREMENT METHOD	PERFORMANCE STANDARD			PRE RESTORATION CONDITION		POST RESTORATION CONDITION (DESIGN)	
			FUNCTIONING	AT-RISK	NOT FUNCTIONING	VALUE	RATING	VALUE	RATING
LEVEL 1 - HYDROLOGY									
	NOT APPLICABLE	NO CHANGES							
LEVEL 2 - HYDRAULICS									
IMPROVE FLOODPLAIN ACCESS	IMPROVE FLOODPLAIN CONNECTIVITY	PREDICTED WITH BANK HEIGHT RATIO (BHR)	1.0-1.2	1.3-1.5	>1.5	>1.5	NOT FUNCTIONING	1-1.2	FUNCTIONING
IMPROVE FLOODPLAIN ACCESS	INCREASE ANNUAL FREQUENCE OF FLOODPLAIN ACCESS	CONFIRMED WITH PHOTO MONITORING, MODELED DISCHARGE	3+	1-2	<1	< 1	NOT FUNCTIONING	>3	FUNCTIONING
LEVEL 3 - GEOMORPHOLOGY									
REDUCE BANK MIGRATION	IMPROVER LATERAL STABILITY	CROSS-SECTIONAL SURVEY-WIDTH/ DEPTH RATIO COMPARISON TO REFERENCE	1-1.2	1.2-1.4	>1.4	>1.4	NOT FUNCTIONING	1-1.2	FUNCTIONING
IMPROVE RIPARIAN VEGETATION	PROVIDE A MORE ROBUST RIPARIAN AREA	MEASURING FUNCTIONAL RIPARIAN ZONE WIDTH	35 FT +	15-35 FT	<15 FT	<15 FT	NOT FUNCTIONING	35 FT +	FUNCTIONING
IMPROVE BED MATERIAL CHARACTERIZATION	IMPROVED BED MATERIAL COMPOSITION	SIZE CLASS PEBBLE COUNT ANALYSIS	PROJECT REACH IS NOT SIGNIFICANTLY DIFFERENT THAN REFERENCE	NA	PROJECT REACH IS SIGNIFICANTLY DIFFERENT (FINER) THAN REFERENCE	PROJECT REACH IS SIGNIFICANTLY DIFFERENT (FINER) THAN REFERENCE	NOT FUNCTIONING	PROJECT REACH IS NOT SIGNIFICANTLY DIFFERENT THAN REFERENCE	FUNCTIONING
IMPROVE SHELTER FOR FISH AND MACROINVERTEBRATES	IMPROVE HABITAT DIVERSITY FOR AQUATIC ORGANISMS	OBSERVATIONAL AND STRUCTURE ASSESSMENT	GREATER THAN 70% SUBSTRATE FAVORABLE FOR EPIFAUNAL COVER AND FISH COVER	20-70% MIX OF STABLE HABITAT SUITED FOR FULL COLONIZATION	LESS THAN 20% MIX OF STANLE HABITAT	LESS THAN 20% MIX OF STABLE HABITAT	NOT FUNCTIONING	GREATER THAN 70% SUBSTRATE FAVORABLE FOR EPIFAUNAL COVER AND FISH COVER	FUNCTIONING
LEVEL 4 - PHYSICOCHEMICAL									
	NOT APPLICABLE	NO CHANGES							
LEVEL 5 - BIOLOGY									
	NOT APPLICABLE	NO CHANGES							

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WWW.RES.US

GREEN RIDGE RECYCLING & DISPOSAL STREAM MITIGATION

DESIGN NARRATIVE

BUCKINGHAM COUNTY, VIRGINIA

STAMP/SEAL:

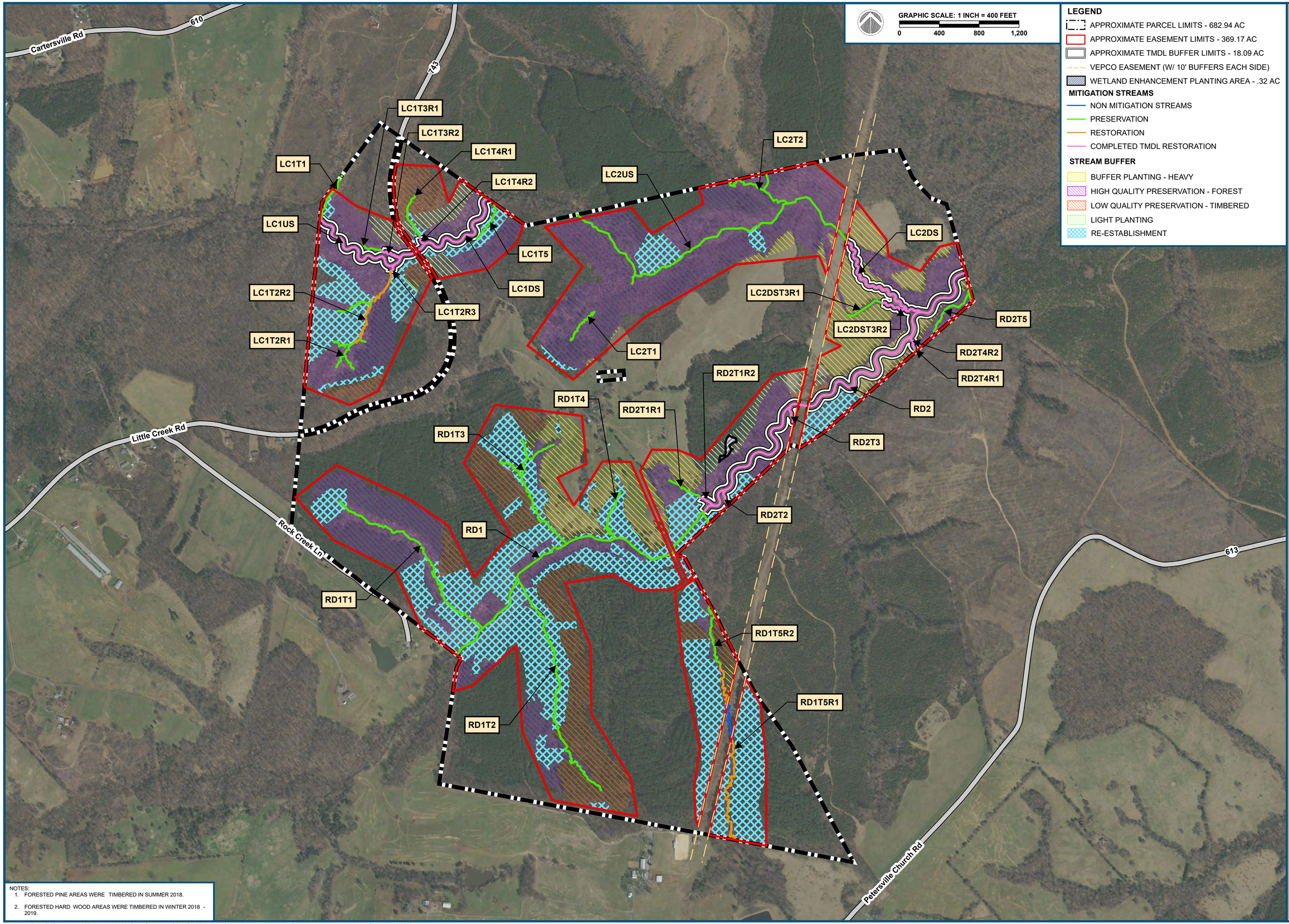
30% DESIGN REVIEW
x _____ ####
Signature Date

PERMIT PLAN DESIGN REVIEW
x _____ ####
Signature Date

CONSTRUCTION PLAN REVIEW
x _____ ####
Signature Date

REVISIONS:

PROJECT MANAGER:	RA
DESIGNED:	BCLS/LDS
DRAWN:	BCLS/LDS
JOB NUMBER:	102528
DESIGN TYPE:	CONCEPT
DATE:	4/15/2022
SHEET NO:	3 OF 12



NOTES:
1. FORESTED PINE AREAS WERE TIMBERED IN SUMMER 2018.
2. FORESTED HARD WOOD AREAS WERE TIMBERED IN WINTER 2018 - 2019.

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P: 804.353.6017
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GREEN RIDGE RECYCLING & DISPOSAL
STREAM MITIGATION

BOXWOOD FARMS
MITIGATION PLAN

BUCKINGHAM COUNTY, VIRGINIA

STAMP/SEAL:

REVISIONS:
LC - 03/07/2022
TD - 04/25/2022

PROJECT MANAGER:	RA
DESIGNED:	BCLS
DRAWN:	LC / BN
JOB NUMBER:	102528
DESIGN TYPE:	CONCEPT
DATE:	04/15/2022
REVISIONS:	
SHEET NO:	4 OF 12

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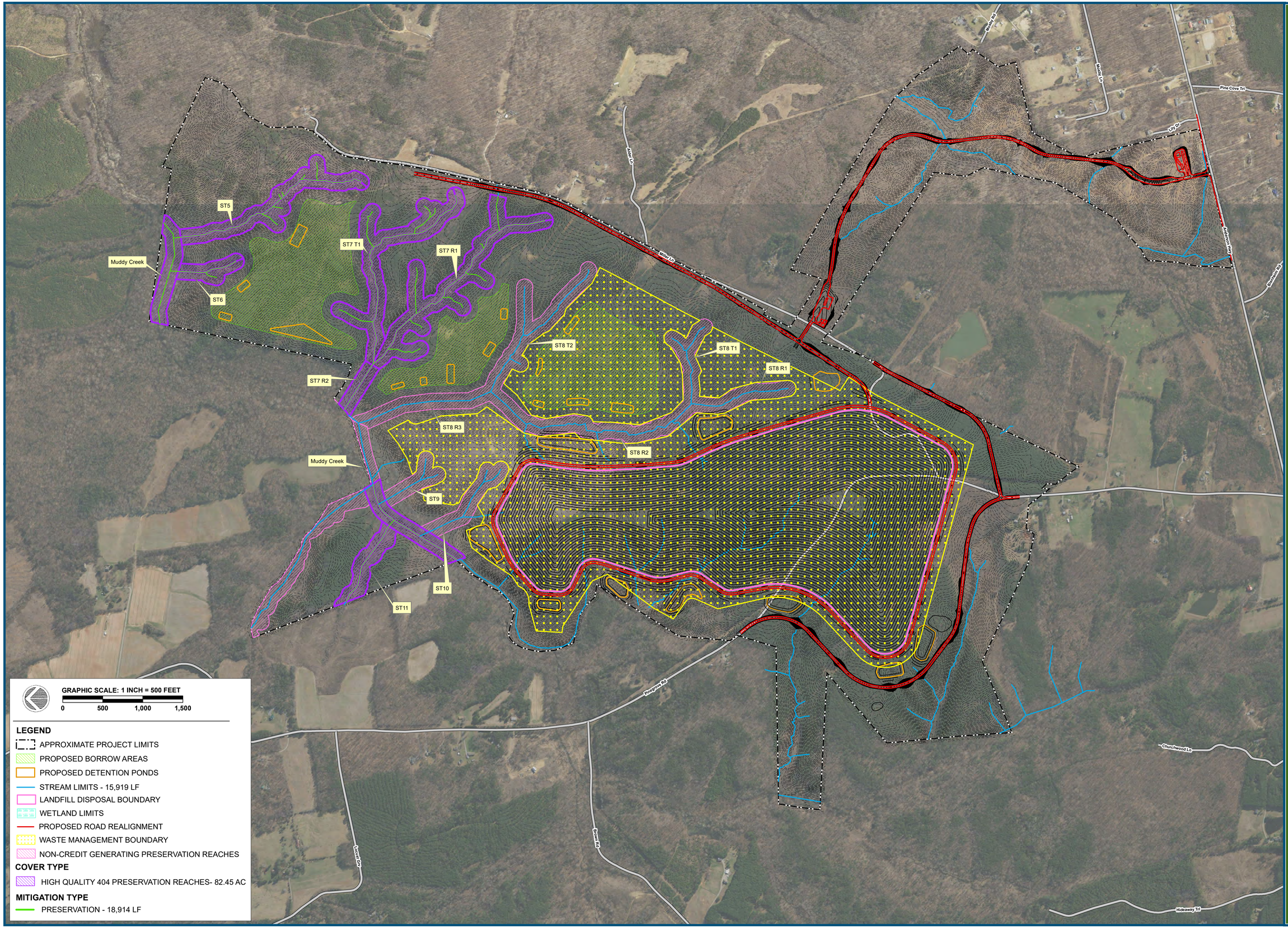

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P: 804.353.6017
WWW.RES.US

GREEN RIDGE RECYCLING & DISPOSAL
STREAM MITIGATION

GREEN RIDGE RECYCLING & DISPOSAL FACILITY MITIGATION PLAN

CUMBERLAND COUNTY, VIRGINIA

STAMP/SEAL:

REVISIONS:
TB - 04/20/2022

PROJECT MANAGER:	RA
DESIGNED:	BCLS
DRAWN:	LC / BN
JOB NUMBER:	102528
DESIGN TYPE:	CONCEPT
DATE:	04/15/2022
SHEET NO:	5 OF 12

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TMDL MAINTENANCE ACCESS PATHS WILL BE USED WHEN MANAGEMENT OF THE TMDL STREAM RESTORATION SITES IS NEEDED. ACCESS PATHS WILL BE PLANTED WITH AN HERBACEOUS POLLINATOR MIX AND REPLANTED IF DISTURBED BY MAINTENANCE CREWS .

GRAPHIC SCALE: 1 INCH = 400 FEET
0 400 800 1,200

LEGEND

- APPROXIMATE PARCEL LIMITS - 682.94 AC
- APPROXIMATE EASEMENT LIMITS - 369.17 AC
- APPROXIMATE TMDL BUFFER LIMITS - 18.09 AC
- TMDL MAINTENANCE ACCESS PATHS
- VEPCO EASEMENT (W/ 10' BUFFERS EACH SIDE)
- EXISTING CHANNEL
- WETLAND ENHANCEMENT PLANTING AREA - .32 AC

MITIGATION STREAMS

- NON MITIGATION STREAMS
- PRESERVATION
- ENHANCEMENT
- RESTORATION
- COMPLETE TMDL RESTORATION

LC1T3R1
LC1T3R2
LC1T4R1
LC1T4R2
LC1T1
LC1US
LC1T5
LC1DS
LC1T2R2
LC1T2R2 PLANVIEW 1
LC1T2R3
LC1T2R1
LC2T2
LC2US
LC2DS
LC2DST3R1
LC2DST3R2
RD2T5
RD2T4R2
RD2T4R1
RD2
RD2T3
LC2T1
RD2T1R2
RD1T4
RD2T1R1
RD1T3
RD2T2
RD1
RD1T1
RD1T2
RD1T5R1 PLANVIEW 2
RD1T5R2
RD1T5R1
RD1T5R1 PLANVIEW 1
743
Little Creek Rd
Rock Creek Ln
613
Petersville Church Rd

NOTES:
1. FORESTED PINE AREAS WERE TIMBERED IN SUMMER 2018.
2. FORESTED HARD WOOD AREAS WERE TIMBERED IN WINTER 2018 - 2019.

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GREEN RIDGE RECYCLING & DISPOSAL
STREAM MITIGATION

BOXWOOD FARMS
CONCEPT OVERALL

BUCKINGHAM COUNTY, VIRGINIA

STAMP/SEAL:

REVISIONS:
TB - 04/14/2022

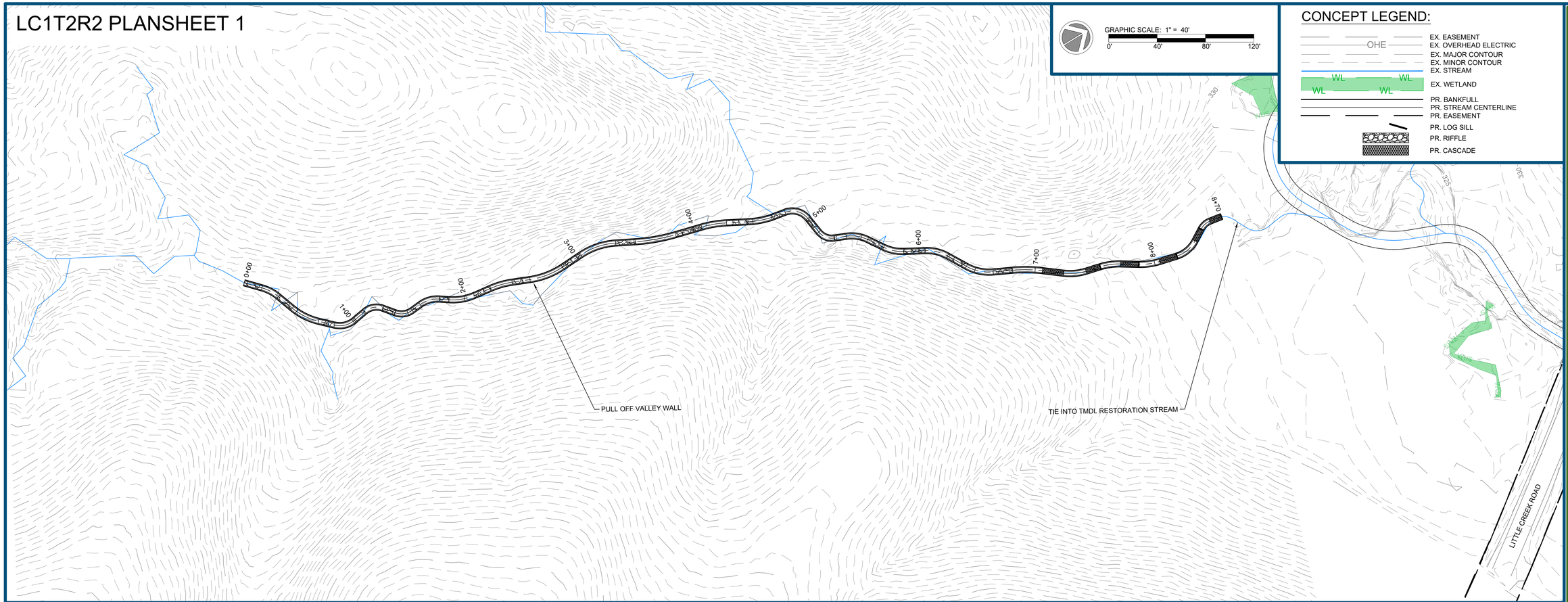
PROJECT MANAGER:	RA
DESIGNED:	BS
DRAWN:	BN
JOB NUMBER:	102528
DESIGN TYPE:	CONCEPT
DATE:	04/15/2022
SHEET NO:	6 OF 12

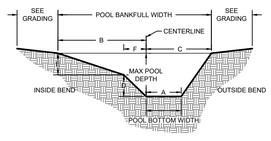
LC1T2R2 PLANSHEET 1

GRAPHIC SCALE: 1" = 40'
0' 40' 80' 120'

CONCEPT LEGEND:

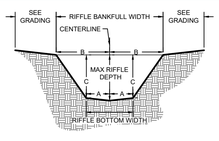
- EX. EASEMENT
- EX. OVERHEAD ELECTRIC (OHE)
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- EX. STREAM
- EX. WETLAND (WL)
- PR. BANKFULL
- PR. STREAM CENTERLINE
- PR. EASEMENT
- PR. LOG SILL
- PR. RIFFLE
- PR. CASCADE





POOL (POINT BAR) CROSS-SECTION GEOMETRY										
REACH	STATION	A-CENTERLINE OFFSET TO BOTTOM OF BANK (FT)	POOL BOTTOM WIDTH (FT)	B-LENGTH OF POINT BAR (FT)	C-CENTERLINE OFFSET TO OUTSIDE TOP OF BANK WIDTH (FT)	MAX POOL DEPTH (FT)	D-HEIGHT OF POINT BAR FROM POOL BOTTOM (FT)	E-HEIGHT TO TOP OF INNER BANK FROM POINT BAR (FT)	F-CENTERLINE OFFSET TO TOP OF INNER BANK (FT)	POOL BKF WIDTH (FT)
LC1T1R2		0.5	0.5	4.0	2.0	1.0	0.5	0.5	0.8	6.0

POOL (POINT BAR) CROSS-SECTION GEOMETRY
NOT TO SCALE



RIFFLE CROSS-SECTION GEOMETRY							
REACH	STATION	A-CENTERLINE OFFSET TO BOTTOM OF BANK (FT)	RIFFLE BOTTOM WIDTH (FT)	MAX RIFFLE DEPTH (FT)	B-CENTERLINE OFFSET TO TOP OF BANK (FT)	RIFFLE BANKFULL WIDTH (FT)	C-BANK HEIGHT
LC1T1R2		1.7	3.4	0.5	2.5	5.0	0.4

RIFFLE CROSS-SECTION GEOMETRY
NOT TO SCALE

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GREEN RIDGE RECYCLING & DISPOSAL STREAM MITIGATION

LC1T2R1 DESIGN PLAN

BUCKINGHAM COUNTY, VIRGINIA

STAMP/SEAL:

30% DESIGN REVIEW
X ____ ####
Signature Date

PERMIT PLAN DESIGN REVIEW
X ____ ####
Signature Date

CONSTRUCTION PLAN REVIEW
X ____ ####
Signature Date

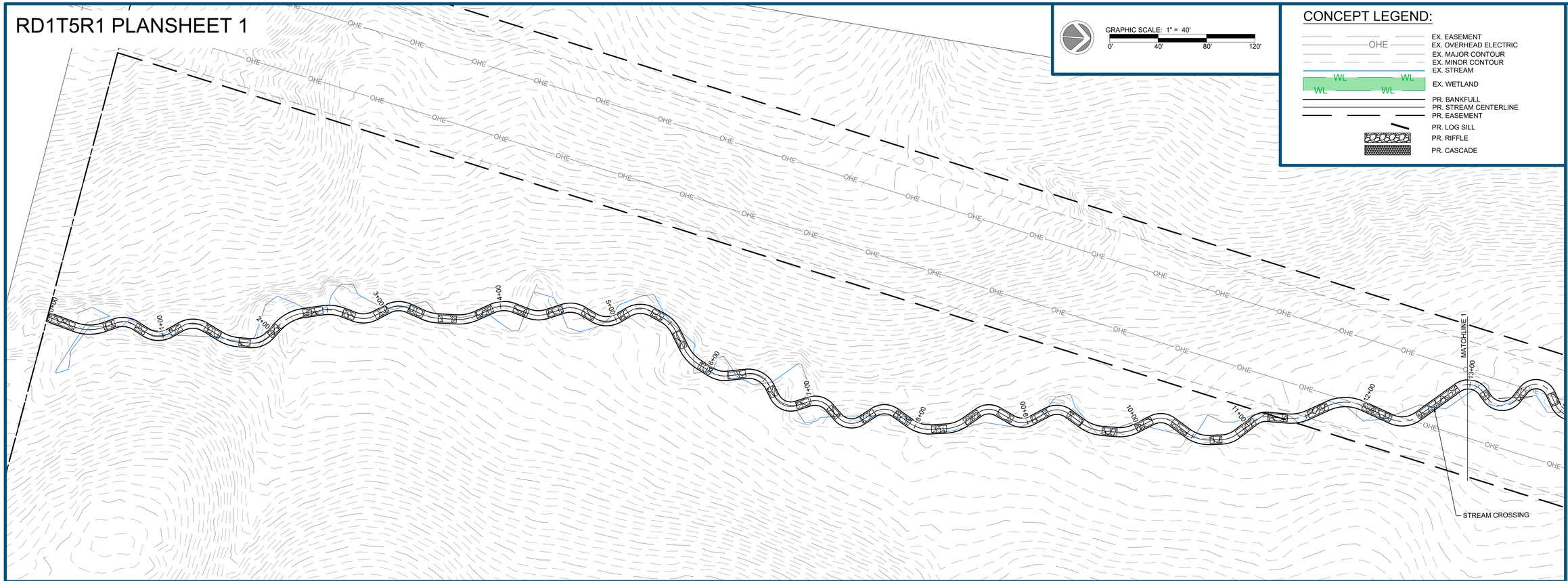
REVISIONS:

PROJECT MANAGER:	RA
DESIGNED:	BCLS/LDS
DRAWN:	BCLS/LDS
JOB NUMBER:	102528
DESIGN TYPE:	CONCEPT
DATE:	4/15/2022

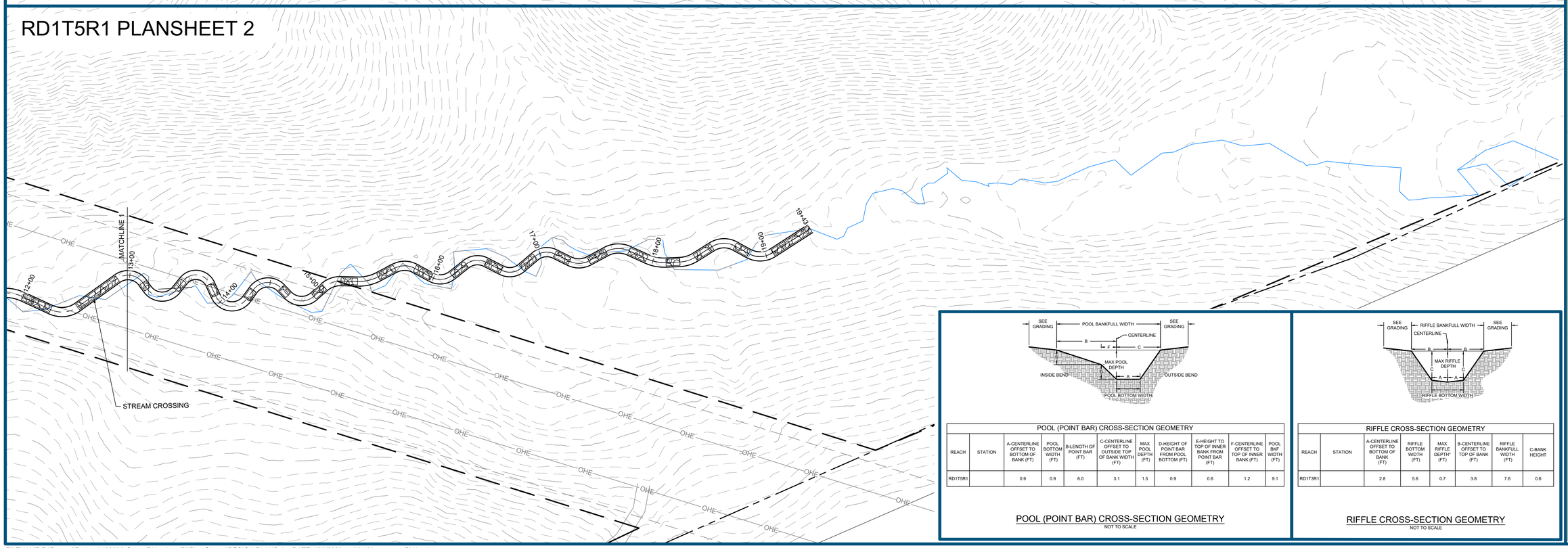
SHEET NO: 7 OF 12

FILENAME:R:\Rescad\Projects\102528-Green Ridge Landfill\Plan Sheets\DESIGN PLANS.dwgDATE:4/26/2022 11:39 AM BY:Lsokol

RD1T5R1 PLANSHEET 1



RD1T5R1 PLANSHEET 2



POOL (POINT BAR) CROSS-SECTION GEOMETRY										
REACH	STATION	A-CENTERLINE OFFSET TO BOTTOM OF BANK (FT)	POOL BOTTOM WIDTH (FT)	B-LENGTH OF POINT BAR (FT)	C-CENTERLINE OFFSET TO OUTSIDE TOP OF BANK WIDTH (FT)	MAX POOL DEPTH (FT)	D-HEIGHT OF POINT BAR FROM POOL BOTTOM (FT)	E-HEIGHT TO TOP OF INNER BANK FROM POINT BAR (FT)	F-CENTERLINE OFFSET TO TOP OF INNER BANK (FT)	POOL BKF WIDTH (FT)
RD1T5R1		0.9	0.9	6.0	3.1	1.5	0.9	0.6	1.2	9.1

POOL (POINT BAR) CROSS-SECTION GEOMETRY
NOT TO SCALE

RIFFLE CROSS-SECTION GEOMETRY							
REACH	STATION	A-CENTERLINE OFFSET TO BOTTOM OF BANK (FT)	RIFFLE BOTTOM WIDTH (FT)	MAX RIFFLE DEPTH (FT)	B-CENTERLINE OFFSET TO TOP OF BANK (FT)	RIFFLE BANKFULL WIDTH (FT)	C-BANK HEIGHT
RD1T3R1		2.8	5.6	0.7	3.8	7.6	0.6

RIFFLE CROSS-SECTION GEOMETRY
NOT TO SCALE

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GREEN RIDGE RECYCLING & DISPOSAL STREAM MITIGATION

RD1T5R1 DESIGN PLAN

BUCKINGHAM COUNTY, VIRGINIA

STAMP/SEAL:

30% DESIGN REVIEW
X ____ ####
Signature Date

PERMIT PLAN DESIGN REVIEW
X ____ ####
Signature Date

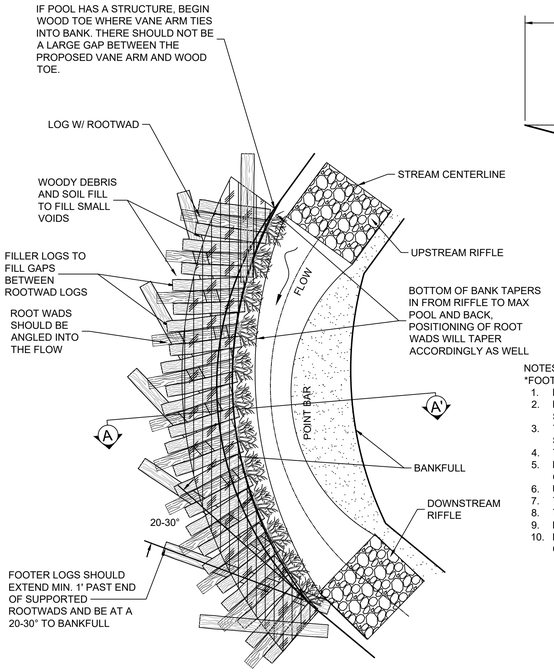
CONSTRUCTION PLAN REVIEW
X ____ ####
Signature Date

REVISIONS:

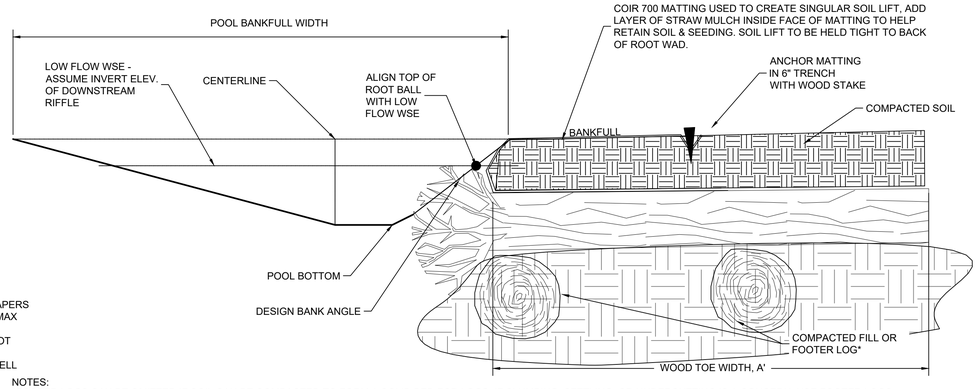
PROJECT MANAGER:	RARA
DESIGNED:	BCLS/LDS
DRAWN:	BCLS/LDS
JOB NUMBER:	102528
DESIGN TYPE:	CONCEPT
DATE:	4/15/2022

SHEET NO: 8 OF 12

FILENAME:R:\Rescad\Projects\102528-Green Ridge Landfill\Plan Sheets\DESIGN PLANS.dwgDATE:4/26/2022 11:39 AM BY:Lsokol



PLAN VIEW
NOT TO SCALE



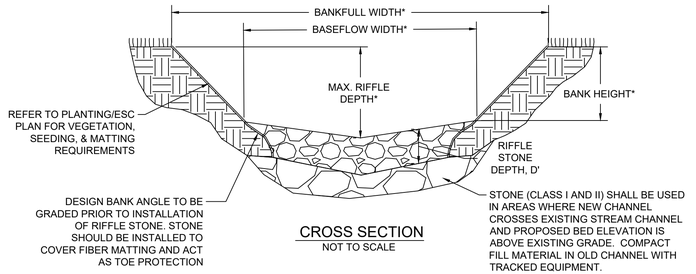
NOTES:
*FOOTER LOGS CAN BE OMITTED IF SOIL CAN BE COMPACTED TO FORM A SOLID BED FOR LOGS. IF SLUMPING, SETTLING, OR UNDERCUTTING IS A CONCERN, USE FOOTER LOGS.

1. ROOTWADS SHALL BE TOUCHING OR OVERLAPPING SO THAT THERE ARE NO GAPS ALONG THE FACE OF THE REVETMENT.
2. FILLER LOGS SHALL BE ANY SCRAP LOGS NOT USED FOR ROOTWADS AND TIGHTLY FITTED IN TO HOLD THE ROOTWADS IN PLACE. USE WOODY DEBRIS AND SOIL TO FILL SMALLER VOID SPACES.
3. THE WOODY DEBRIS AND SOIL FILL SHALL BE COMPACTED WITH EXCAVATOR BUCKET IN THE VOIDS AROUND THE LOGS AND ON TOP OF THE WOOD TOE LAYER TO PROVIDE AN EVEN SURFACE FOR THE BOTTOM SOIL LIFT.
4. THE SOIL USED FOR LIVE LIFTS SHALL BE FREE OF STICKS, ROOTS, AND ROCKS LARGER THAN GRAVEL. THIS SOIL SHALL CONTAIN NO LESS THAN 50% TOPSOIL.
5. FOR SINGULAR LIFT COIR 700 MAY BE USED AND LIFT SHOULD MATCH CHANNEL GEOMETRY. THE SOIL LIFT SHALL BE HELD TIGHT TO THE BACK OF THE ROOTS, PREVENTING ANY LARGE GAPS WHERE SCOUR CAN OCCUR.
6. USE HIGH DENSITY LIVE STAKING DURING THE PLANTING SEASON IN THE LIFT, PER THE SEEDING AND PLANTING SCHEDULE PROVIDED IN THE PLANS.
7. THE OVERALL SLOPE CREATED BY THE WOOD TOE AND LIVE LIFT SHALL MATCH THE PROPOSED CROSS SECTION SHAPE FOR THE OUTER BANK OF THE PROPOSED POOL.
8. THE SURFACE SHALL BE FINISHED TO A SMOOTH AND COMPACT SURFACE IN ACCORDANCE WITH THE ELEVATIONS, GRADES, AND/OR CROSS-SECTIONS SHOWN IN THE PLANS.
9. ROOTWADS SHALL BE HELD LOW IN THE CHANNEL, THE BULK OF THE ROOTWAD SHALL BE BELOW THE LOW-FLOW WSE.
10. REDRESSING OF CHANNEL, BENCHES, AND FLOODPLAIN WILL LIKELY BE REQUIRED FOLLOWING INSTALLATION OF THIS STRUCTURE AND SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION. ADDITIONAL ROOTWADS OR RIPRAP MAY BE USED TO ADDRESS AREAS OF CONCERN FOR EROSION, ESPECIALLY AT THE ENDS OF THIS STRUCTURE.

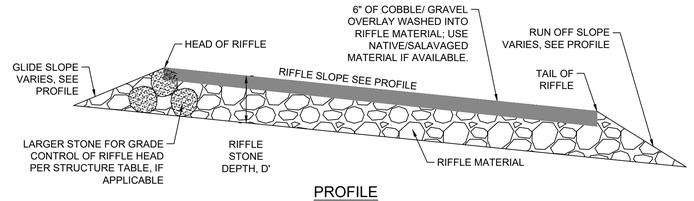
STRUCTURE TABLE			
REACH	START STATION	END STATION	WOOD TOE WIDTH, A'

^OFFSET FROM THE CENTERLINE APPLIES ONLY AT THE DMAX/MIDPOINT OF THE POOL. WOOD TOE REVETMENT SHOULD TRANSITION TO AND FROM THE RIFFLE CROSS-SECTION FROM THAT PONT.

WOOD TOE REVETMENT
NOT TO SCALE



CROSS SECTION
NOT TO SCALE



PROFILE
NOT TO SCALE

STRUCTURE TABLE		
REACH	RIFFLE STONE DEPTH, D	MIN. GRADE CONTROL STONE SIZE (L, W, H)
UT1 R1	1'-0"	
UT1 R2	1'-6"	
UT3	1'-0"	
UT4	1'-0"	

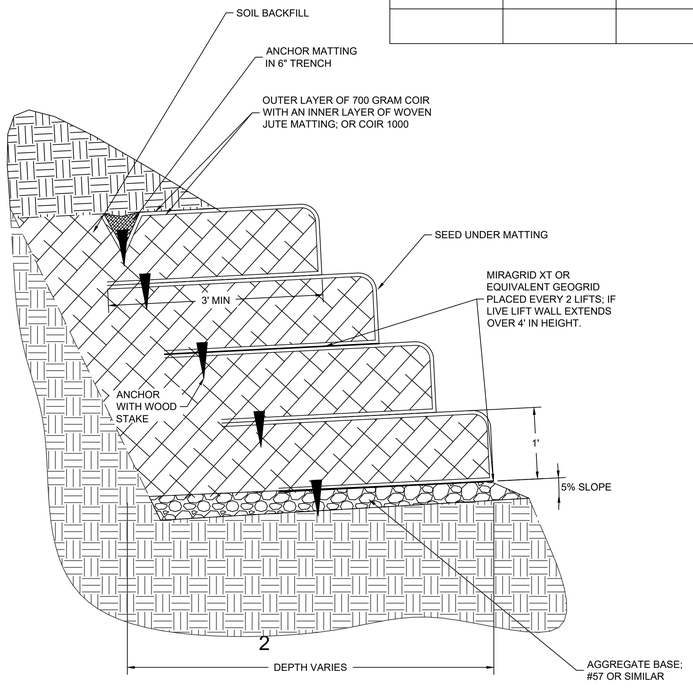
REACH X RIFFLE MATERIAL		
MATERIAL	SIZE (D50)	PERCENT
ROCK		
ROCK		
ROCK		
ROCK		
ROCK		
ROCK		
SOIL/SAND		

REACH X RIFFLE MATERIAL		
MATERIAL	SIZE (D50)	PERCENT
ROCK		
ROCK		
ROCK		
ROCK		
ROCK		
ROCK		
SOIL/SAND		

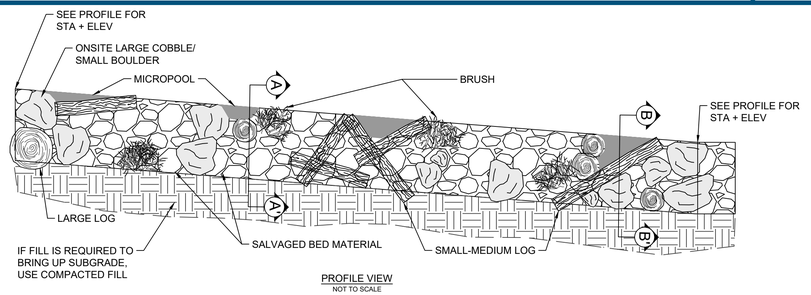
CONSTRUCTED RIFFLE
NOT TO SCALE

*NOTE: SEE CROSS-SECTION GEOMETRY TABLE FOR CHANNEL DIMENSIONS AND SLOPES.

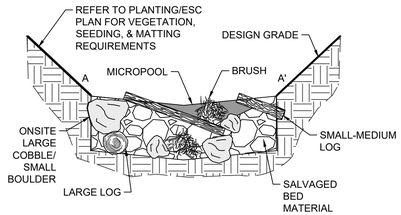
LIVE LIFT DETAILS		
REACH	STATION	LIFT SETBACK, A



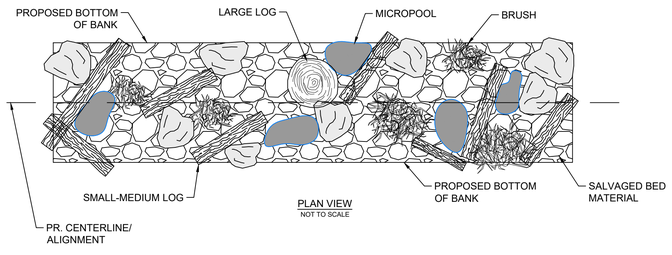
LIVE LIFT SLOPE STABILIZATION
NOT TO SCALE



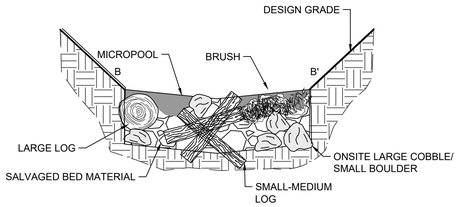
PROFILE VIEW
NOT TO SCALE



SECTION A-A'
NOT TO SCALE



PLAN VIEW
NOT TO SCALE



SECTION B-B'
NOT TO SCALE

CASCADE BED FEATURE
NOT TO SCALE

*NOTE: INCORPORATION OF WOOD TO BE DETERMINED BY ONSITE AVAILABILITY. CONTRACTOR TO REPLACE WOOD WITH SMALL AND LARGE BOULDERS IF LIMITED.

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DETAILS

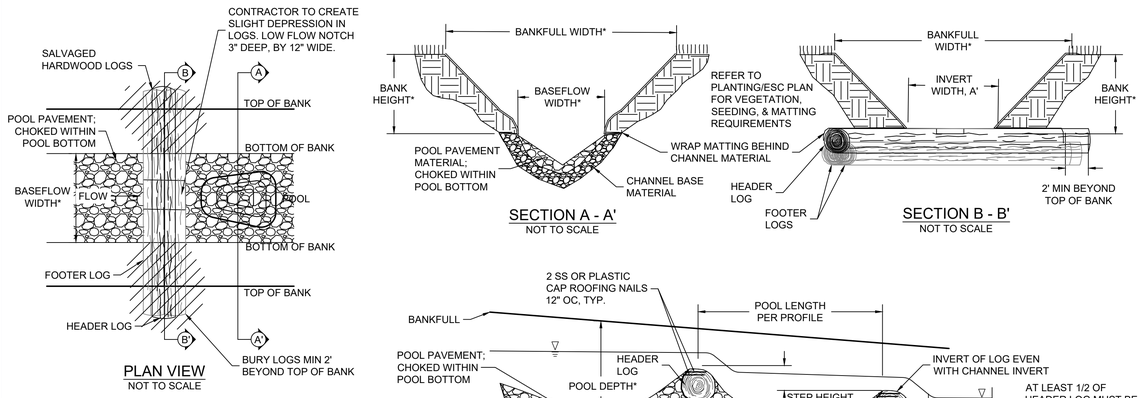
GREEN RIDGE RECYCLING & DISPOSAL STREAM MITIGATION

BUCKINGHAM COUNTY, VIRGINIA

STAMP/SEAL:

REVISIONS:

PROJECT MANAGER:	RA
DESIGNED:	BCLS/LDS
DRAWN:	BCLS/LDS
JOB NUMBER:	102528
DESIGN TYPE:	CONCEPT
DATE:	4/15/2022
SHEET NO:	9 OF 12

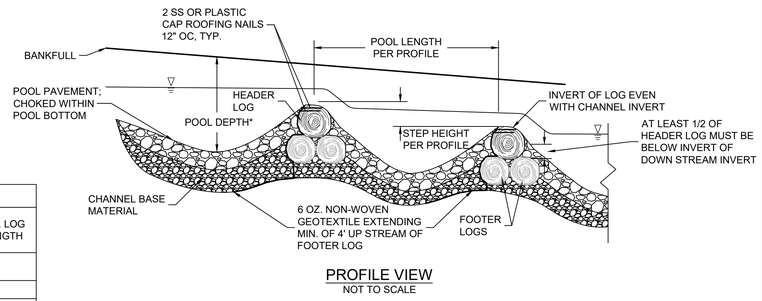


PLAN VIEW
NOT TO SCALE

SECTION A - A'
NOT TO SCALE

SECTION B - B'
NOT TO SCALE

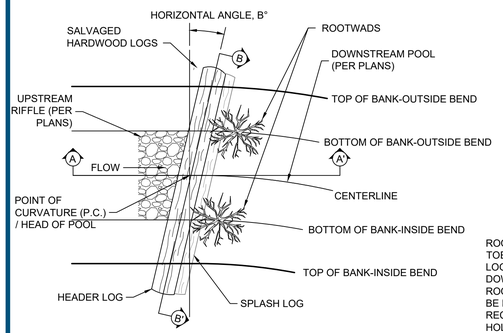
STRUCTURE TABLE					
	STATION	INVERT WIDTH, A'	INVERT ELEV.	MIN. LOG DIAMETER	MIN. LOG LENGTH
REACH/STR. #					



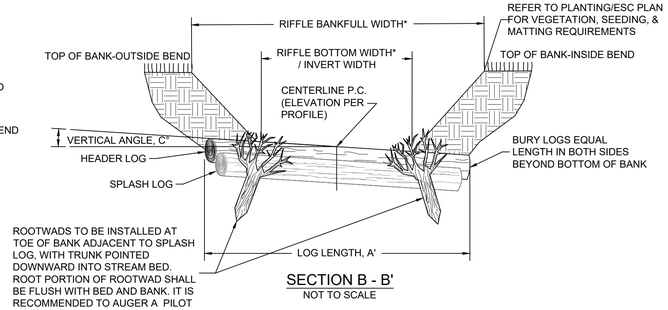
PROFILE VIEW
NOT TO SCALE

LOG-STEP POOL
NOT TO SCALE

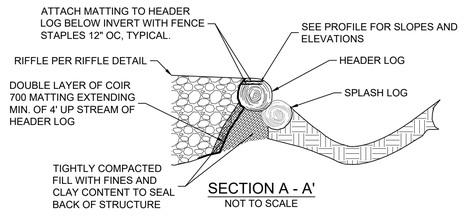
*NOTE: SEE CROSS-SECTION GEOMETRY TABLE FOR CHANNEL DIMENSIONS.



PLAN VIEW
NOT TO SCALE



SECTION B - B'
NOT TO SCALE



SECTION A - A'
NOT TO SCALE

LOG SILL
NOT TO SCALE

*NOTE: SEE CROSS-SECTION GEOMETRY DETAIL FOR CHANNEL DIMENSIONS.

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DETAILS

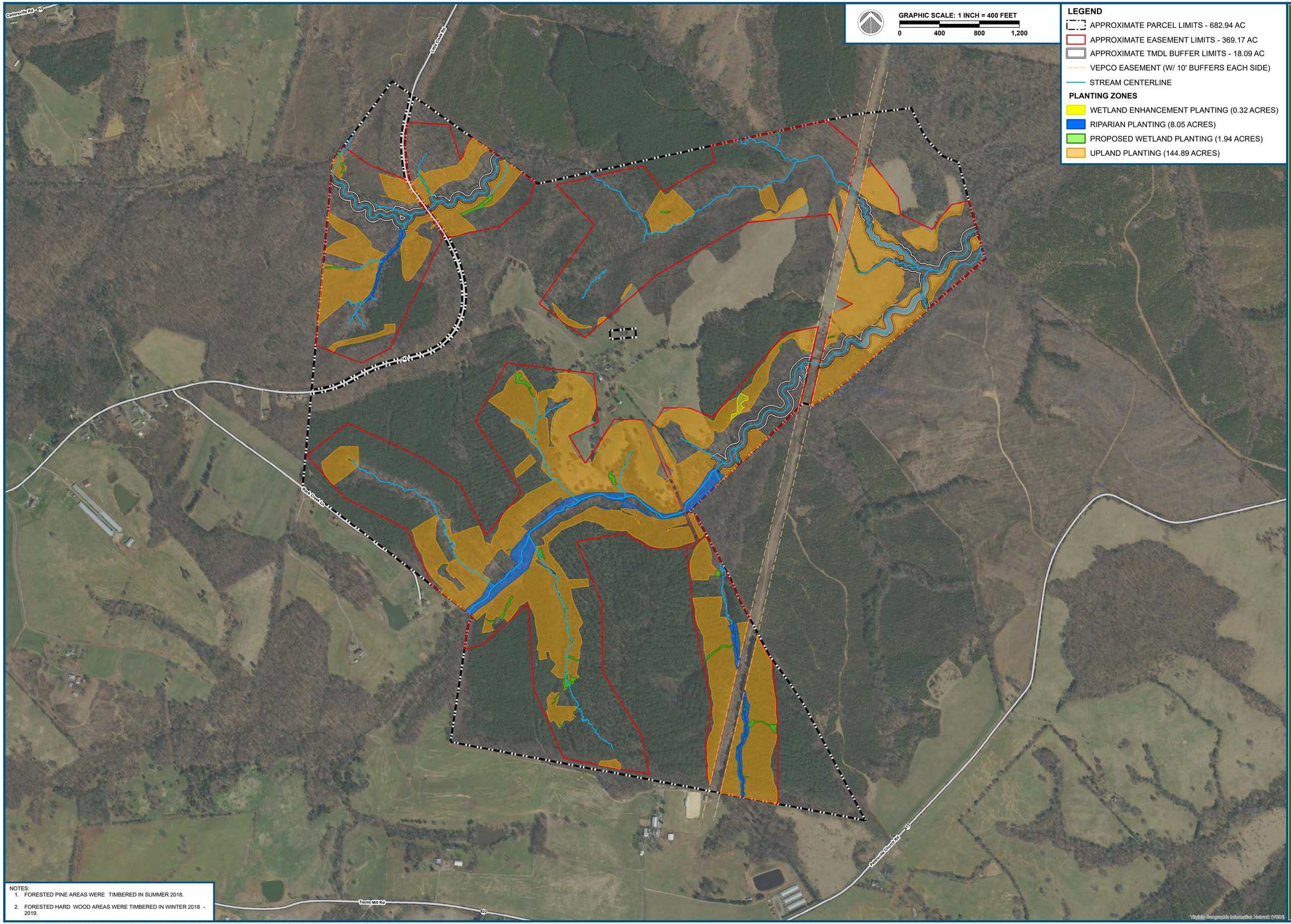
GREEN RIDGE RECYCLING & DISPOSAL STREAM MITIGATION

BUCKINGHAM COUNTY, VIRGINIA

STAMP/SEAL:

REVISIONS:

PROJECT MANAGER:	RA
DESIGNED:	BCLS/LDS
DRAWN:	BCLS/LDS
JOB NUMBER:	102528
DESIGN TYPE:	CONCEPT
DATE:	4/15/2022
SHEET NO:	10 OF 12



NOTES:
1. FORESTED PINE AREAS WERE TIMBERED IN SUMMER 2018.
2. FORESTED HARD WOOD AREAS WERE TIMBERED IN WINTER 2018 - 2019.

res
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GREEN RIDGE RECYCLING & DISPOSAL
STREAM MITIGATION

BOXWOOD FARMS
PLANTING PLAN

BUCKINGHAM COUNTY, VIRGINIA

STAMP/SEAL:

REVISIONS:

PROJECT MANAGER:	RA
DESIGNED:	BCLS
DRAWN:	TD
JOB NUMBER:	102528
DESIGN TYPE:	CONCEPT
DATE:	04/15/2022
REVISIONS:	NONE
SHEET NO:	11 OF 12

PLANTING SPECIFICATIONS

THE PLANTING SHOULD BE COMPLETED ACCORDING TO THE PLANS AND SPECIFICATIONS PROVIDED. PLANTS AND SEEDS SHALL BE OBTAINED FROM A COMMERCIAL SUPPLIER. THE CONTRACTOR SHALL MAKE ARRANGEMENTS WITH RELIABLE SOURCES TO ENSURE THAT AN ADEQUATE SUPPLY OF THE REQUIRED PLANT AND SEED MATERIAL IS AVAILABLE. IN THE EVENT THAT A PLANT OR SEED SPECIFIED IS NOT COMMERCIALLY AVAILABLE, THE CONTRACTOR MAY REQUEST A SUBSTITUTION IN WRITING, ALL REQUESTS FOR SUBSTITUTIONS MUST BE MADE AT LEAST ONE (1) MONTH PRIOR TO INSTALLATION AND BE APPROVED BY THE ENGINEER OF RECORD, THEIR ASSIGNEE, AND THE OWNER.

QUALITY:
PLANTS DELIVERED TO THE SITE SHOULD BE BASED ON THE PLANTING SCHEDULE PROVIED IN THE PLANS. ALL PLANT MATERIALS RECEIVED FROM COMMERCIAL SUPPLIERS SHALL CONFORM TO THE CURRENT ISSUE OF THE AMERICAN STANDARD FOR NURSERY STOCK, PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN. ALL PLANT MATERIAL SHALL BE UNIFORMLY SHAPED AND HAVE A VIGOROUS ROOT SYSTEM. THE PLANT MATERIAL SHALL BE HEALTHY, AND FREE OF DEFECTS, DECAY, ABRASIONS OF THE BARK, PLANT DISEASE, INSECT PEST EGGS AND ALL FORMS OF INFESTATIONS. THE PLANT MATERIALS MUST BE FRESH AND FREE OF TRANSPLANT SHOCK OR VISIBLE WILT. ALL CONTAINER GROWN STOCK SHALL HAVE BEEN PROPAGATED IN A CONTAINER LARGE ENOUGH FOR THE ROOTS TO HAVE DEVELOPED SUFFICIENTLY TO HOLD ITS SOIL WHEN REMOVED FROM THE CONTAINER. CONTAINER STOCK WITH POORLY DEVELOPED ROOTS IS UNACCEPTABLE AND WILL BE REJECTED.

PLANTS SHOULD BE OBTAINED FROM HARDINESS ZONES SIMILAR TO THOSE FOUND AT THE PROJECT SITE (ZONES 7).

PRODUCT HANDLING, STORAGE, AND DELIVERY:
HANDLE PLANTS AT ALL TIMES SO THAT THE ROOTS OR BALLS ARE ADEQUATELY PROTECTED FROM BREAKAGE, DIRECT SUN, WARM AIR, AND DRYING WINDS. POTTED PLANTS SHOULD BE WATERED FREQUENTLY TO KEEP SOIL MOIST. PLANTS WITH DRIED OUT TOPS OR ROOTS SHALL BE REJECTED. ALL PLANT MATERIAL SHALL BE TRANSPORTED AND STORED TO PREVENT ANY PHYSICAL DAMAGE, AND AT THE NECESSARY INTERVALS MINIMIZE STORAGE AND TO MAINTAIN PROPER CULTIVATION PRACTICES.

INSTALLATION/PLANTING:
SHRUBS & TREES SHOULD BE PLANTED IN THE LOCATIONS SHOWN ON THE PLANTING PLAN. QUANTITY AND TYPES OF PLANTS SHALL BE PLANTED PER THE PLANTING SCHEDULE & PLAN. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING ALL PLANT MATERIAL IN THE APPROPRIATE PLANTING SEASON, NO SEEDING OR PLANTING SHALL OCCUR WHEN THE SOIL IS FROZEN, OR THE SITE IS FLOODED.

THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING ALL PLANT MATERIAL IN THE APPROPRIATE SEASON FOR EACH PLANT TYPE. THE PLANTING SEASON FOR THE TREES AND SHRUBS SHALL BE FROM NOVEMBER 15 THROUGH DECEMBER 31 AND FEBRUARY 1 THROUGH APRIL 15. FOR LIVE STAKES THE INSTALLATION PERIOD SHALL BE NOVEMEBER 15 THROUGH DECEMBER 15 AND FEBRUARY 1 THROUGH APRIL 1. THE PLANTING SEASON FOR THE HERBACEOUS PLANTS SHALL BE APRIL 15 THROUGH JUNE 15 OR SEPTEMBER 1 THROUGH OCTOBER 15.

ALL CONTAINERIZED AND BAREROOT PLANTS SHALL BE SET STRAIGHT OR PLUMB FOR AN UPRIGHT GROWTH PATTERN. LIVESTAKES SHALL BE SET AT A 45 DEGREE, POINTING DOWNSTREAM, TO THE BANK. THE PLANTING HOLES SHALL BE BACKFILLED WITH THE SAME SOIL THAT WAS EXCAVATED FROM THE HOLE AFTER REMOVING ALL STONES, ROOTS, AND OTHER DEBRIS GREATER THAN 1.5 INCHES IN DIAMETER. AFTER BACKFILLING THE HOLE, ALL PLANTED SPECIES SHOULD BE WATERED TO THE POINT OF SOIL SATURATION IF NOT PLANTED IN AN EXISTING WET CONDITION.

DURING PLANTING THE CONTRACTOR SHALL WATER EACH PLANT WITH THE FOLLOWING MINIMUM QUANTITIES OF WATER, UNLESS OWNER DETERMINES THERE IS SUFFICIENT SOIL MOISTURE ON SITE:

TREES	1 GALLON OF WATER
SHRUBS	1 GALLON OF WATER
PLUGS	1 PINT OF WATER

THE CONTRACTOR SHALL GUARANTEE AND MAINTAIN ALL PLANT MATERIALS FOR A PERIOD OF ONE YEAR AFTER DATE OF ACCEPTANCE OF FINISHED PLANTING.

STREAM BANK PLANTING

(BELOW TOP OF BANK)

LINEAR FEET OF CHANNEL	***2850***
PLANTS PER LINEAR FOOT	***0.75***
TOTAL PLANTS	***2138***

SCIENTIFIC NAME	*COMMON NAME*	*INDICATOR STATUS*	*SIZE*	*STOCK*	*%*	*QUANTITY*
Platanus occidentalis	*American sycamore*	*FACW*	*2-3'*	*Livestakes*	*25%*	*535*
Cephalanthus occidentalis	*Buttonbush*	*OBL*	*2-3'*	*Livestakes*	*25%*	*535*
Cornus amomum	*Silky dogwood*	*FACW*	*2-3'*	*Livestakes*	*25%*	*535*
Salix nigra	*Black Willow*	*OBL*	*2-3'*	*Livestakes*	*25%*	*535*
					100%	***2,140***

Note: Stream bank plantings shall be installed below top of bank, where coir matting is placed along banks

WETLAND/ FLOODPLAIN PLANTING

ACRES	***10.5***
PLANTS PER ACRE	***600***
TOTAL PLANTS	***6,300***

SCIENTIFIC NAME	*COMMON NAME*	*INDICATOR STATUS*	*SIZE*	*SOLAR PREFERENCE*	*STOCK*	*%*	*QUANTITY*
CANOPY (75%)							
Acer negundo	*Box elder*	*FAC*	*8-12"*	*S,P*	*Bareroot*	*15%*	*945*
Acer rubrum	*Red maple*	*FAC*	*8-12"*	*S,P*	*Bareroot*	*5%*	*315*
Betula nigra	*River birch*	*FACW*	*8-12"*	*S,P,F*	*Bareroot*	*5%*	*315*
Carpinus caroliniana	*American hornbeam*	*FAC*	*8-12"*	*S,P,F*	*Bareroot*	*5%*	*315*
Juglans nigra	*Black walnut*	*FACU*	*8-12"*	*S,P,F*	*Bareroot*	*10%*	*630*
Liriodendron tulipifera	*Tulip poplar*	*FACU*	*8-12"*	*P,F*	*Bareroot*	*10%*	*630*
Platanus occidentalis	*American sycamore*	*FACW*	*8-12"*	*P,F*	*Bareroot*	*15%*	*945*
Quercus palustris	*Pin oak*	*FACW*	*8-12"*	*P,F*	*Bareroot*	*5%*	*315*
Ulmus rubra	*Slippery Elm*	*FAC*	*8-12"*	*S,P,F*	*Bareroot*	*5%*	*315*
UNDERSTORY/SHRUB (25%)							
Asimina triloba	*PawPaw*	*FAC*	*8-12"*	*S,P*	*Bareroot*	*5%*	*315*
Cephalanthus occidentalis	*Buttonbush*	*OBL*	*8-12"*	*P,F*	*Bareroot*	*5%*	*315*
Lindera benzoin	*Spicebush*	*FAC*	*8-12"*	*S,P*	*Bareroot*	*5%*	*315*
Sambucus nigra	*Black Elderberry*	*FAC*	*8-12"*	*P,F*	*Bareroot*	*5%*	*315*
Viburnum dentatum	*Arrowwood viburnum*	*FACW*	*8-12"*	*P,F*	*Bareroot*	*5%*	*315*
						100%	***6,300***

UPLAND PLANTING

ACRES	***145***
PLANTS PER ACRE	***600***
TOTAL PLANTS	***87,000***

SCIENTIFIC NAME	*COMMON NAME*	*INDICATOR STATUS*	*SOLAR PREFERENCE*	*SIZE*	*STOCK*	*%*	*QUANTITY*
CANOPY (80%)							
Acer rubrum	*Red maple*	*FAC*	*S,P*	*8-12"*	*Bareroot*	*10%*	*8,700*
Liquidambar styraciflua	*Sweetgum*	*FAC*	*P,F*	*8-12"*	*Bareroot*	*10%*	*8,700*
Nyssa sylvatica	*Black tupelo*	*FAC*	*P,F*	*8-12"*	*Bareroot*	*10%*	*8,700*
Quercus bicolor	*Swamp white oak*	*FACW*	*P,F*	*8-12"*	*Bareroot*	*15%*	*13,050*
Quercus falcata	*Southern red oak*	*FACU*	*F*	*8-12"*	*Bareroot*	*15%*	*13,050*
Quercus palustris	*Pin oak*	*FACW*	*P,F*	*8-12"*	*Bareroot*	*15%*	*13,050*
Juniperus virginiana	*Eastern redcedar*	*FACU*	*P,F*	*8-12"*	*Bareroot*	*15%*	*13,050*
UNDERSTORY/SHRUB (15%)							
Cercis canadensis	*Eastern redbud*	*UPL*	*P,F*	*8-12"*	*Bareroot*	*5%*	*4,350*
Carpinus caroliniana	*Ironwood*	*FAC*	*S,P,F*	*8-12"*	*Bareroot*	*5%*	*4,350*
Salix humilis	*Prairie willow*	*FACU*	*F*	*8-12"*	*Bareroot*	*5%*	
						100%	***87,000***

S= SHADE, P=PARTIAL, F=FULL

FLOODPLAIN SEED MIX

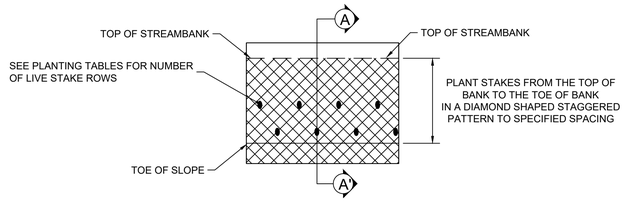
ACRES	***10.5***
POUNDS PER ACRE	***10***
TOTAL POUND	***105***

SCIENTIFIC NAME	*COMMON NAME*	*SOLAR PREFERENCE*	*INDICATOR STATUS*	*%*
Grasses (42.1%)/Sedges (46.9%)				
Carex lurida	*Lurid Sedge*	*P,F*	*OBL*	*5.0%*
Carex vulpinoidea	*Fox Sedge*	*P,F*	*OBL*	*16.9%*
Carex lupulina. PA Ecotype	*Hop Sedge*	*P,F*	*OBL*	*5.0%*
Elymus virginicus	*Virginia Wildrye*	*S*	*FACW*	*20.0%*
Juncus effusus	*Common Sedge*	*F*	*OBL*	*20.0%*
Panicum rigidulum, PA Ecotype	*Redtop Panicgrass*	*F*	*FACW*	*20.0%*
Juncus tenuis, NC Ecotype	*path Rush*	*P,F*	*FACW*	*2.0%*
Scirpus cyperinus, Coastal Plain NC Ecotype	*Woolgrass*	*P,F*	*FACW*	*0.1%*
Forbs (11%)				
Helenium autumnale, Northern VA Ecotype	*Common Sneezeweed*	*F*	*FACW*	*1.0%*
Helenium flexuosum, VA Ecotype	*Purplehead Sneezeweed*	*F*	*FAC*	*5.0%*
Eupatorium perfoliatum, PA Ecotype	*Boneset*	*P,F*	*FACW*	*5.0%*
Veronia noveboracensis, PA Ecotype	*New York Ironweed*	*P,F*	*FACW*	*5.0%*
				100.0%

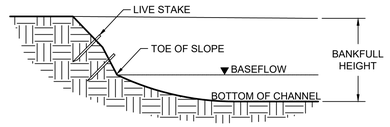
UPLAND SEED MIX

ACRES	***145***
POUNDS PER ACRE	***15***
TOTAL POUND	***2175***

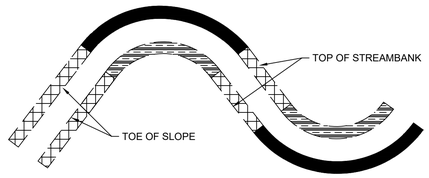
SCIENTIFIC NAME	*COMMON NAME*	*SOLAR PREFERENCE*	*INDICATOR STATUS*	*%*
Grasses(89.5%)				
Sorghastrum nutans, PA Ecotype	*Indiangrass*	*F*	*FACU*	*5.0%*
Panicum rigidulum, Coastal Plain NC Ecotype	*Broomsedge*	*F*	*FACU*	*5.0%*
Chasmanthium latifolium, WV Ecotype	*River Oats*	*S*	*FACU*	*15.0%*
Elymus virginicus	*VA Wildrye*	*S*	*FACW*	*15.0%*
Panicum clandestinum	*Deertongue*	*F*	*FAC*	*14.5%*
Schizachyrium scoparium	*Little Bluestem*	*F*	*FACU*	*25.0%*
Forbs (10.5%)				
Rubeckia hirta	*Black Eyed Susan*	*F*	*FACU*	*0.5%*
Eupatorium perfoliatum, PA Ecotype	*Boneset*	*P,F*	*FACW*	*2.0%*
Chamaecrista nictitans, NC Ecotype	*Sensitive pea*	*F*	*FACU*	*1.0%*
Chamaecrista fasciculata	*Partridge Pea*	*S*	*FACU*	*3.0%*
Helenium autumnale, Northern VA Ecotype	*Common Sneezeweed*	*F*	*FACW*	*3.0%*
Helenium flexuosum, VA Ecotype	*Purplehead sneezeweed*	*F*	*FAC*	*1.0%*
Vernonia noveboracensis, PA Ecotype	*New York Ironweed*	*P,F*	*FACW*	*10.0%*
				100.0%



PLAN VIEW



SECTION A-A'

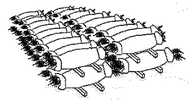


LIVE STAKE SPACING PLAN VIEW

INNER BEND SPACING PER PLANTING TABLE
RIFFLE SPACING PER PLANTING TABLE
OUTER BEND SPACING PER PLANTING TABLE

LIVE STAKE LAYOUT
NOT TO SCALE

PLANTING BARE-ROOTED SEEDLLINGS



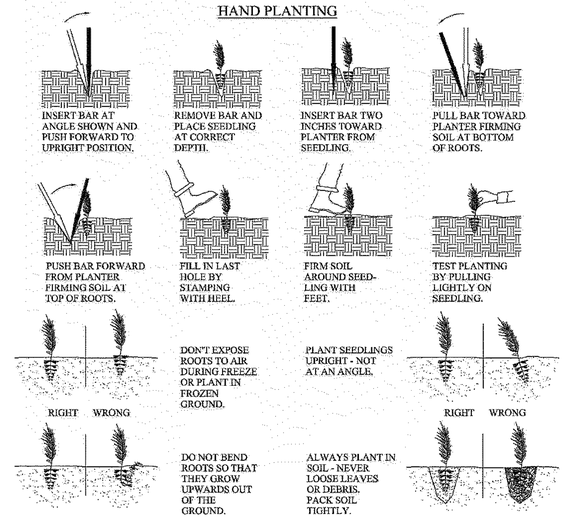
CARE OF SEEDLINGS UNTIL PLANTED

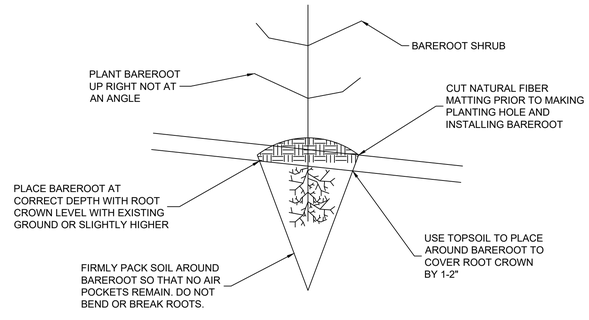
SEEDLINGS SHOULD BE PLANTED IMMEDIATELY. IF IT IS NECESSARY TO STORE MOSS PACKED SEEDLINGS FOR MORE THAN 2 WEEKS, ONE PINT OF WATER PER PKG. SHOULD BE ADDED. IF CLAY-TREATED, DO NOT ADD WATER TO PKG. PACKAGES MUST BE SEPERATED TO PROVIDE VENTILATION TO PREVENT "HEATING". SEPARATE PACKAGES WITH WOOD STRIPS AND STORE OUT OF THE WIND IN A SHADED, COOL (NOT FREEZING) LOCATION.

CARE OF SEEDLINGS DURING PLANTING

WHEN PLANTING, ROOTS MUST BE KEPT MOIST UNTIL TREES ARE IN THE GROUND. DO NOT CARRY SEEDLINGS IN YOUR HAND EXPOSED TO THE AIR AND SUN. KEEP MOSS-PACKED SEEDLINGS IN A CONTAINER PACKED WITH WET MOSS OR FILLED WITH THICK MUDDY WATER. COVER CLAY-TREATED SEEDLINGS WITH WET BURLAP ONLY.

HAND PLANTING





BARE-ROOT PLANTING
NOT TO SCALE

HGS, LLC. A RES COMPANY
1408 ROSENEATH ROAD,SUITE B, RICHMOND, VIRGINIA 23230
P: 804.353.6017
WWW.RES.US

GREEN RIDGE RECYCLING & DISPOSAL STREAM MITIGATION

PLANTING NOTES, SCHEDULES & DETAILS

BUCKINGHAM COUNTY, VIRGINIA

STAMP/SEAL:

30% DESIGN REVIEW
x ---- Signature Date

PERMIT PLAN DESIGN REVIEW
x ---- Signature Date

CONSTRUCTION PLAN REVIEW
x ---- Signature Date

REVISIONS:

PROJECT MANAGER:	RA
DESIGNED:	BCLS/LDS
DRAWN:	BCLS/LDS
JOB NUMBER:	102528
DESIGN TYPE:	CONCEPT
DATE:	4/15/2022
SHEET NO:	12 OF 12

Attachment D

Delineation Report and Mapping

Wetland Delineation Report Site Information Summary
Boxwood Farm Site 404
1928 Little Creek Road
Tax Parcel 84-34 (683.42 Acres),
Buckingham County, Virginia

Date
December 18, 2020

Latitude/ Longitude in Decimal Degrees using coordinate plane (NAD 1983)
-78.328 / 37.611

Has a previous delineation or JD been performed? If so please provide USACE Project Number: Adjacent subject area previously delineated (NAO-2020-0076).

Hydrologic Unit Code (HUC)
HUC8- 02080203 (Middle James-Buffalo)

USGS Topographic Sheet
Gold Hill Quadrangle (VA)

Nearest Waterbody (example given)
Randolph Creek, a Nontidal system flowing northeast, lies approximately 100 ft from the southern boundary of the subject parcel, and its associated tributaries are within the subject parcel.
Little Creek, a Nontidal system flowing east, lies approximately 100 feet north of the subject parcel, and its associated tributaries are within the subject parcel.

Delineation Methods
Delineation methods were based on the *Corps of Engineers Wetland Delineation Manual (*U.S. Army Corps of Engineers, 1987) in conjunction with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Version 2*.0 (U.S. Army Corps of Engineers, 2020). The wetland indicator status for each species was determined from the *2016 National Wetland Plant List, version 3.3* (U.S. Army Corps of Engineers, 2016).

On-Site Investigation Date
Wetland boundary delineation and site data collection conducted from June to September 2020.

Wetland Delineation Plan
The proposed wetland boundaries and Data Sampling Point locations are depicted on the plan entitled “Waters of the US Wetland Delineation” prepared by RES on October 29, 2020.

Wetland Investigation Results (Examples given, this is a summary of totals, please also provide a table with each individual water, Cowardin classification, and area shown. See table at end of questionnaire.)

Wetlands: Approximately 7.48 acres of non-tidal wetlands were identified within the 252.89-acre parcel during this investigation. Of the total proposed wetland area, approximately 4.48 acres are palustrine forested (PFO) wetlands, 2.24 acres are palustrine emergent (PEM) wetlands, and 0.76 acres are palustrine scrub shrub wetlands. For more detailed information about these wetlands, see the Data Points provided in Appendix C.

Stream Channels: Approximately 15,339 linear feet of the subject parcel were classified as stream channels with a bed and bank and the presence of an ordinary high-water mark. Of the total stream channel, approximately 1,925 LF are ephemeral (R6) streams, 9,536 LF are intermittent (R4) streams, and 3,878 LF are perennial (R3) streams. See the waters table at the end of this summary for more detailed information on each stream.

Other Waters: No other waters were identified onsite.

Water bodies onsite identified as Section 10: No Section 10 water onsite.

Uplands: Approximately 244.22 acres of the subject parcel were classified as uplands, as described by the Data Points provided in Appendix C. Representative site photos are provided in Appendix D.

100-Year Floodplains
As depicted on the Federal Emergency Management Agency's (FEMA) on-line Flood Insurance Rate Map #51029C0325B, effective date 06/17/2008 the subject property lies within the 100-year floodplain (Zone A).

National Wetlands Inventory
The on-line National Wetland Inventory (Figure 6, Appendix A) identifies wetlands within the subject property.

USDA Soil Survey
The on-line USDA Natural Resource Conservation Service Soil Survey (Figure 7, Appendix A) identifies 15 soil complexes across the site ranging from well drained to poorly drained soils. The majority of the site includes well drained Oak Level-Siloam complex (30C/30D) throughout the subject property (approximately 68.7% of the site), moderately well drained Halifax-Delanco complex (approximately 5.1% of the site), and somewhat poorly drained Codorus-Hatboro complex (approximately 9.8% of the site) at the lowest elevations of the site. The soils on-site found on the Virginia Hydric Soils List include Banister fine sandy loam, Codorus-Hatboro complex, Grassland-Delanco complex, Halifax-Delanco complex, and Hatboro loam.

Notes:
The site property has portions that have been timbered within the past 3 years.

Wetland Table:

Wetland	Latitude	Longitude	Cowardin Class	Area (Acres)	Class of aquatic resource (Tidal/Non-tidal, Section 10/404)
104a	37.61531	-78.317869	Palustrine Forested (PFO) Wetland	0.016334	Non-tidal Section 404
104b	37.61488	-78.317636	Palustrine Emergent (PEM) Wetland	0.071011	Non-tidal Section 404
104c	37.613406	-78.317129	Palustrine Emergent (PEM) Wetland	0.093296	Non-tidal Section 404
10a	37.615926	-78.33471	Palustrine Forested (PFO) Wetland	0.119838	Non-tidal Section 404
10b	37.615359	-78.33393	Palustrine Forested (PFO) Wetland	0.040115	Non-tidal Section 404
20	37.614371	-78.313546	Palustrine Emergent (PEM) Wetland	0.001969	Non-tidal Section 404
29A	37.615753	-78.321534	Palustrine Emergent (PEM) Wetland	0.001103	Non-tidal Section 404
2C	37.615008	-78.335147	Palustrine Forested (PFO) Wetland	0.040326	Non-tidal Section 404
33	37.613879	-78.324517	Palustrine Forested (PFO) Wetland	0.029051	Non-tidal Section 404
5	37.615555	-78.331151	Palustrine Emergent (PEM) Wetland	0.01924	Non-tidal Section 404
D1	37.616048	-78.335194	Palustrine Emergent (PEM) Wetland	0.000992	Non-tidal Section 404
E1	37.613367	-78.316339	Palustrine Emergent (PEM) Wetland	0.004002	Non-tidal Section 404
F1	37.613472	-78.315879	Palustrine Emergent (PEM) Wetland	0.00085	Non-tidal Section 404
G10	37.614823	-78.323708	Palustrine Forested (PFO) Wetland	0.029415	Non-tidal Section 404
G11a	37.616563	-78.31991	Palustrine Emergent (PEM) Wetland	0.002156	Non-tidal Section 404
G11b	37.616683	-78.320164	Palustrine Emergent (PEM) Wetland	0.004991	Non-tidal Section 404
G14	37.613709	-78.324191	Palustrine Forested (PFO) Wetland	0.022513	Non-tidal Section 404
G2	37.616456	-78.334956	Palustrine Forested (PFO) Wetland	0.01649	Non-tidal Section 404
G39	37.613318	-78.335076	Palustrine Forested (PFO) Wetland	0.074541	Non-tidal Section 404
G4	37.612353	-78.334212	Palustrine Forested (PFO) Wetland	0.005853	Non-tidal Section 404

G5	37.611817	-78.33421	Palustrine Forested (PFO) Wetland	0.019081	Non-tidal Section 404
H1	37.608688	-78.323397	Palustrine Emergent (PEM) Wetland	0.035233	Non-tidal Section 404
K60a	37.607307	-78.333117	Palustrine Emergent (PEM) Wetland	0.008564	Non-tidal Section 404
K61	37.606483	-78.331552	Palustrine Emergent (PEM) Wetland	0.005101	Non-tidal Section 404
K62	37.606634	-78.331747	Palustrine Emergent (PEM) Wetland	0.010993	Non-tidal Section 404
K63	37.607137	-78.332406	Palustrine Emergent (PEM) Wetland	0.015783	Non-tidal Section 404
K64	37.60721	-78.332442	Palustrine Emergent (PEM) Wetland	0.006377	Non-tidal Section 404
K70	37.607969	-78.334481	Palustrine Forested (PFO) Wetland	0.002481	Non-tidal Section 404
K71	37.60802	-78.334627	Palustrine Forested (PFO) Wetland	0.003371	Non-tidal Section 404
L3	37.607488	-78.325549	Palustrine Emergent (PEM) Wetland	0.119349	Non-tidal Section 404
LaB3	37.610977	-78.318919	Palustrine Scrub Shrub (PSS) Wetland	0.006974	Non-tidal Section 404
LaB4	37.610808	-78.31951	Palustrine Forested (PFO) Wetland	0.952017	Non-tidal Section 404
LaB5	37.611363	-78.318016	Palustrine Scrub Shrub (PSS) Wetland	0.00761	Non-tidal Section 404
LaB5	37.611386	-78.317883	Palustrine Emergent (PEM) Wetland	0.00247	Non-tidal Section 404
M1a	37.604554	-78.32178	Palustrine Emergent (PEM) Wetland	0.724221	Non-tidal Section 404
M1b	37.603698	-78.321485	Palustrine Emergent (PEM) Wetland	0.030196	Non-tidal Section 404
M1c	37.603225	-78.321286	Palustrine Emergent (PEM) Wetland	0.021283	Non-tidal Section 404
M1d	37.601166	-78.32098	Palustrine Emergent (PEM) Wetland	0.054122	Non-tidal Section 404
M1e	37.600643	-78.32096	Palustrine Emergent (PEM) Wetland	0.002758	Non-tidal Section 404
M1f	37.600491	-78.320947	Palustrine Emergent (PEM) Wetland	0.003524	Non-tidal Section 404
M1g	37.59981	-78.321253	Palustrine Emergent (PEM) Wetland	0.004935	Non-tidal Section 404
M1h	37.599644	-78.321169	Palustrine Emergent (PEM) Wetland	0.007407	Non-tidal Section 404
M1i	37.599976	-78.321173	Palustrine Emergent (PEM) Wetland	0.000523	Non-tidal Section 404

M1J	37.599262	-78.321006	Palustrine Emergent (PEM) Wetland	0.011054	Non-tidal Section 404
M1k	37.599421	-78.321152	Palustrine Emergent (PEM) Wetland	0.007235	Non-tidal Section 404
M1l	37.598821	-78.321043	Palustrine Emergent (PEM) Wetland	0.003244	Non-tidal Section 404
M1m	37.60274	-78.321896	Palustrine Emergent (PEM) Wetland	0.117054	Non-tidal Section 404
M1n	37.60354	-78.321473	Palustrine Emergent (PEM) Wetland	0.012123	Non-tidal Section 404
M1o	37.600082	-78.321193	Palustrine Emergent (PEM) Wetland	0.001559	Non-tidal Section 404
M2a	37.605406	-78.328032	Palustrine Forested (PFO) Wetland	0.092599	Non-tidal Section 404
M2b	37.604747	-78.327455	Palustrine Emergent (PEM) Wetland	0.000725	Non-tidal Section 404
M2c	37.604343	-78.327413	Palustrine Emergent (PEM) Wetland	0.000295	Non-tidal Section 404
M2d	37.604215	-78.327379	Palustrine Emergent (PEM) Wetland	0.001758	Non-tidal Section 404
M2e	37.60382	-78.327171	Palustrine Emergent (PEM) Wetland	0.017093	Non-tidal Section 404
M2f	37.603473	-78.327125	Palustrine Emergent (PEM) Wetland	0.001768	Non-tidal Section 404
M2g	37.603295	-78.327086	Palustrine Emergent (PEM) Wetland	0.00334	Non-tidal Section 404
M2h	37.603021	-78.326984	Palustrine Emergent (PEM) Wetland	0.010458	Non-tidal Section 404
M2i	37.602459	-78.326558	Palustrine Emergent (PEM) Wetland	0.137033	Non-tidal Section 404
M2j	37.602136	-78.32716	Palustrine Forested (PFO) Wetland	0.007848	Non-tidal Section 404
M2k	37.602553	-78.327102	Palustrine Emergent (PEM) Wetland	0.000892	Non-tidal Section 404
M2l	37.60071	-78.327066	Palustrine Forested (PFO) Wetland	0.235148	Non-tidal Section 404
M2M	37.60104	-78.32661	Palustrine Emergent (PEM) Wetland	0.011162	Non-tidal Section 404
M2M	37.599837	-78.325395	Palustrine Forested (PFO) Wetland	0.045906	Non-tidal Section 404
M2N	37.600779	-78.326455	Palustrine Emergent (PEM) Wetland	0.041277	Non-tidal Section 404
M2O	37.603718	-78.329401	Palustrine Forested (PFO) Wetland	0.249201	Non-tidal Section 404
M4	37.60552	-78.329139	Palustrine Forested (PFO) Wetland	0.004568	Non-tidal Section 404

M4	37.601778	-78.327187	Palustrine Forested (PFO) Wetland	0.189431	Non-tidal Section 404
Mk	37.601912	-78.326713	Palustrine Emergent (PEM) Wetland	0.14007	Non-tidal Section 404
Mk	37.600676	-78.320337	Palustrine Emergent (PEM) Wetland	0.211717	Non-tidal Section 404
Ml	37.601451	-78.326923	Palustrine Emergent (PEM) Wetland	0.00504	Non-tidal Section 404
S1	37.614783	-78.330192	Palustrine Forested (PFO) Wetland	0.731545	Non-tidal Section 404
S10	37.607859	-78.325115	Palustrine Emergent (PEM) Wetland	0.000795	Non-tidal Section 404
S11	37.614622	-78.325686	Palustrine Forested (PFO) Wetland	1.537009	Non-tidal Section 404
S14	37.609383	-78.327664	Palustrine Emergent (PEM) Wetland	0.014845	Non-tidal Section 404
S16	37.614555	-78.325894	Palustrine Scrub Shrub (PSS) Wetland	0.020628	Non-tidal Section 404
S1a	37.609387	-78.321194	Palustrine Scrub Shrub (PSS) Wetland	0.42973	Non-tidal Section 404
S4	37.616259	-78.332072	Palustrine Scrub Shrub (PSS) Wetland	0.293167	Non-tidal Section 404
S5	37.608186	-78.324915	Palustrine Emergent (PEM) Wetland	0.00684	Non-tidal Section 404
S7	37.60883	-78.328401	Palustrine Forested (PFO) Wetland	0.003479	Non-tidal Section 404
S8a	37.608574	-78.328211	Palustrine Emergent (PEM) Wetland	0.002771	Non-tidal Section 404
S8b	37.608748	-78.328322	Palustrine Forested (PFO) Wetland	0.007934	Non-tidal Section 404
S8c	37.608747	-78.328241	Palustrine Forested (PFO) Wetland	0.00193	Non-tidal Section 404
S8d	37.610158	-78.328652	Palustrine Emergent (PEM) Wetland	0.21704	Non-tidal Section 404
S8e	37.607844	-78.327863	Palustrine Emergent (PEM) Wetland	0.002401	Non-tidal Section 404
S9	37.607566	-78.325278	Palustrine Emergent (PEM) Wetland	0.000489	Non-tidal Section 404
V2	37.609194	-78.328031	Palustrine Emergent (PEM) Wetland	0.006906	Non-tidal Section 404

Stream Table:

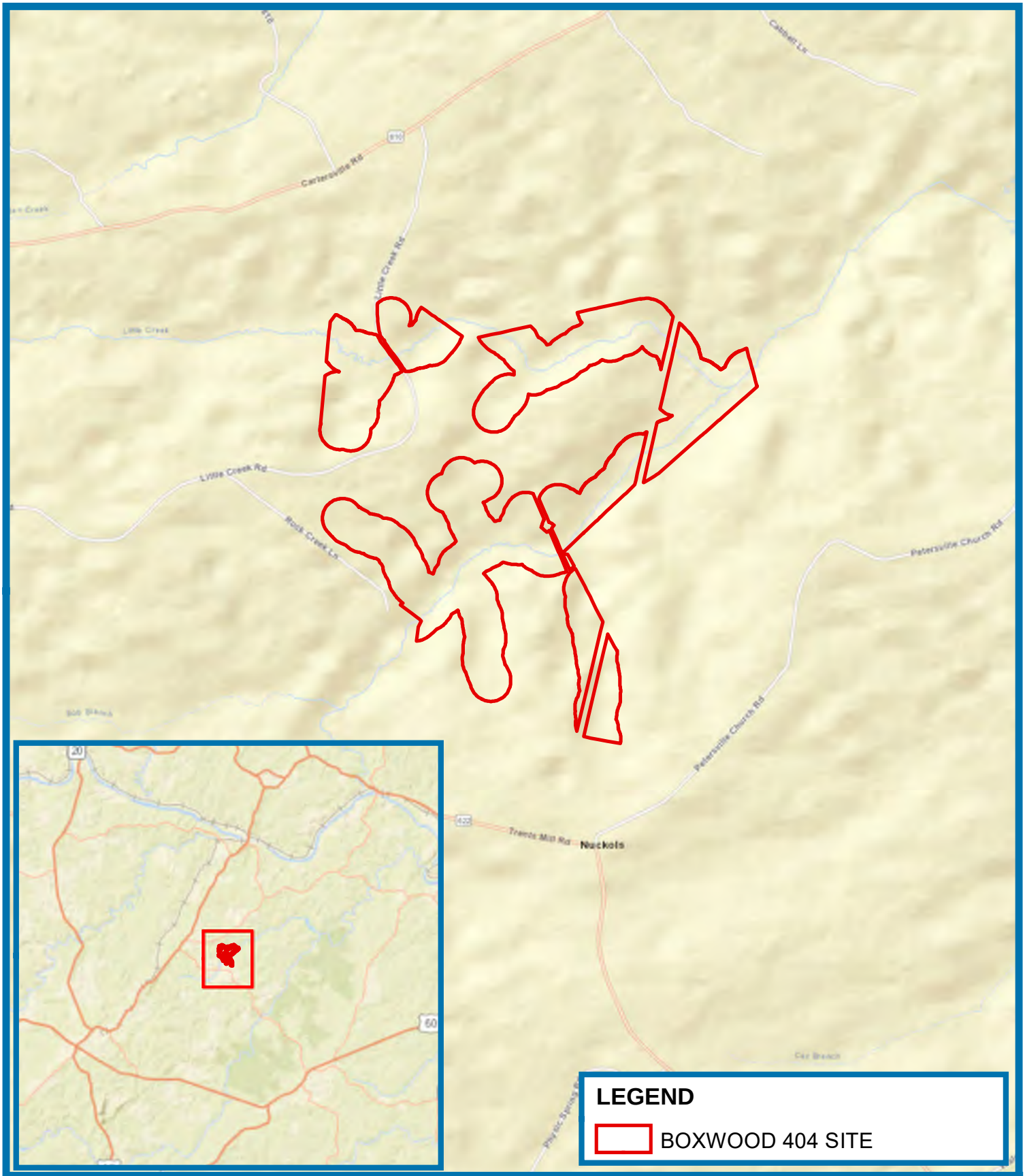
Waters	Latitude	Longitude	Cowardin Class	Length (Linear Feet)	Class of aquatic resource (Tidal/Non-tidal, Section 10/404)
A1	37.614955	-78.333289	Intermittent Stream (R4)	111.497274	None
B1	37.613403	-78.316228	Intermittent Stream (R4)	503.507842	None
C1	37.608349	-78.322633	Intermittent Stream (R4)	397.542372	None
G1	37.616255	-78.335034	Perennial Stream (R3)	318.637514	None
G11	37.616749	-78.320392	Perennial Stream (R3)	668.80534	None
G12	37.616791	-78.31973	Perennial Stream (R3)	190.184834	None
G3	37.612859	-78.333699	Intermittent Stream (R4)	1292.988362	None
G3a	37.613264	-78.334258	Ephemeral Stream (R6)	252.522589	None
G3a	37.6135	-78.333741	Intermittent Stream (R4)	170.812472	None
G3b	37.612439	-78.333779	Ephemeral Stream (R6)	62.261091	None
G3c	37.612317	-78.33454	Intermittent Stream (R4)	231.160423	None
G3d	37.611964	-78.334354	Intermittent Stream (R4)	83.96547	None
G3d	37.611777	-78.334191	Ephemeral Stream (R6)	109.242024	None
K60	37.607663	-78.334023	Ephemeral Stream (R6)	449.76891	None
K60	37.606221	-78.331341	Intermittent Stream (R4)	1766.503047	None
L1	37.607821	-78.325119	Ephemeral Stream (R6)	399.443444	None
M1a	37.60369	-78.321531	Perennial Stream (R3)	1295.325197	None
M1b	37.59999	-78.321213	Perennial Stream (R3)	1405.11798	None
M1o	37.605067	-78.321807	Intermittent Stream (R4)	70.857168	None
M2	37.602578	-78.327102	Intermittent Stream (R4)	2667.472412	None

S10	37.612697	-78.326367	Ephemeral Stream (R6)	268.5135	None
S10	37.613055	-78.325987	Intermittent Stream (R4)	158.91771	None
S10a	37.613169	-78.325805	Ephemeral Stream (R6)	55.332325	None
S16	37.614311	-78.324988	Ephemeral Stream (R6)	19.607129	None
S3	37.615876	-78.332234	Intermittent Stream (R4)	480.972765	None
S6	37.608245	-78.328025	Intermittent Stream (R4)	1279.697539	None
S7	37.60899	-78.328575	Intermittent Stream (R4)	319.661528	None
V1	37.609401	-78.327611	Ephemeral Stream (R6)	308.584726	None

APPENDIX A

FIGURES

VICINITY MAP, PROJECT LOCATION MAP,
NATIONAL WETLAND INVENTORY MAP, AERIAL IMAGERY, SOILS MAP,
100 YEAR FLOODPLAIN MAP



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P: 713.520.5400
www.res.us

VICINITY MAP

BOXWOOD 404

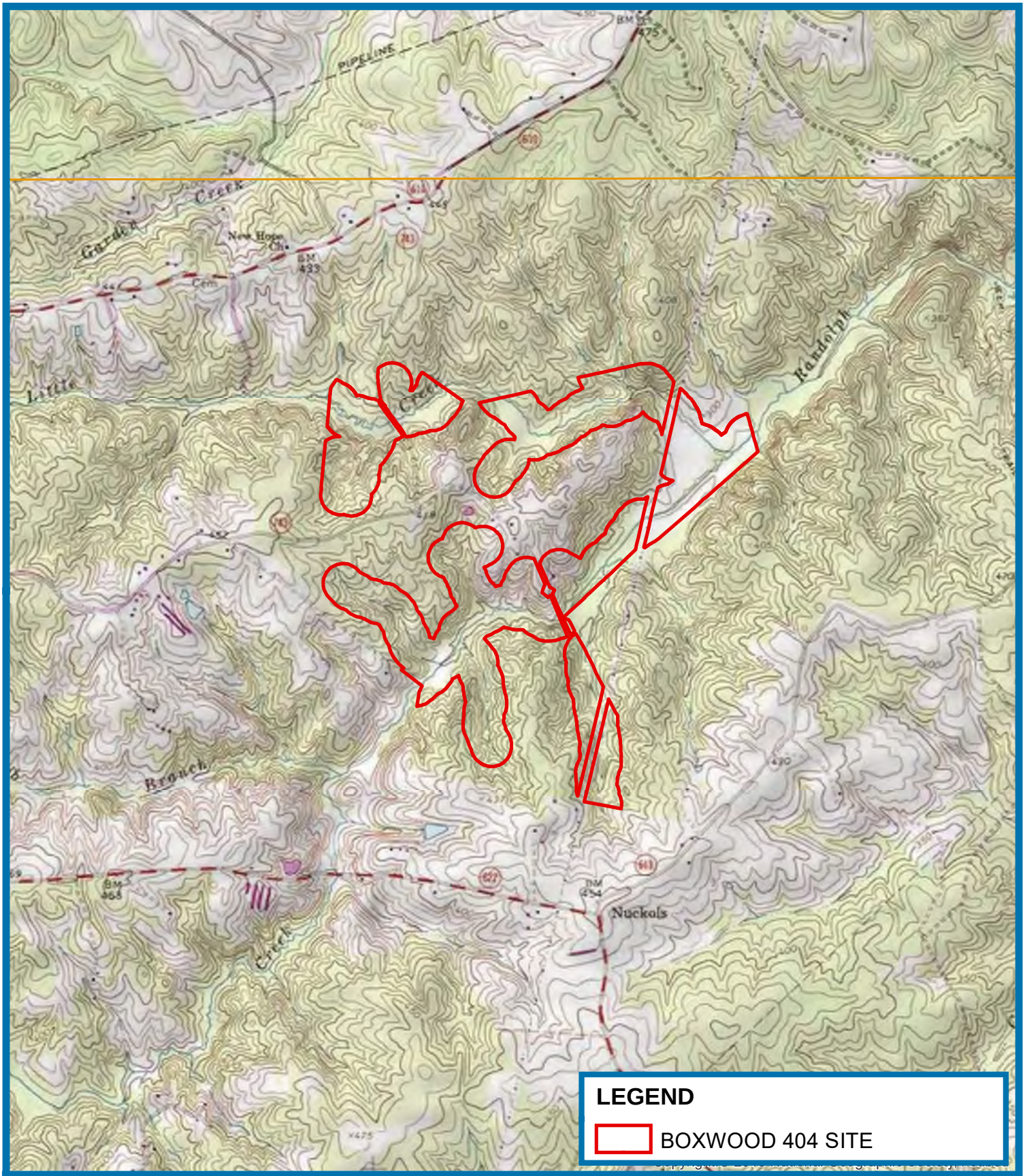
BUCKINGHAM COUNTY, VIRGINIA

Street Map Source:
World Street Map
ESRI ArcGIS Online

N

1 inch = 2,000 feet

Document Path: R:\Resgis\richmondgis\GIS_Work\Active_Jobs\102581_Boxwood_404\maps\102581_Vicinity.mxd - Date Saved: 10/8/2020



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PROJECT LOCATION MAP

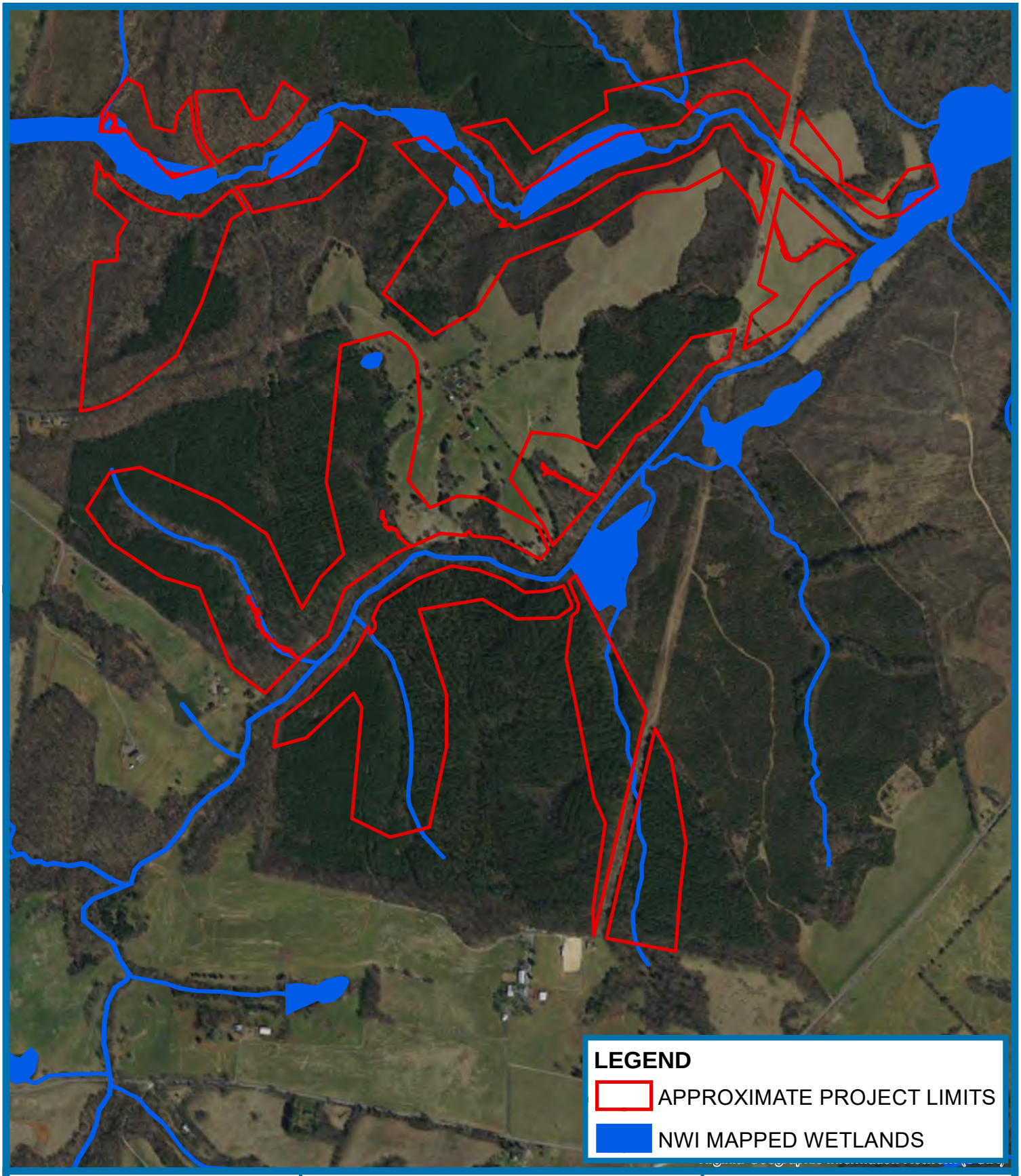
BOXWOOD 404

BUCKINGHAM COUNTY, VIRGINIA

USGS Topo Quads: Gold Hill
Latitude: 37.611
Longitude: -78.328
Approx. Project Area: 334.19 acres
Elevation: 278 - 428 feet
Scale: 1 inch = 2,000 feet
Source: http://resources.arcgis.com/ USA Topo Maps

N

Document Path: R:\Resgis\richmondgis\GIS_Work\Active_Jobs\102581_Boxwood_404\maps\102581_Project_Location.mxd - Date Saved: 10/8/2020



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NATIONAL WETLANDS INVENTORY MAP

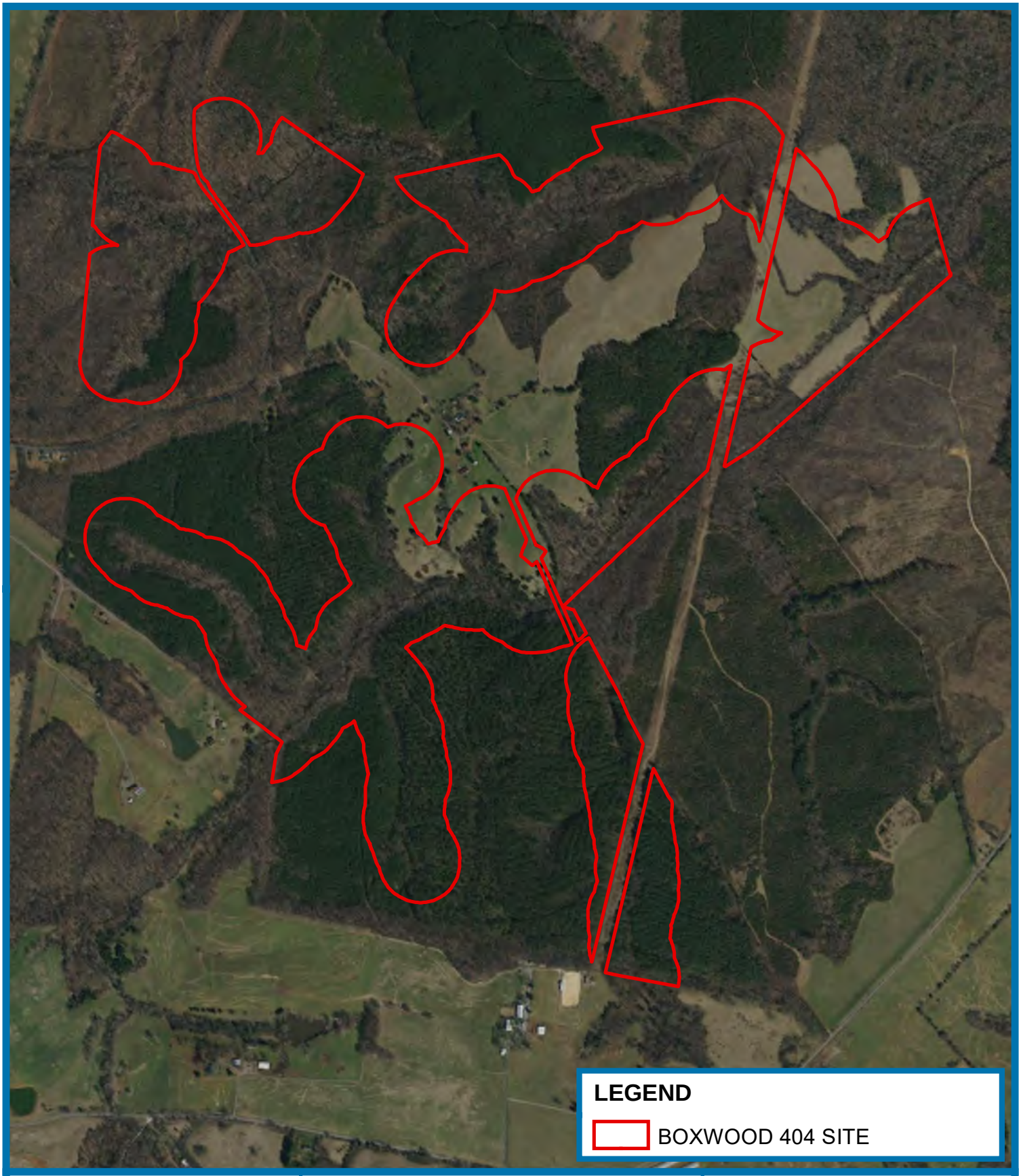
BOXWOOD 404
BUCKINGHAM COUNTY, VIRGINIA

Digital Ortho Photo Source:
VBMP Most Recent Imagery
Virginia Lambert (VGIN)
National Inventory Wetlands (NWI)
Source
http://www.fws.gov/

N

1 inch = 1,000 feet

Document Path: R:\Resgis\richmondgis\GIS_Work\Active_Jobs\6799_Boxwood_404\maps\102581_NWI.mxd - Date Saved: 7/27/2020



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AERIAL IMAGERY

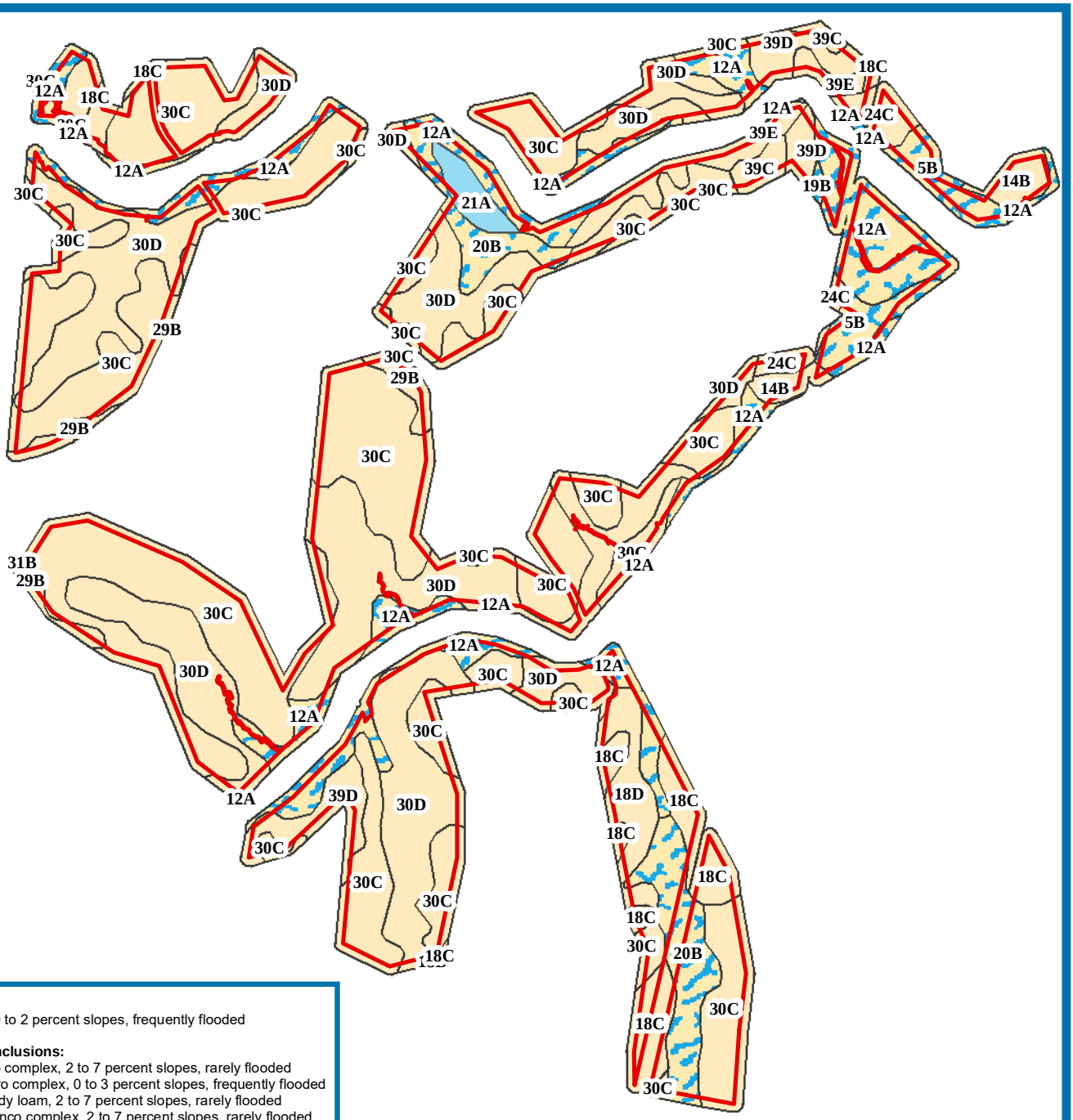
BOXWOOD 404

BUCKINGHAM COUNTY, VIRGINIA

Digital Orthophoto Source:
VBMP Most Recent Imagery
Virginia Lambert (VGIN)

N

1 inch = 1,000 feet



Hydric Soils:
21A Hatboro loam, 0 to 2 percent slopes, frequently flooded

Soils with Hydric Inclusions:
20B Halifax-Delanco complex, 2 to 7 percent slopes, rarely flooded
12A Codorus-Hatboro complex, 0 to 3 percent slopes, frequently flooded
5B Banister fine sandy loam, 2 to 7 percent slopes, rarely flooded
19B Grassland-Delanco complex, 2 to 7 percent slopes, rarely flooded

Non-hydric Soils:
14B Delanco loam, 2 to 7 percent slopes, rarely flooded
18C Fairview-Devotion complex, 7 to 15 percent slopes
18D Fairview-Devotion complex, 15 to 25 percent slopes
24C Littlejoe-Appomattox complex, 7 to 15 percent slopes
29B Oak Level-Diana Mills complex, 2 to 7 percent slopes
30C Oak Level-Siloam complex, 7 to 15 percent slopes
30D Oak Level-Siloam complex, 15 to 25 percent slopes
31B Penhook loam, 2 to 7 percent slopes
39C Spriggs-Toast complex, 7 to 15 percent slopes
39D Spriggs-Toast complex, 15 to 25 percent slopes
39E Spriggs-Toast complex, 25 to 50 percent slopes

Unknown Soil Type:
NONE

LEGEND

- APPROXIMATE PROJECT LIMITS
- HYDRIC SOIL
- SOIL WITH HYDRIC INCLUSIONS
- NON-HYDRIC SOIL
- UNKNOWN SOIL

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SOILS MAP

BOXWOOD 404

BUCKINGHAM COUNTY, VIRGINIA

Source:
U.S. Department of Agriculture
Natural Resources
Conservation Service
Soil Survey Geographic
(SSURGO)

1 inch = 1,000 feet

N

National Flood Hazard Layer FIRMette

FEMA

78°19'37"W 37°36'42"N

78°19'W 37°36'14"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

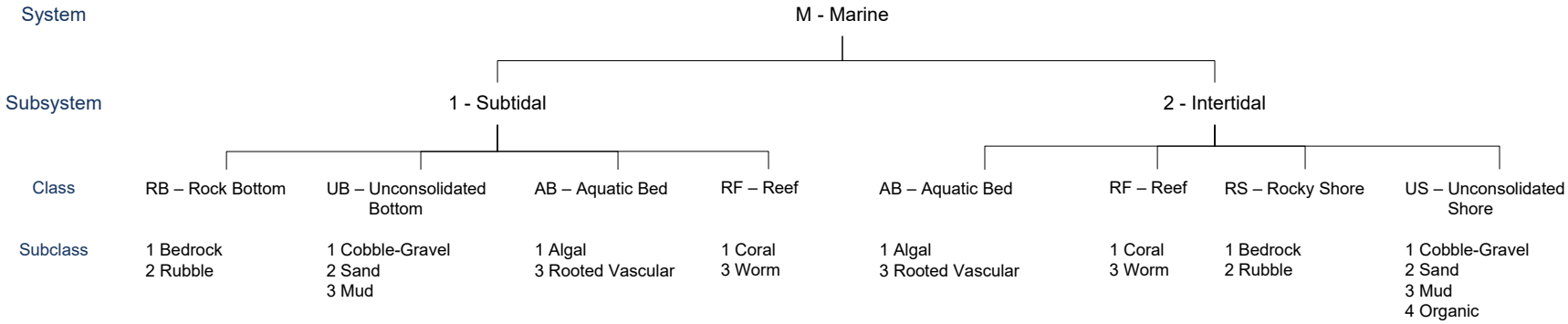
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/22/2020 at 2:26 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

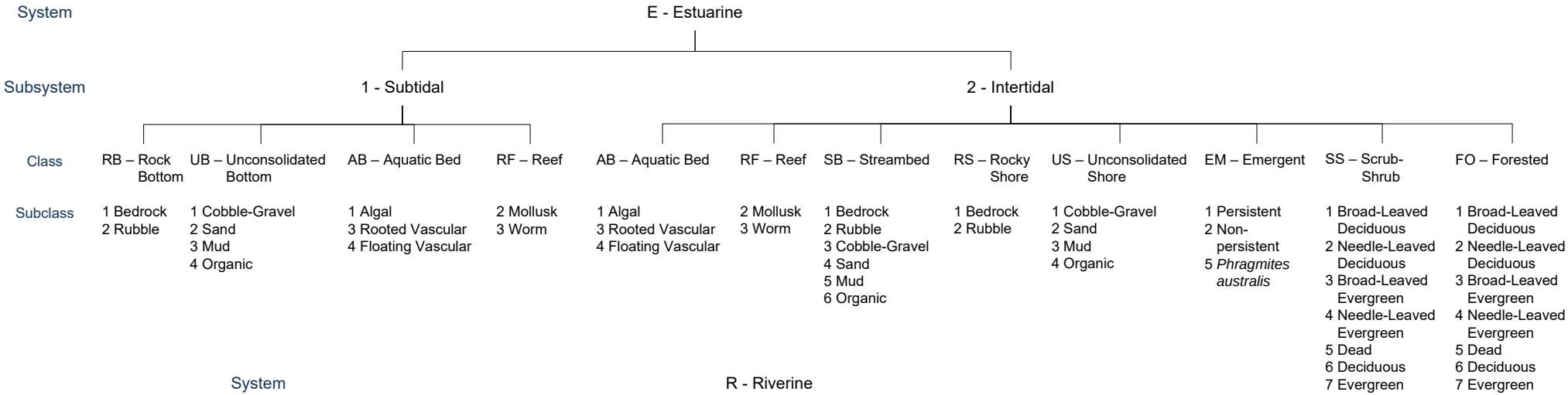
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

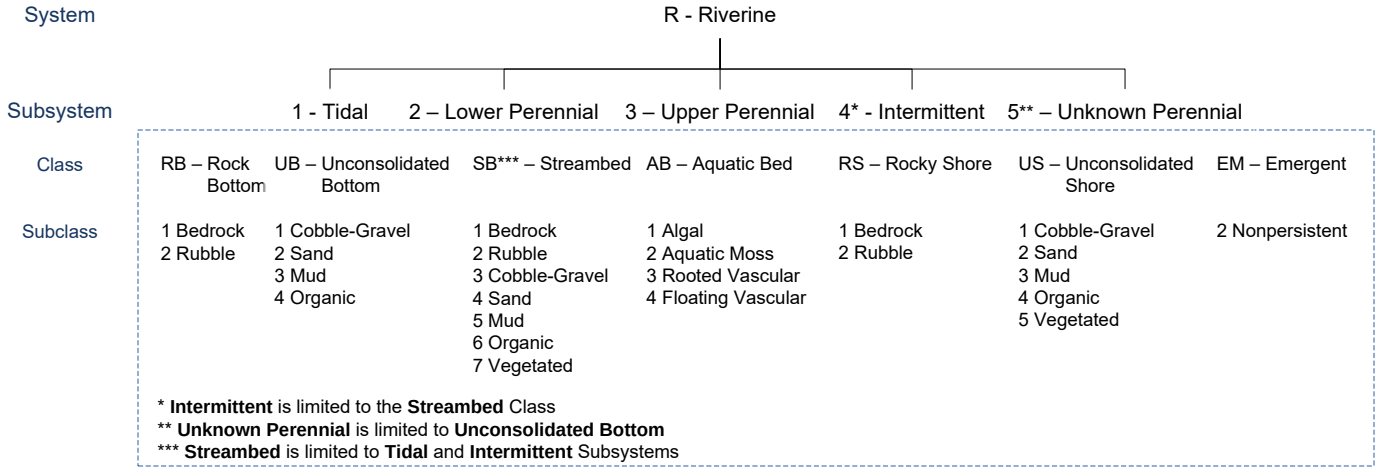
APPENDIX B

COWARDIN SYSTEM OF WETLANDS AND DEEPWATER WATER HABITAT CLASSIFICATION

WETLANDS AND DEEPWATER HABITATS CLASSIFICATION



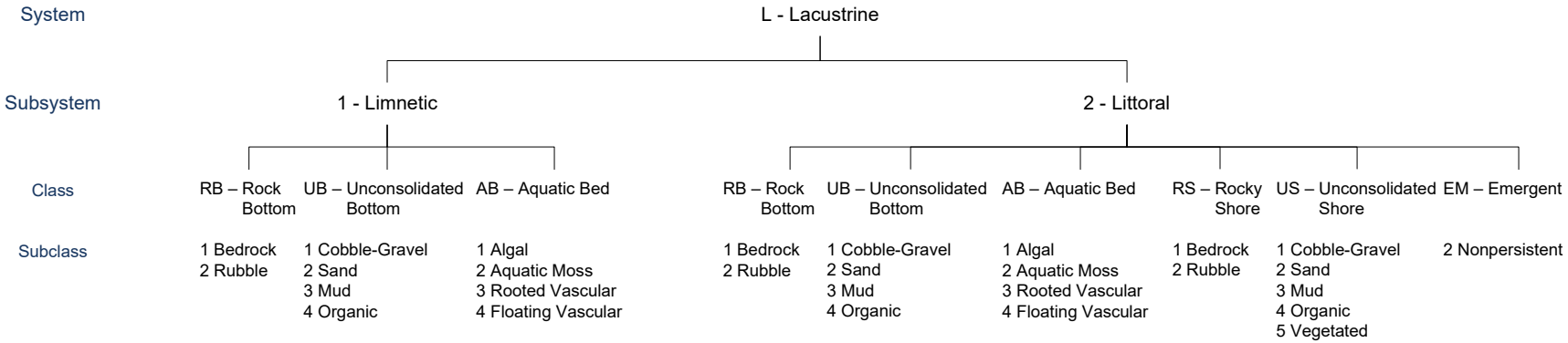


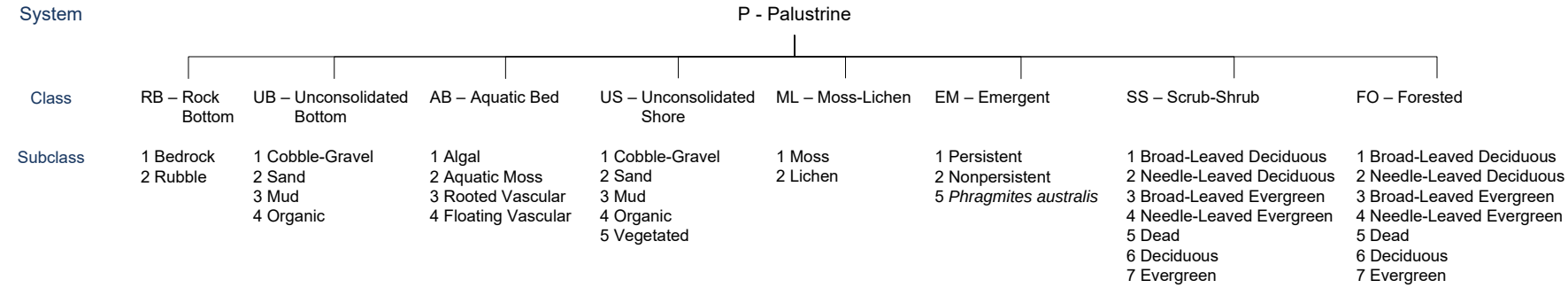


* **Intermittent** is limited to the **Streambed** Class
** **Unknown Perennial** is limited to **Unconsolidated Bottom**
*** **Streambed** is limited to **Tidal** and **Intermittent** Subsystems

Classification of Wetlands and Deepwater Habitats of the United States, Cowardin *et al*. 1979

WETLANDS AND DEEPWATER HABITATS CLASSIFICATION





MODIFIERS

In order to more adequately describe the wetland and deepwater habitats, one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

Water Regime			Special Modifiers	Water Chemistry			Soil
Nontidal	**Saltwater Tidal**	**Freshwater Tidal**		**Coastal Halinity**	**Inland Salinity**	**pH Modifiers for all Fresh Water**	
A Temporarily Flooded	L Subtidal	S Temporarily Flooded-Tidal	b Beaver	1 Hyperhaline	7 Hypersaline	a Acid	g Organic
B Saturated	M Irregularly Exposed	R Seasonally Flooded-Tidal	d Partly Drained/Ditched	2 Euhaline	8 Eusaline	t Circumneutral	n Mineral
C Seasonally Flooded	N Regularly Flooded	T Semipermanently Flooded-Tidal	f Farmed	3 Mixohaline (Brackish)	9 Mixosaline	l Alkaline	
E Seasonally Flooded/ Saturated	P Irregularly Flooded	V Permanently Flooded-Tidal	h Diked/Impounded	4 Polyhaline	0 Fresh		
F Semipermanently Flooded			r Artificial	5 Mesohaline			
G Intermittently Exposed			s Spoil	6 Oligohaline			
H Permanently Flooded			x Excavated	0 Fresh			
J Intermittently Flooded							
K Artificially Flooded							

APPENDIX C
WETLAND DELINEATION DATA SHEETS

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	7-Aug-2020
Applicant/Owner:	RES, LLC	State:	VA	Sampling Point:	1
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Hillslope	Local relief (concave, convex, none):	Convex	Slope (%):	1-2%
Subregion (LRR or MLRA):	MLRA 136 of LRR P	Lat:	37.61507538	Long:	-78.33262996
Datum:	NAD 83				
Soil Map Unit Name:	30D - Oak Level-Siloam complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)		Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
Water-Stained Leaves (B9)		Shallow Aquitard (D3)
Aquatic Fauna (B13)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 1

	Tree Stratum (Plot size: r = 30 feet)	Absolute % Cover	Dominant Species?	Indicator Staus
1	*Fagus grandifolia*	10	Y	FACU
2	*Liriodendron tulipifera*	5	Y	FACU
3				
4				
5				
6				
7				
		15	= Total Cover	
	Sapling stratum (Plot size: r = 15 feet)			
1	*Liriodendron tulipifera*	15	Y	FACU
2	*Fraxinus pennsylvanica*	3	N	FACW
3				
4				
5				
6				
7				
		18	= Total Cover	
	Shrub stratum (Plot size: r = 15 feet)			
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
	Herb stratum (Plot size: r = 5 feet)			
1	*Dichanthelium dichotomum*	20	Y	FAC
2	*Rubus argutus*	3	N	FACU
3	*Liquidambar styraciflua*	3	N	FAC
4	*Athyrium filix-femina*	2	N	FAC
5	*Liriodendron tulipifera*	2	N	FACU
6	*Erigeron canadensis*	2	N	FACU
7	*Solidago rugosa*	2	N	FAC
8	*Eupatorium capillifolium*	2	N	FACU
9				
10				
11				
12				
		36	= Total Cover	
	Woody vine stratum (Plot size: r = 30 feet)			
1				
2				
3				
4				
5				
		0	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 25.00% (A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	3	x 2 =	6
FAC species	27	x 3 =	81
FACU species	39	x 4 =	156
UPL species	0	x 5 =	0
Column totals	69 (A)		243 (B)

Prevalence Index = B/A = 3.52

Hydrophytic Vegetation Indicators:

- 1 – Rapid Test for Hydrophytic Vegetation
- 2 – Dominance Test is >50%
- 3 – Prevalence Index is ≤3.0[1]
- 4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-2	2.5Y 4/3	100%					Sandy clay	
2-8	2.5Y 5/4	90%	10YR 5/8	10%	C	M	Sandy clay	
8-18	7.5YR 5/8	100%					Clay	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS Sampling Point: 1

Photograph 1. Data Point 1 Soil

Photograph 2. Data Point 1 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	17-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	2
Investigator(s):	M. Molnar (PWD) & L. Rader-Dixon	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Floodplain	Local relief (concave, convex, none):	Flat	Slope (%):	0
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.61535713	Long:	-78.32650294
Datum:	NAD83				
Soil Map Unit Name:	21A - Hatboro loam	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)
	Surface Water (A1)		True Aquatic Plants (B14)		Surface Soil Cracks (B6)
	High Water Table (A2)		Hydrogen Sulfide Odor (C1)		Sparsely Vegetated Concave Surface (B8)
X	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)		Drainage Patterns (B10)
	Water Marks (B1)		Presence of Reduced Iron (C4)		Moss Trim Lines (B16)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Thin Muck Surface (C7)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)				Stunted or Stressed Plants (D1)
	Inundation Visible on Aerial Imagery (B7)				Geomorphic Position (D2)
	Water-Stained Leaves (B9)				Shallow Aquitard (D3)
	Aquatic Fauna (B13)				Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	N/A	
Water table present?	Yes		No	X	Depth (inches):	N/A	**Wetland Hydrology Present?** Y
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	10	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 2

Tree Stratum (Plot size: r = 30 feet)	Absolute % Cover	Dominant Species?	Indicator Staus
1 *Ostrya virginiana*	60	Y	FACU
2 *Prunus serotina*	20	Y	FACU
3			
4			
5			
6			
7			
	80	= Total Cover	

Sapling stratum (Plot size: r = 15 feet)			
1			
2			
3			
4			
5			
6			
7			
	0	= Total Cover	

Shrub stratum (Plot size: r = 15 feet)			
1 *Lindera benzoin*	15	Y	FAC
2			
3			
4			
5			
6			
7			
	15	= Total Cover	

Herb stratum (Plot size: r = 5 feet)			
1 *Onoclea sensibilis*	10	Y	FAC
2 *Persicaria maculosa*	7	Y	FAC
3 *Bidens aristosa*	5	Y	FACW
4 *Oxalis stricta*	2	N	FACU
5			
6			
7			
8			
9			
10			
11			
12			
	24	= Total Cover	

Woody vine stratum (Plot size: r = 30 feet)			
1 *Vitis rotundifolia*	5	Y	FAC
2 *Campsis radicans*	5	Y	FAC
3			
4			
5			
	10	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	6	(A)
Total Number of Dominant Species Across all Strata:	8	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	75.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	42	x 3 =	126
FACU species	82	x 4 =	328
UPL species	0	x 5 =	0
Column totals	129 (A)		464 (B)
Prevalence Index = B/A =			3.60

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-2	7.5Y 3/2	100%					Loam	
2-10	10YR 5/4	100%					Loam	
10-18	7.5YR 3/2	75%	7.5YR 5/3	25%	C	M	Sandy clay loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS Sampling Point: 2

Photograph 1. Data Point 2 Soil.

Photograph 2. Data Point 2 Vicinity.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	17-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	3
Investigator(s):	M. Molnar (PWD) & L. Rader-Dixon	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Floodplain	Local relief (concave, convex, none):	Flat	Slope (%):	0
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.61534682	Long:	-78.32638375
Datum:	NAD83				
Soil Map Unit Name:	21A - Hatboro loam	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		True Aquatic Plants (B14)
	High Water Table (A2)		Hydrogen Sulfide Odor (C1)
X	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)
	Water Marks (B1)		Presence of Reduced Iron (C4)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)
	Drift Deposits (B3)		Thin Muck Surface (C7)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)
	Iron Deposits (B5)		
	Inundation Visible on Aerial Imagery (B7)		
	Water-Stained Leaves (B9)		
	Aquatic Fauna (B13)		

Secondary Indicators (minimum of two required)

	Surface Soil Cracks (B6)
	Sparsely Vegetated Concave Surface (B8)
X	Drainage Patterns (B10)
	Moss Trim Lines (B16)
	Dry-Season Water Table (C2)
	Crayfish Burrows (C8)
	Saturation Visible on Aerial Imagery (C9)
	Stunted or Stressed Plants (D1)
	Geomorphic Position (D2)
	Shallow Aquitard (D3)
	Microtopographic Relief (D4)
X	FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	N/A
Water table present?	Yes		No	X	Depth (inches):	N/A
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 3

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1	*Acer rubrum*	20	Y	FAC
2	*Carpinus caroliniana*	10	Y	FAC
3	*Betula nigra*	5	N	FACW
4				
5				
6				
7				
		35	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1	*Acer rubrum*	5	Y	FAC
2				
3				
4				
5				
6				
7				
		5	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1	*Lindera benzoin*	15	Y	FAC
2				
3				
4				
5				
6				
7				
		15	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Thelypteris noveboracensis*	15	Y	FAC
2	*Woodwardia areolata*	15	Y	FACW
3	*Glyceria striata*	5	N	OBL
4				
5				
6				
7				
8				
9				
10				
11				
12				
		35	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1	*Smilax rotundifolia*	10	Y	FAC
2				
3				
4				
5				
		10	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	7	(A)
Total Number of Dominant Species Across all Strata:	7	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	100.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	5	x 1 =	5	
FACW species	20	x 2 =	40	
FAC species	75	x 3 =	225	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	100	(A)	270	(B)

Prevalence Index = B/A = 2.70

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-1	7.5YR 3/1	100%					Sandy loam	
1-12	10YR 4/2	70%	5YR 4/6	30%	C	M	Sandy clay loam	
12-18	10YR 3/1	75%	5YR 4/4	25%	C	M	Loamy sand	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

PHOTOGRAPHS Sampling Point: 3

Photograph 1. Data Point 3 Soil.

Photograph 2. Data Point 3 Vicinity.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	17-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	4
Investigator(s):	M. Molnar (PWD) & L. Rader-Dixon	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Swale	Local relief (concave, convex, none):	Concave	Slope (%):	3
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.6157165	Long:	-78.32672505
Datum:	NAD83				
Soil Map Unit Name:	30D - Oak Level-Siloam complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)	
	High Water Table (A2)	
	Saturation (A3)	
	Water Marks (B1)	
	Sediment Deposits (B2)	
	Drift Deposits (B3)	
	Algal Mat or Crust (B4)	
	Iron Deposits (B5)	
	Inundation Visible on Aerial Imagery (B7)	
	Water-Stained Leaves (B9)	
	Aquatic Fauna (B13)	
	True Aquatic Plants (B14)	
	Hydrogen Sulfide Odor (C1)	
	Oxidized Rhizospheres on Living Roots (C3)	
	Presence of Reduced Iron (C4)	
	Recent Iron Reduction in Tilled Soils (C6)	
	Thin Muck Surface (C7)	
	Other (Explain in Remarks)	

Secondary Indicators (minimum of two required)

	Surface Soil Cracks (B6)
	Sparsely Vegetated Concave Surface (B8)
	Drainage Patterns (B10)
	Moss Trim Lines (B16)
	Dry-Season Water Table (C2)
	Crayfish Burrows (C8)
	Saturation Visible on Aerial Imagery (C9)
	Stunted or Stressed Plants (D1)
	Geomorphic Position (D2)
	Shallow Aquitard (D3)
	Microtopographic Relief (D4)
X	FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 4

	Tree Stratum (Plot size: r = 30 feet)	Absolute % Cover	Dominant Species?	Indicator Staus
1	*Acer rubrum*	50	Y	FAC
2	*Liriodendron tulipifera*	15	N	FACU
3	*Pinus taeda*	10	N	FAC
4	*Quercus alba*	5	N	FACU
5				
6				
7				
		80	= Total Cover	

	Sapling stratum (Plot size: r = 15 feet)			
1	*Fraxinus pennsylvanica*	10	Y	FACW
2	*Ilex decidua*	5	Y	FACW
3				
4				
5				
6				
7				
		15	= Total Cover	

	Shrub stratum (Plot size: r = 15 feet)			
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	

	Herb stratum (Plot size: r = 5 feet)			
1	*Bidens aristosa*	10	Y	FACW
2	*Thelypteris noveboracensis*	5	Y	FAC
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
		15	= Total Cover	

	Woody vine stratum (Plot size: r = 30 feet)			
1	*Campsis radicans*	5	Y	FAC
2	*Smilax rotundifolia*	5	Y	FAC
3				
4				
5				
		10	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	7	(A)
Total Number of Dominant Species Across all Strata:	7	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	100.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	25	x 2 =	50	
FAC species	75	x 3 =	225	
FACU species	20	x 4 =	80	
UPL species	0	x 5 =	0	
Column totals	120	(A)	355	(B)
Prevalence Index = B/A =			2.96	

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-8	7.5YR 4/3	100%					Sandy loam	
8-18	7.5YR 5/3	85%	7.5YR 5/6	10%	C	M	Sandy clay loam	
			7.5YR 4/6	5%	C	M		

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS Sampling Point: 4

Photograph 1. Data Point 4 Soil.

Photograph 2. Data Point 4 Vicinity.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	17-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	5
Investigator(s):	M. Molnar (PWD) & L. Rader-Dixon	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Swale	Local relief (concave, convex, none):	Concave	Slope (%):	2
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.61314352	Long:	-78.32576143
Datum:	NAD83				
Soil Map Unit Name:	20B - Halifax-Delanco complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		True Aquatic Plants (B14)
	High Water Table (A2)		Hydrogen Sulfide Odor (C1)
X	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)
	Water Marks (B1)		Presence of Reduced Iron (C4)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)
	Drift Deposits (B3)		Thin Muck Surface (C7)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)
	Iron Deposits (B5)		
	Inundation Visible on Aerial Imagery (B7)		
	Water-Stained Leaves (B9)		
	Aquatic Fauna (B13)		

Secondary Indicators (minimum of two required)

	Surface Soil Cracks (B6)
	Sparsely Vegetated Concave Surface (B8)
X	Drainage Patterns (B10)
	Moss Trim Lines (B16)
	Dry-Season Water Table (C2)
	Crayfish Burrows (C8)
	Saturation Visible on Aerial Imagery (C9)
	Stunted or Stressed Plants (D1)
	Geomorphic Position (D2)
	Shallow Aquitard (D3)
	Microtopographic Relief (D4)
	FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	N/A
Water table present?	Yes		No	X	Depth (inches):	N/A
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 5

Tree Stratum (Plot size: r = 30 feet)	Absolute % Cover	Dominant Species?	Indicator Staus
1 *Acer rubrum*	50	Y	FAC
2 *Ilex opaca*	10	N	FACU
3			
4			
5			
6			
7			
	60	= Total Cover	

Sapling stratum (Plot size: r = 15 feet)			
1			
2			
3			
4			
5			
6			
7			
	0	= Total Cover	

Shrub stratum (Plot size: r = 15 feet)			
1 *Alnus serrulata*	15	Y	OBL
2 *Vaccinium fuscatum*	10	Y	FAC
3 *Lindera benzoin*	5	N	FAC
4			
5			
6			
7			
	30	= Total Cover	

Herb stratum (Plot size: r = 5 feet)			
1 *Lindera benzoin*	5	Y	FAC
2 *Thelypteris noveboracensis*	5	Y	FAC
3 *Arisaema triphyllum*	5	Y	FAC
4 *Geum canadense*	5	Y	FACU
5			
6			
7			
8			
9			
10			
11			
12			
	20	= Total Cover	

Woody vine stratum (Plot size: r = 30 feet)			
1 *Lonicera japonica*	3	Y	FACU
2 *Smilax glauca*	2	Y	FACU
3 *Parthenocissus quinquefolia*	2	Y	FACU
4			
5			
	7	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	6	(A)
Total Number of Dominant Species Across all Strata:	10	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	60.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	15	x 1 =	15	
FACW species	0	x 2 =	0	
FAC species	80	x 3 =	240	
FACU species	22	x 4 =	88	
UPL species	0	x 5 =	0	
Column totals	117	(A)	343	(B)

Prevalence Index = B/A = 2.93

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-1	2.5YR 2/1	100%					Sandy loam	
1-6	7.5YR 4/1	95%	7.5YR 4/6	5%	C	M	Sandy clay loam	
6-8	7.5YR 5/8	100%					Sandy clay loam	Gravelly

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

PHOTOGRAPHS

Sampling Point: 5

Photograph 1. Data Point 5 Soil.

Photograph 2. Data Point 5 Vicinity.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	17-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	6
Investigator(s):	M. Molnar (PWD) & L. Rader-Dixon	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Swale	Local relief (concave, convex, none):	Concave	Slope (%):	2
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.61306623	Long:	-78.32579146
Datum:	NAD83				
Soil Map Unit Name:	20B - Halifax-Delanco complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)		Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
Water-Stained Leaves (B9)		Shallow Aquitard (D3)
Aquatic Fauna (B13)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 6

Tree Stratum (Plot size: r = 30 feet)	Absolute % Cover	Dominant Species?	Indicator Staus
1 *Liquidambar styraciflua*	50	Y	FAC
2 *Quercus alba*	20	Y	FACU
3			
4			
5			
6			
7			
	70	= Total Cover	

Sapling stratum (Plot size: r = 15 feet)			
1 *Ilex opaca*	15	Y	FACU
2 *Hamamelis virginiana*	10	Y	FACU
3			
4			
5			
6			
7			
	25	= Total Cover	

Shrub stratum (Plot size: r = 15 feet)			
1 *Alnus serrulata*	15	Y	OBL
2 *Vaccinium fuscatum*	10	Y	FAC
3 *Lindera benzoin*	5	N	FAC
4			
5			
6			
7			
	30	= Total Cover	

Herb stratum (Plot size: r = 5 feet)			
1 *Polystichum acrostichoides*	15	Y	FACU
2 *Geum canadense*	5	Y	FAC
3 *Elymus hystrix*	5	Y	UPL
4			
5			
6			
7			
8			
9			
10			
11			
12			
	25	= Total Cover	

Woody vine stratum (Plot size: r = 30 feet)			
1 *Lonicera japonica*	3	Y	FACU
2			
3			
4			
5			
	3	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across all Strata:	10	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	40.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	15	x 1 =	15	
FACW species	0	x 2 =	0	
FAC species	70	x 3 =	210	
FACU species	63	x 4 =	252	
UPL species	5	x 5 =	25	
Column totals	153	(A)	502	(B)
Prevalence Index = B/A =			3.28	

Hydrophytic Vegetation Indicators:

- 1 – Rapid Test for Hydrophytic Vegetation
- 2 – Dominance Test is >50%
- 3 – Prevalence Index is ≤3.0[1]
- 4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-2	7.5YR 3/2	100%					Sandy loam	
2-18	7.5YR 5/4	95%	7.5YR 4/6	5%	C	M	Sandy clay loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS Sampling Point: 6

Photograph 1. Data Point 6 Soil.

Photograph 2. Data Point 6 Vicinity.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	19-Aug-2020
Applicant/Owner:	RES, LLC	State:	VA	Sampling Point:	7
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Swale	Local relief (concave, convex, none):	Concave	Slope (%):	1-2%
Subregion (LRR or MLRA):	MLRA 136 of LRR P	Lat:	37.61587732	Long:	-78.32137996
Datum:	NAD 83				
Soil Map Unit Name:	30D - Oak Level-Siloam complex	NWI Classification:	PFO1A		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)		Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
Water-Stained Leaves (B9)		Shallow Aquitard (D3)
Aquatic Fauna (B13)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 7

	Tree Stratum (Plot size: r = 30 feet)	Absolute % Cover	Dominant Species?	Indicator Staus
1	*Juglans nigra*	10	Y	FACU
2	*Carya tomentosa*	7	Y	UPL
3	*Quercus palustris*	3	N	FACW
4	*Liriodendron tulipifera*	3	N	FACU
5				
6				
7				
		23	= Total Cover	

	Sapling stratum (Plot size: r = 15 feet)			
1	*Carpinus caroliniana*	10	Y	FAC
2	*Carya tomentosa*	5	Y	UPL
3				
4				
5				
6				
7				
		15	= Total Cover	

	Shrub stratum (Plot size: r = 15 feet)			
1	*Lindera benzoin*	10	Y	FAC
2	*Carpinus caroliniana*	5	Y	FAC
3	*Asimina triloba*	3	N	FAC
4				
5				
6				
7				
		18	= Total Cover	

	Herb stratum (Plot size: r = 5 feet)			
1	*Geum canadense*	5	Y	FACU
2	*Polystichum acrostichoides*	3	Y	FACU
3	*Parthenocissus quinquefolia*	3	Y	FACU
4	*Elymus hystrix*	2	N	UPL
5	*Microstegium vimineum*	2	N	FAC
6	*Onoclea sensibilis*	2	N	FACW
7				
8				
9				
10				
11				
12				
		17	= Total Cover	

	Woody vine stratum (Plot size: r = 30 feet)			
1				
2				
3				
4				
5				
		0	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across all Strata:	9	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	33.33%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	5	x 2 =	10	
FAC species	30	x 3 =	90	
FACU species	21	x 4 =	84	
UPL species	14	x 5 =	70	
Column totals	70	(A)	254	(B)
Prevalence Index = B/A =			3.63	

Hydrophytic Vegetation Indicators:

- 1 – Rapid Test for Hydrophytic Vegetation
- 2 – Dominance Test is >50%
- 3 – Prevalence Index is ≤3.0[1]
- 4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-1	7.5YR 3/2	100%					Loam	
1-18	7.5YR 4/4	100%						

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS Sampling Point: 7

Photograph 1. Data Point 7 Soils

Photograph 2. Data Point 7 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	7-Aug-2020
Applicant/Owner:	RES, LLC	State:	VA	Sampling Point:	8
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Swale	Local relief (concave, convex, none):	Concave	Slope (%):	2-3%
Subregion (LRR or MLRA):	MLRA 136 of LRR P	Lat:	37.60804207	Long:	-78.33464785
Datum:	NAD 83				
Soil Map Unit Name:	30D- Oak Level-Siloam complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		True Aquatic Plants (B14)
	High Water Table (A2)		Hydrogen Sulfide Odor (C1)
	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)
	Water Marks (B1)		Presence of Reduced Iron (C4)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)
	Drift Deposits (B3)		Thin Muck Surface (C7)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)
	Iron Deposits (B5)		
	Inundation Visible on Aerial Imagery (B7)		
X	Water-Stained Leaves (B9)		
	Aquatic Fauna (B13)		

Secondary Indicators (minimum of two required)

	Surface Soil Cracks (B6)
X	Sparsely Vegetated Concave Surface (B8)
	Drainage Patterns (B10)
	Moss Trim Lines (B16)
	Dry-Season Water Table (C2)
	Crayfish Burrows (C8)
	Saturation Visible on Aerial Imagery (C9)
	Stunted or Stressed Plants (D1)
	Geomorphic Position (D2)
	Shallow Aquitard (D3)
	Microtopographic Relief (D4)
	FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 8

Tree Stratum (Plot size: r = 30 feet)	Absolute % Cover	Dominant Species?	Indicator Staus
1			
2			
3			
4			
5			
6			
7			
	0 = Total Cover		

Sapling stratum (Plot size: r = 15 feet)			
1			
2			
3			
4			
5			
6			
7			
	0 = Total Cover		

Shrub stratum (Plot size: r = 15 feet)			
1			
2			
3			
4			
5			
6			
7			
	0 = Total Cover		

Herb stratum (Plot size: r = 5 feet)			
1 *Carex lurida*	2	Y	OBL
2 *Athyrium filix-femina*	1	Y	FAC
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
	3 = Total Cover		

Woody vine stratum (Plot size: r = 30 feet)			
1 *Smilax rotundifolia*	1	Y	FAC
2			
3			
4			
5			
	1 = Total Cover		

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across all Strata:	3	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	100.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	2	x 1 =	2	
FACW species	0	x 2 =	0	
FAC species	2	x 3 =	6	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	4	(A)	8	(B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-1	7.5YR 3/2	100%						
1-18	N4/0	65%	2.5Y 4/4	15%	C	M		
			10YR 5/6	20%	C	M		

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- X Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

PHOTOGRAPHS Sampling Point: 8

Photograph 1. Data Point 8 Soil

Photograph 2. Data Point 8 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	2-Aug-2020
Applicant/Owner:	RES, LLC	State:	VA	Sampling Point:	9
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Hillslope	Local relief (concave, convex, none):	Concave	Slope (%):	2-3%
Subregion (LRR or MLRA):	MLRA 136 of LRR P	Lat:	37.60797787	Long:	-78.33463243
Datum:	NAD 83				
Soil Map Unit Name:	30D - Oak Level-Siloam complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)		Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
Water-Stained Leaves (B9)		Shallow Aquitard (D3)
Aquatic Fauna (B13)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 9

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum	(Plot size: r = 30 feet)			
1	*Liquidambar styraciflua*	15	Y	FAC
2	*Liriodendron tulipifera*	10	Y	FACU
3	*Cercis canadensis*	5	N	FACU
4	*Acer rubrum*	5	N	FAC
5	*Quercus alba*	5	N	FACU
6	*Ulmus americana*	5	N	FACW
7				
		45	= Total Cover	
Sapling stratum	(Plot size: r = 15 feet)			
1	*Liquidambar styraciflua*	5	Y	FAC
2	*Quercus alba*	3	Y	FACU
3	*Quercus palustris*	2	Y	FACW
4				
5				
6				
7				
		10	= Total Cover	
Shrub stratum	(Plot size: r = 15 feet)			
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Herb stratum	(Plot size: r = 5 feet)			
1	*Athyrium filix-femina*	3	Y	FAC
2	*Liriodendron tulipifera*	2	Y	FACU
3	*Quercus alba*	2	Y	FACU
4				
5				
6				
7				
8				
9				
10				
11				
12				
		7	= Total Cover	
Woody vine stratum	(Plot size: r = 30 feet)			
1				
2				
3				
4				
5				
		0	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 8 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	7	x 2 =	14	
FAC species	28	x 3 =	84	
FACU species	27	x 4 =	108	
UPL species	0	x 5 =	0	
Column totals	62	(A)	206	(B)

Prevalence Index = B/A = 3.32

Hydrophytic Vegetation Indicators:

- 1 – Rapid Test for Hydrophytic Vegetation
- 2 – Dominance Test is >50%
- 3 – Prevalence Index is ≤3.0[1]
- 4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-2	7.5YR 3/2	100%					Clay loam	
2-18	5YR 4/6	100%					Clay loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS Sampling Point: 9

Photograph 1. Data Point 9 Soil

Photograph 2. Data Point 9 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	11-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	10
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Floodplain	Local relief (concave, convex, none):	None	Slope (%):	0
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat: 37.605506	Long: -78.329244	Datum:	NAD83
Soil Map Unit Name:	12A - Codorus-Hatboro complex		NWI Classification:	None	

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		True Aquatic Plants (B14)		Surface Soil Cracks (B6)
	High Water Table (A2)		Hydrogen Sulfide Odor (C1)		Sparsely Vegetated Concave Surface (B8)
	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)	X	Drainage Patterns (B10)
	Water Marks (B1)		Presence of Reduced Iron (C4)		Moss Trim Lines (B16)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Thin Muck Surface (C7)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)				Stunted or Stressed Plants (D1)
	Inundation Visible on Aerial Imagery (B7)			X	Geomorphic Position (D2)
	Water-Stained Leaves (B9)				Shallow Aquitard (D3)
	Aquatic Fauna (B13)				Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No X	Depth (inches):	N/A
Water table present?	Yes		No X	Depth (inches):	N/A
Saturation present? (includes capillary fringe)	Yes		No X	Depth (inches):	N/A

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 10

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Microstegium vimineum*	60	Y	FAC
2	*Boehmeria cylindrica*	10	N	FACW
3	*Agrimonia parviflora*	5	N	FACW
4				
5				
6				
7				
8				
9				
10				
11				
12				
		75	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
		0	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across all Strata:	1	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	100.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	15	x 2 =	30	
FAC species	60	x 3 =	180	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	75	(A)	210	(B)
Prevalence Index = B/A =			2.80	

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-2	10YR 3/3	100%					Silt loam	
2-4	10YR 4/3	95%	7.5YR 4/4	5%	C	M	Silt loam	
4-18	10YR 5/2	95%	7.5YR 3/4	5%	C	M	Sandy clay loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

PHOTOGRAPHS Sampling Point: 10

Photograph 1. Data Point 10 Soil.

Photograph 2. Data Point 10 Vicinity.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	11-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	11
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Floodplain	Local relief (concave, convex, none):	Concave	Slope (%):	0
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat: 37.605506	Long: -78.329244	Datum:	NAD83
Soil Map Unit Name:	12A - Codorus-Hatboro complex		NWI Classification:	None	

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)		Secondary Indicators (minimum of two required)	
	Surface Water (A1)		True Aquatic Plants (B14)		Surface Soil Cracks (B6)
	High Water Table (A2)		Hydrogen Sulfide Odor (C1)	X	Sparsely Vegetated Concave Surface (B8)
	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)		Drainage Patterns (B10)
	Water Marks (B1)		Presence of Reduced Iron (C4)		Moss Trim Lines (B16)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Thin Muck Surface (C7)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)				Stunted or Stressed Plants (D1)
	Inundation Visible on Aerial Imagery (B7)				Geomorphic Position (D2)
	Water-Stained Leaves (B9)				Shallow Aquitard (D3)
	Aquatic Fauna (B13)				Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	N/A
Water table present?	Yes		No	X	Depth (inches):	N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches):	N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 11

Tree Stratum (Plot size: r = 30 feet)	Absolute % Cover	Dominant Species?	Indicator Staus
1			
2			
3			
4			
5			
6			
7			
	0 = Total Cover		

Sapling stratum (Plot size: r = 15 feet)			
1			
2			
3			
4			
5			
6			
7			
	0 = Total Cover		

Shrub stratum (Plot size: r = 15 feet)			
1			
2			
3			
4			
5			
6			
7			
	0 = Total Cover		

Herb stratum (Plot size: r = 5 feet)			
1 *Microstegium vimineum*	3	Y	FAC
2 *Elymus hystrix*	2	Y	UPL
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
	5 = Total Cover		

Woody vine stratum (Plot size: r = 30 feet)			
1			
2			
3			
4			
5			
	0 = Total Cover		

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across all Strata:	2	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	50.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	3	x 3 =	9	
FACU species	0	x 4 =	0	
UPL species	2	x 5 =	10	
Column totals	5	(A)	19	(B)

Prevalence Index = B/A = 3.80

Hydrophytic Vegetation Indicators:

- 1 – Rapid Test for Hydrophytic Vegetation
- 2 – Dominance Test is >50%
- 3 – Prevalence Index is ≤3.0[1]
- 4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-5	10YR 5/3	100%					Sandy loam	
5-9	10YR 6/3	98%	5YR 4/6	2%	C	M	Sandy loam	
9-18	2.5Y 5/3	98%	7.5YR 4/6	2%	C	M	Sandy loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	12-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	12
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Swale	Local relief (concave, convex, none):	Concave	Slope (%):	0.5
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.60135452	Long:	-78.32755689
Datum:	NAD83				
Soil Map Unit Name:	30C - Oak Level-Siloam complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

	Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
	Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
X	High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
X	Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
	Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
	Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
	Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
	Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)		Stunted or Stressed Plants (D1)
	Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
	Water-Stained Leaves (B9)		Shallow Aquitard (D3)
	Aquatic Fauna (B13)		Microtopographic Relief (D4)
			FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): X
Water table present?	Yes	X	No		Depth (inches): 0
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches): 0

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 12

Tree Stratum (Plot size: r = 30 feet)	Absolute % Cover	Dominant Species?	Indicator Staus
1			
2			
3			
4			
5			
6			
7			
	0 = Total Cover		

Sapling stratum (Plot size: r = 15 feet)			
1			
2			
3			
4			
5			
6			
7			
	0 = Total Cover		

Shrub stratum (Plot size: r = 15 feet)			
1			
2			
3			
4			
5			
6			
7			
	0 = Total Cover		

Herb stratum (Plot size: r = 5 feet)			
1	*Carex crinita*	5	Y	OBL
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
	5 = Total Cover			

Woody vine stratum (Plot size: r = 30 feet)			
1			
2			
3			
4			
5			
	0 = Total Cover		

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across all Strata:	1	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	100.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	5	x 1 =	5	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	5	(A)	5	(B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-1	10YR 3/3	100%					Sandy loam	
1-18	10YR 4/1	95%	10YR 5/6	5%	C	M	Sandy loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

PHOTOGRAPHS Sampling Point: 12

Photograph 1. Data Point 12 Soil.

Photograph 2. Data Point 12 Vicinity.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	12-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	13
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Swale	Local relief (concave, convex, none):	Concave	Slope (%):	1
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.60126985	Long:	-78.32761536
Datum:	NAD83				
Soil Map Unit Name:	30C - Oak Level-Siloam complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	Y		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)		Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
Water-Stained Leaves (B9)		Shallow Aquitard (D3)
Aquatic Fauna (B13)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 13

Tree Stratum (Plot size: r = 30 feet)	Absolute % Cover	Dominant Species?	Indicator Staus
1 *Pinus taeda*	20	Y	FAC
2 *Liquidambar styraciflua*	10	Y	FAC
3 *Acer rubrum*	10	Y	FAC
4 *Quercus alba*	10	Y	FACU
5 *Oxydendrum arboreum*	5	N	UPL
6			
7			
	55	= Total Cover	

Sapling stratum (Plot size: r = 15 feet)			
1 *Cercis canadensis*	5	Y	FACU
2 *Quercus alba*	5	Y	FACU
3			
4			
5			
6			
7			
	10	= Total Cover	

Shrub stratum (Plot size: r = 15 feet)			
1			
2			
3			
4			
5			
6			
7			
	0	= Total Cover	

Herb stratum (Plot size: r = 5 feet)			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
	0	= Total Cover	

Woody vine stratum (Plot size: r = 30 feet)			
1			
2			
3			
4			
5			
	0	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across all Strata:	6	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	50.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	40	x 3 =	120	
FACU species	20	x 4 =	80	
UPL species	5	x 5 =	25	
Column totals	65	(A)	225	(B)

Prevalence Index = B/A = 3.46

Hydrophytic Vegetation Indicators:

- 1 – Rapid Test for Hydrophytic Vegetation
- 2 – Dominance Test is >50%
- 3 – Prevalence Index is ≤3.0[1]
- 4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-1	10YR 3/4	100%					Sandy loam	
1-18	7.5YR 5/6	100%					Sandy loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

PHOTOGRAPHS Sampling Point: 13

Photograph 1. Data Point 13 Soil.

Photograph 2. Data Point 13 Vicinity.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	12-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	14
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Swale	Local relief (concave, convex, none):	Concave	Slope (%):	2
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.60249964	Long:	-78.32701132
Datum:	NAD83				
Soil Map Unit Name:	30C - Oak Level-Siloam complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)		Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
Water-Stained Leaves (B9)		Shallow Aquitard (D3)
Aquatic Fauna (B13)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 14

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1	*Liriodendron tulipifera*	10	Y	FACU
2	*Acer rubrum*	10	Y	FAC
3	*Pinus taeda*	10	Y	FAC
4				
5				
6				
7				
		30	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1	*Carya tomentosa*	5	Y	UPL
2	*Liriodendron tulipifera*	5	Y	FACU
3				
4				
5				
6				
7				
		10	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1	*Hamamelis virginiana*	5	Y	FACU
2	*Symphoricarpos orbiculatus*	5	Y	FACU
3	*Cercis canadensis*	5	Y	FACU
4	*Liquidambar styraciflua*	5	Y	FAC
5				
6				
7				
		20	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Rubus argutus*	40	Y	FACU
2	*Carex lurida*	5	N	OBL
3	*Juncus effusus*	5	N	FACW
4	*Eupatorium perfoliatum*	5	N	FACW
5	*Cirsium arvense*	5	N	FACU
6				
7				
8				
9				
10				
11				
12				
		60	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
		0	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across all Strata:	10	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	30.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	5	x 1 =	5	
FACW species	10	x 2 =	20	
FAC species	25	x 3 =	75	
FACU species	75	x 4 =	300	
UPL species	5	x 5 =	25	
Column totals	120	(A)	425	(B)
Prevalence Index = B/A =			3.54	

Hydrophytic Vegetation Indicators:

- 1 – Rapid Test for Hydrophytic Vegetation
- 2 – Dominance Test is >50%
- 3 – Prevalence Index is ≤3.0[1]
- 4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-4	10YR 3/1	100%					Sandy loam	
4-18	5Y 5/3	100%					Sandy loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS Sampling Point: 14

Photograph 1. Data Point 14 Soil.

Photograph 2. Data Point 14 Vicinity.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	12-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	15
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Swale	Local relief (concave, convex, none):	Concave	Slope (%):	1
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.60254289	Long:	-78.32695754
Datum:	NAD83				
Soil Map Unit Name:	30C - Oak Level-Siloam complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

	Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
	Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
X	High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
X	Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
	Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
	Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
	Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
	Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)		Stunted or Stressed Plants (D1)
	Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
	Water-Stained Leaves (B9)		Shallow Aquitard (D3)
	Aquatic Fauna (B13)		Microtopographic Relief (D4)
			X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No		Depth (inches): N/A
Water table present?	Yes	X	No		Depth (inches): 4
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches): 0

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 15

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Eupatorium perfoliatum*	50	Y	FACW
2	*Carex lurida*	20	Y	OBL
3	*Thelypteris noveboracensis*	20	Y	FAC
4	*Ludwigia alternifolia*	10	N	FACW
5	*Mimulus ringens*	5	N	OBL
6	*Woodwardia areolata*	5	N	FACW
7	*Scirpus cyperinus*	5	N	FACW
8	*Juncus effusus*	3	N	FACW
9	*Cyperus esculentus*	2	N	FACW
10				
11				
12				
		120	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
		0	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across all Strata:	3	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	100.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	25	x 1 =	25
FACW species	75	x 2 =	150
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	120 (A)		235 (B)

Prevalence Index = B/A = 1.96

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	10YR 5/2	100%					Sandy loam	
3-18	2.5Y 3/1	97%	10YR 3/6	3%	C	M	Sandy loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

PHOTOGRAPHS Sampling Point: 15

Photograph 1. Data Point 15 soil.

Photograph 2. Data Point 15 vicinity.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	11-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	16
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Floodplain	Local relief (concave, convex, none):	Concave	Slope (%):	1
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.603777	Long:	-78.326928
Datum:	NAD83				
Soil Map Unit Name:	30D - Oak Level-Siloam complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)		Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
Water-Stained Leaves (B9)		Shallow Aquitard (D3)
Aquatic Fauna (B13)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 16

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1	*Liriodendron tulipifera*	20	Y	FACU
2	*Platanus occidentalis*	20	Y	FACW
3	*Juniperus virginiana*	5	N	FACU
4				
5				
6				
7				
		45	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1	*Sassafras albidum*	5	Y	FACU
2	*Celtis occidentalis*	5	Y	FACU
3				
4				
5				
6				
7				
		10	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1	*Rosa multiflora*	10	Y	FACU
2	*Symphoricarpos orbiculatus*	5	Y	FACU
3				
4				
5				
6				
7				
		15	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Dichanthelium scoparium*	50	Y	FACW
2	*Andropogon virginicus*	20	Y	FACU
3	*Verbascum thapsus*	10	N	FACU
4	*Verbena urticifolia*	10	N	FAC
5	*Mitchella repens*	5	N	FACU
6	*Ambrosia artemisiifolia*	5	N	FACU
7				
8				
9				
10				
11				
12				
		100	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
		0	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across all Strata:	8	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	25.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	10	x 3 =	30
FACU species	90	x 4 =	360
UPL species	0	x 5 =	0
Column totals	170 (A)		530 (B)

Prevalence Index = B/A = 3.12

Hydrophytic Vegetation Indicators:

- 1 – Rapid Test for Hydrophytic Vegetation
- 2 – Dominance Test is >50%
- 3 – Prevalence Index is ≤3.0[1]
- 4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-2	10YR 2/2	100%					Sandy loam	fine sand
2-18	10YR 4/6	100%					Sandy loam	fine sand

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS Sampling Point: 16

Photograph 1. Data Point 16 Soil.

Photograph 2. Data Point 16 Vicinity.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	11-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	17
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Floodplain	Local relief (concave, convex, none):	None	Slope (%):	0
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat: 37.60429844	Long: -78.32896907	Datum:	NAD83
Soil Map Unit Name:	12A - Codorus-Hatboro complex		NWI Classification:	None	

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)		Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
Water-Stained Leaves (B9)		Shallow Aquitard (D3)
Aquatic Fauna (B13)		Microtopographic Relief (D4)
		X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 17

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1	*Pinus taeda*	40	Y	FAC
2	*Liriodendron tulipifera*	20	Y	FACU
3	*Betula nigra*	10	N	FACW
4				
5				
6				
7				
		70	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1	*Alnus serrulata*	5	Y	OBL
2				
3				
4				
5				
6				
7				
		5	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Onoclea sensibilis*	10	Y	FACW
2	*Thelypteris noveboracensis*	10	Y	FAC
3	*Rosa multiflora*	5	Y	FAC
4				
5				
6				
7				
8				
9				
10				
11				
12				
		25	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1	*Toxicodendron radicans*	5	Y	FAC
2	*Campsis radicans*	5	Y	FAC
3	*Vitis rotundifolia*	5	Y	FAC
4				
5				
		15	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	8	(A)
Total Number of Dominant Species Across all Strata:	9	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	88.89%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	5	x 1 =	5	
FACW species	20	x 2 =	40	
FAC species	70	x 3 =	210	
FACU species	20	x 4 =	80	
UPL species	0	x 5 =	0	
Column totals	115	(A)	335	(B)

Prevalence Index = B/A = 2.91

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-2	10YR 3/4	100%					Sandy loam	
2-6	10YR 6/5	98%	10YR 5/6	2%	C	M	Sandy loam	
6-18	10YR 5/4	95%	7.5YR 4/6	5%	C	M	Sandy loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS Sampling Point: 17

Photograph 1. Data Point 17 Soil.

Photograph 2. Data Point 17 vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	11-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	18
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Floodplain	Local relief (concave, convex, none):	None	Slope (%):	0
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat: 37.60410983	Long: -78.32912203	Datum:	NAD83
Soil Map Unit Name:	12A - Codorus-Hatboro complex		NWI Classification:	None	

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		True Aquatic Plants (B14)		Surface Soil Cracks (B6)
	High Water Table (A2)		Hydrogen Sulfide Odor (C1)	X	Sparsely Vegetated Concave Surface (B8)
	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)		Drainage Patterns (B10)
	Water Marks (B1)		Presence of Reduced Iron (C4)		Moss Trim Lines (B16)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Thin Muck Surface (C7)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)				Stunted or Stressed Plants (D1)
	Inundation Visible on Aerial Imagery (B7)				Geomorphic Position (D2)
	Water-Stained Leaves (B9)				Shallow Aquitard (D3)
	Aquatic Fauna (B13)				Microtopographic Relief (D4)
				X	FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	N/A
Water table present?	Yes		No	X	Depth (inches):	N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches):	N/A

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 18

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Boehmeria cylindrica*	2	Y	FACW
2	*Persicaria hydropiperoides*	1	Y	OBL
3	*Onoclea sensibilis*	1	Y	FACW
4	*Dulichium arundinaceum*	1	Y	OBL
5				
6				
7				
8				
9				
10				
11				
12				
		5	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
		0	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across all Strata:	4	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	100.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	2	x 1 =	2	
FACW species	3	x 2 =	6	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	5	(A)	8	(B)

Prevalence Index = B/A = 1.60

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-2	10YR 3/4	100%					Sandy loam	
2-12	10YR 4/2	90%	7.5YR 4/6	10%	C	M	Sandy loam	
12-18	10YR 4/1	97%	7.5YR 4/4	3%	C	M	Sandy loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

PHOTOGRAPHS Sampling Point: 18

Photograph 1. Data Point 18 Soil

Photograph 2. Data Point 18 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	14-Sep-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	19
Investigator(s):	L. Rader-Dixon	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Stream Terrace	Local relief (concave, convex, none):	Concave	Slope (%):	3-5%
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.609092	Long:	-78.328829
Datum:	NAD83				
Soil Map Unit Name:	Oak Level-Siloam Complex, 15-25% slopes	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation X, soil , or hydrology X significantly disturbed? Are "normal circumstances" present? No

Are vegetation , soil , or hydrology naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

Recent cutover, embedded logging slash, rutting, logging slash in drainageways, possibly due to storm event after cutting (~Feb 2019)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)
Surface Water (A1)	True Aquatic Plants (B14)		Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)		Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)		Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)		Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)		Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)		Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)			Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)			Geomorphic Position (D2)
Water-Stained Leaves (B9)			Shallow Aquitard (D3)
Aquatic Fauna (B13)			Microtopographic Relief (D4)
			FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	N/A
Water table present?	Yes		No	X	Depth (inches):	N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches):	N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

no hydrology indicators present

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 19

Tree Stratum (Plot size: r = 30 feet)	Absolute % Cover	Dominant Species?	Indicator Staus
1			
2			
3			
4			
5			
6			
7			
	0	= Total Cover	

Sapling stratum (Plot size: r = 30 feet)			
1			
2			
3			
4			
5			
6			
7			
	0	= Total Cover	

Shrub stratum (Plot size: r = 30 feet)			
1			
2			
3			
4			
5			
6			
7			
	0	= Total Cover	

Herb stratum (Plot size: r = 30 feet)			
1 *Carex tribuloides*	40	Y	FACW
2 *Andropogon virginicus*	10	Y	FACU
3 *Panicum virgatum*	10	Y	FAC
4 *Muhlenbergia schreberi*	10	Y	FAC
5 *Scirpus cyperinus*	5	N	FACW
6 *Hypericum perforatum*	5	N	FAC
7 *Rosa multiflora*	5	N	FACU
8 *Eupatorium capillifolium*	5	N	FACU
9 *Rubus argutus*	5	N	FACU
10 *Verbascum thapsus*	5	N	FACU
11			
12			
	100	= Total Cover	

Woody vine stratum (Plot size: r = 30 feet)			
1 *Lonicera japonica*	15	Y	FACU
2			
3			
4			
5			
	15	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across all Strata:	5	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	60.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	45	x 2 =	90	
FAC species	25	x 3 =	75	
FACU species	45	x 4 =	180	
UPL species	0	x 5 =	0	
Column totals	115	(A)	345	(B)
Prevalence Index = B/A =			3.00	

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	7.5YR 4/4	100%					Sandy Loam	
2-8	7.5YR 4/6	80%	7.5YR 4/4	20%	C	M	Sandy Loam	
8-14	7.5YR 5/3	40%	7.5YR 5/6	40%	C	M	Sandy Clay Loam	
			5YR 5/6	20%	C	PL/M		

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

Refusal at 14" due to embedded slash.

PHOTOGRAPHS Sampling Point: 19

Photograph 1. Data Point 19 Soil

Photograph 2. Data Point 19 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	14-Sep-2020
Applicant/Owner:	RES, LLC	State:	Virgnia	Sampling Point:	20
Investigator(s):	L. Rader-Dixon	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Slope	Local relief (concave, convex, none):	Concave	Slope (%):	0-3%
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.610978	Long:	-78.318847
Datum:	NAD83				
Soil Map Unit Name:	Delanco loam	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)		Secondary Indicators (minimum of two required)	
	Surface Water (A1)		True Aquatic Plants (B14)		Surface Soil Cracks (B6)
	High Water Table (A2)		Hydrogen Sulfide Odor (C1)		Sparsely Vegetated Concave Surface (B8)
	Saturation (A3)	X	Oxidized Rhizospheres on Living Roots (C3)		Drainage Patterns (B10)
	Water Marks (B1)		Presence of Reduced Iron (C4)		Moss Trim Lines (B16)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Thin Muck Surface (C7)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)				Stunted or Stressed Plants (D1)
	Inundation Visible on Aerial Imagery (B7)			X	Geomorphic Position (D2)
	Water-Stained Leaves (B9)				Shallow Aquitard (D3)
	Aquatic Fauna (B13)				Microtopographic Relief (D4)
				X	FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	N/A
Water table present?	Yes		No	X	Depth (inches):	N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches):	N/A

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 20

Tree Stratum (Plot size: r = 30 feet)	Absolute % Cover	Dominant Species?	Indicator Staus
1			
2			
3			
4			
5			
6			
7			
	0	= Total Cover	
Sapling stratum (Plot size: r = 30 feet)			
1 *Platanus occidentalis*			FACW
2			
3			
4			
5			
6			
7			
	0	= Total Cover	
Shrub stratum (Plot size: r = 30 feet)			
1			
2			
3			
4			
5			
6			
7			
	0	= Total Cover	
Herb stratum (Plot size: r = 30 feet)			
1 *Microstegium vimineum*	30	Y	FAC
2 *Agrimonia parviflora*	30	Y	FACW
3 *Dichanthelium clandestinum*	20	Y	FAC
4 *Panicum virgatum*	10	N	FAC
5 *Hibiscus moscheutos*	10	N	OBL
6			
7			
8			
9			
10			
11			
12			
	100	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)			
1 *Lonicera japonica*	30	Y	FACU
2 *Clematis virginiana*	10	Y	FAC
3			
4			
5			
	40	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across all Strata:	5	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	80.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	10	x 1 =	10	
FACW species	30	x 2 =	60	
FAC species	70	x 3 =	210	
FACU species	30	x 4 =	120	
UPL species	0	x 5 =	0	
Column totals	140	(A)	400	(B)
Prevalence Index = B/A =			2.86	

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-2	5YR 4/3	100%					Sandy Loam	
2-13	5YR 4/2	70%	2.5YR 4/8	30%	C	PL	Sandy Loam	Flecks of mica

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

Refusal at 13", roots, grinding the soil

PHOTOGRAPHS Sampling Point: 20

Photograph 1. Data Point 20 Soil

Photograph 2. Data Point 20 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	12-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	21
Investigator(s):	S. Vonada & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Swale	Local relief (concave, convex, none):	Concave	Slope (%):	1%
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.609371	Long:	-78.329289
Datum:	NAD 83				
Soil Map Unit Name:	30D - Oak Level-Siloam complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		True Aquatic Plants (B14)
	High Water Table (A2)		Hydrogen Sulfide Odor (C1)
	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)
X	Water Marks (B1)		Presence of Reduced Iron (C4)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)
	Drift Deposits (B3)		Thin Muck Surface (C7)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)
	Iron Deposits (B5)		
	Inundation Visible on Aerial Imagery (B7)		
	Water-Stained Leaves (B9)		
	Aquatic Fauna (B13)		

Secondary Indicators (minimum of two required)

	Surface Soil Cracks (B6)
	Sparsely Vegetated Concave Surface (B8)
	Drainage Patterns (B10)
	Moss Trim Lines (B16)
	Dry-Season Water Table (C2)
	Crayfish Burrows (C8)
	Saturation Visible on Aerial Imagery (C9)
	Stunted or Stressed Plants (D1)
X	Geomorphic Position (D2)
	Shallow Aquitard (D3)
	Microtopographic Relief (D4)
X	FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No		Depth (inches): N/A
Water table present?	Yes		No		Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No		Depth (inches): N/A

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 21

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1	*Salix nigra*	5	Y	OBL
2	*Alnus serrulata*	3	Y	OBL
3				
4				
5				
6				
7				
		8	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Mimulus ringens*	20	Y	OBL
2	*Carex lurida*	10	Y	OBL
3	*Scirpus cyperinus*	5	N	FACW
4	*Ludwigia alternifolia*	5	N	FACW
5	*Scirpus atrovirens*	3	N	OBL
6	*Typha latifolia*	3	N	OBL
7	*Juncus effusus*	3	N	FACW
8	*Dichanthelium clandestinum*	3	N	FAC
9				
10				
11				
12				
		52	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
		0	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across all Strata:	4	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	100.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	44	x 1 =	44	
FACW species	13	x 2 =	26	
FAC species	3	x 3 =	9	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	60	(A)	79	(B)
Prevalence Index = B/A =			1.32	

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	5YR 4/1	80%	5YR 3/4	20%	C	M	Silty Clay	
3-5	5YR 5/1	60%	7.5YR 5/4	30%	C	M	Sandy Clay	
			5YR 4/6	10%	C	M	Sandy Clay	
5+	5YR 5/6	80%	7.5YR 6/4	20%	C	M	Fine Sandy Loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	12-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	22
Investigator(s):	S. Vonada & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Swale	Local relief (concave, convex, none):	Concave	Slope (%):	1%
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.609224	Long:	-78.329021
Datum:	NAD 83				
Soil Map Unit Name:	30D - Oak Level-Siloam complex	NWI Classification:	none		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	Y		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)		Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
Water-Stained Leaves (B9)		Shallow Aquitard (D3)
Aquatic Fauna (B13)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):
Water table present?	Yes		No	X	Depth (inches):
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches):

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 22

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1	*Rhus copallinum*	5	Y	FACU
2				
3				
4				
5				
6				
7				
		5	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Festuca arundinacea*	15	Y	FACU
2	*Andropogon virginicus*	7	Y	FACU
3	*Rubus argutus*	5	Y	FACU
4	*Diospyros virginiana*	5	Y	FAC
5	*Pycnanthemum incanum*	5	Y	UPL
6	*Ilex opaca*	3	N	FACU
7	*Conyza canadensis*	3	N	FACU
8	*Lespedeza bicolor*	3	N	UPL
9	*Liriodendron tulipifera*	2	N	FACU
10	*Solidago altissima*	2	N	FACU
11	*Coleataenia anceps*	2	N	FAC
12	*Eupatorium capillifolium*	2	N	FACU
		54	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
		0	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across all Strata:	6	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	16.67%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	7	x 3 =	21	
FACU species	44	x 4 =	176	
UPL species	8	x 5 =	40	
Column totals	59	(A)	237	(B)
Prevalence Index = B/A =			4.02	

Hydrophytic Vegetation Indicators:

- 1 – Rapid Test for Hydrophytic Vegetation
- 2 – Dominance Test is >50%
- 3 – Prevalence Index is ≤3.0[1]
- 4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	7.5YR 2.5/2	100%					Fine Sandy Loam	
3-4	7.5YR 4/1	95%	7.5YR 3/4	5%	C	M	Fine Sandy Loam	
4+	7.5YR 5/4	100%					Sandy Loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	12-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	23
Investigator(s):	S. Vonada & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Flat	Local relief (concave, convex, none):	None	Slope (%):	0
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.609238	Long:	-78.327896
Datum:	NAD 83				
Soil Map Unit Name:	30D - Oak Level-Siloam complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)		Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
Water-Stained Leaves (B9)		Shallow Aquitard (D3)
Aquatic Fauna (B13)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):
Water table present?	Yes		No	X	Depth (inches):
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches):

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 23

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1	*Rhus copallinum*	5	Y	FACU
2				
3				
4				
5				
6				
7				
		5	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Festuca arundinacea*	15	Y	FACU
2	*Andropogon virginicus*	7	Y	FACU
3	*Rubus argutus*	5	Y	FACU
4	*Diospyros virginiana*	5	Y	FAC
5	*Pycnanthemum incanum*	5	Y	UPL
6	*Ilex opaca*	3	N	FACU
7	*Conyza canadensis*	3	N	FACU
8	*Lespedeza bicolor*	3	N	UPL
9	*Liriodendron tulipifera*	2	N	FACU
10	*Solidago altissima*	2	N	FACU
11	*Coleataenia anceps*	2	N	FAC
12	*Eupatorium capillifolium*	2	N	FACU
		54	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
		0	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across all Strata:	6	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	16.67%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	7	x 3 =	21	
FACU species	44	x 4 =	176	
UPL species	8	x 5 =	40	
Column totals	59	(A)	237	(B)
Prevalence Index = B/A =			4.02	

Hydrophytic Vegetation Indicators:

- 1 – Rapid Test for Hydrophytic Vegetation
- 2 – Dominance Test is >50%
- 3 – Prevalence Index is ≤3.0[1]
- 4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 23

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	7.5YR 2.5/2	100%					Fine Sandy Loam	
3-4	7.5YR 4/1	95%	7.5YR 3/4	5%	C	M	Fine Sandy Loam	
4+	7.5YR 5/4	100%					Sandy Loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	11-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	24
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	floodplain	Local relief (concave, convex, none):	None	Slope (%):	0
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.605921	Long:	-78.327565
Datum:	NAD83				
Soil Map Unit Name:	12A - Codorus-Hatboro complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)		Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
Water-Stained Leaves (B9)		Shallow Aquitard (D3)
Aquatic Fauna (B13)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 24

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1	*Betula nigra*	10	Y	FACW
2	*Juniperus virginiana*	10	Y	FACU
3	*Carpinus caroliniana*	10	Y	FAC
4	*Carya tomentosa*	10	Y	UPL
5				
6				
7				
		40	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1	*Lindera benzoin*	10	Y	FAC
2	*Symphoricarpos orbiculatus*	5	Y	FACU
3				
4				
5				
6				
7				
		15	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Elymus hystrix*	15	Y	UPL
2	*Symphyotrichum racemosum*	10	Y	FACW
3	*Polystichum acrostichoides*	5	N	FAC
4	*Rubus argutus*	5	N	FACU
5	*Dichanthelium clandestinum*	5	N	FAC
6				
7				
8				
9				
10				
11				
12				
		40	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1	*Smilax rotundifolia*	5	Y	FAC
2				
3				
4				
5				
		5	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 9 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 55.56% (A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	20	x 2 =	40	
FAC species	35	x 3 =	105	
FACU species	20	x 4 =	80	
UPL species	25	x 5 =	125	
Column totals	100	(A)	350	(B)

Prevalence Index = B/A = 3.50

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 24

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	10YR 4/4	100%					Sandy loam	
3-9	10YR 4/6	100%					Sandy loam	
9-18	7.5YR 4/6	100%					Sandy loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS Sampling Point: 24

Photograph 1. Data Point 24 Soil.

Photograph 2. Data Point 24 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	5-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	25
Investigator(s):	L. Rader-Dixon & S. Vonada	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Depression	Local relief (concave, convex, none):	Concave	Slope (%):	3-5%
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.60985899	Long:	-78.32006464
Datum:	NAD 83				
Soil Map Unit Name:	Oak-Level, Siloam coplex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)
	Surface Water (A1)		True Aquatic Plants (B14)		Surface Soil Cracks (B6)
	High Water Table (A2)		Hydrogen Sulfide Odor (C1)		Sparsely Vegetated Concave Surface (B8)
X	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)		Drainage Patterns (B10)
	Water Marks (B1)		Presence of Reduced Iron (C4)		Moss Trim Lines (B16)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Thin Muck Surface (C7)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)				Stunted or Stressed Plants (D1)
	Inundation Visible on Aerial Imagery (B7)				Geomorphic Position (D2)
	Water-Stained Leaves (B9)				Shallow Aquitard (D3)
	Aquatic Fauna (B13)			X	Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	N/A
Water table present?	Yes	X	No		Depth (inches):	15
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	5

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

possible seep area

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 25

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum	(Plot size: r = 30 feet)			
1	*Acer rubrum*	60	Y	FAC
2				
3				
4				
5				
6				
7				
		60	= Total Cover	
Sapling stratum	(Plot size: r = 30 feet)			
1	*Betula nigra*	10	Y	FACW
2	*Prunus pensylvanica*	5	Y	FACU
3	*Carpinus caroliniana*	5	Y	FAC
4	*Acer rubrum*	5	Y	FAC
5				
6				
7				
		25	= Total Cover	
Shrub stratum	(Plot size: r = 30 feet)			
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Herb stratum	(Plot size: r = 30 feet)			
1	*Microstegium vimineum*	85	Y	FAC
2	*Geum canadense*	5	N	FACU
3	*Carex lurida*	5	N	OBL
4	*Bidens aristosa*	2	N	FACW
5				
6				
7				
8				
9				
10				
11				
12				
		97	= Total Cover	
Woody vine stratum	(Plot size: r = 30 feet)			
1	*Rosa multiflora*	10	Y	FACU
2	*Smilax rotundifolia*	10	Y	FAC
3				
4				
5				
		20	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	6	(A)
Total Number of Dominant Species Across all Strata:	8	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	75.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	5	x 1 =	5	
FACW species	12	x 2 =	24	
FAC species	165	x 3 =	495	
FACU species	20	x 4 =	80	
UPL species	0	x 5 =	0	
Column totals	202	(A)	604	(B)
Prevalence Index = B/A =			2.99	

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 25

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-5	7.5YR2.5/2	100%					Silty Clay Loam	
5-12	10YR4/2	85%	10YR 4/6	15%	C	PL/M	Sandy Clay Loam	
12-24	10YR4/2	90%	10yr5/4	10%	C	PL	Sandy Clay Loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

PHOTOGRAPHS Sampling Point: 25

Photograph 1. Data Point 25 Soil

Photograph 2. Data Point 25 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	5-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	26
Investigator(s):	L. Rader-Dixon & S. Vonada	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Depression	Local relief (concave, convex, none):	Concave	Slope (%):	3-7%
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.66017081	Long:	-78.32547566
Datum:	NAD 83				
Soil Map Unit Name:	Oak-Level, Siloam coplex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y
Hydric soil present?	N
Indicators of wetland hydrology present?	N

Is the sampled area within a wetland? N

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	____	No	X	Depth (inches):	N/A
Water table present?	Yes	____	No	X	Depth (inches):	N/A
Saturation present? (includes capillary fringe)	Yes	____	No	X	Depth (inches):	N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

no hydrology indicators present

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 26

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum	(Plot size: r = 30 feet)			
1	*Betula nigra*	20	Y	FACW
2	*Platanus occidentalis*	15	Y	FACW
3	*Juglans nigra*	15	Y	FACU
4	*Juniperus virginiana*	10	N	FACU
5				
6				
7				
		60	= Total Cover	
Sapling stratum	(Plot size: r = 30 feet)			
1	*Betula nigra*	10	Y	FACW
2	*Fraxinus pennsylvanica*	5	Y	FACW
3				
4				
5				
6				
7				
		15	= Total Cover	
Shrub stratum	(Plot size: r = 30 feet)			
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Herb stratum	(Plot size: r = 30 feet)			
1	*Microstegium vimineum*	85	Y	FAC
2	*Persicaria virginiana*	5	N	FAC
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
		90	= Total Cover	
Woody vine stratum	(Plot size: r = 30 feet)			
1	*Rosa multiflora*	10	Y	FACU
2	*Smilax rotundifolia*	2	N	FAC
3				
4				
5				
		12	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across all Strata:	7	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	71.43%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	92	x 3 =	276
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column totals	177 (A)		516 (B)
Prevalence Index = B/A =			2.92

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 26

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-5	7.5YR2.5/3	100%					fine sandy loam	
5-15	10YR5/3	95%	10YR 4/6	5%	C	PL/M	silty clay loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS

Sampling Point: 26

Photograph 1. Data Point 26 Soil

Photograph 2. Data Point 26 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	19-Aug-2020
Applicant/Owner:	RES, LLC	State:	VA	Sampling Point:	27
Investigator(s):	S. Vonada	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Swale	Local relief (concave, convex, none):	Convex	Slope (%):	1-2%
Subregion (LRR or MLRA):	MLRA 136 of LRR P	Lat:	37.608169	Long:	-78.327585	Datum:	NAD 83
Soil Map Unit Name:	30D - Oak Level-Siloam complex	NWI Classification:	none		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)		Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
Water-Stained Leaves (B9)		Shallow Aquitard (D3)
Aquatic Fauna (B13)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 27

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum	(Plot size: r = 30 feet)			
1	*Acer rubrum*	20	Y	FAC
2	*Liriodendron tulipifera*	15	Y	FACU
3	*Ulmus alata*	5	N	FACU
4	*Ilex opaca*	5	N	FACU
5	*Juniperus virginiana*	3	N	FACU
6				
7				
		48	= Total Cover	
Sapling stratum	(Plot size: r = 15 feet)			
1	*Ulmus alata*	3	Y	FACU
2	*Diospyros virginiana*	2	Y	FAC
3				
4				
5				
6				
7				
		5	= Total Cover	
Shrub stratum	(Plot size: r = 15 feet)			
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Herb stratum	(Plot size: r = 5 feet)			
1	*Microstegium vimineum*	80	Y	FAC
2	*Ambrosia artemisiifolia*	7	N	FACU
3	*Rosa multiflora*	5	N	FACU
4	*Ulmus alata*	3	N	FACU
5	*Persicaria maculosa*	2	N	FACW
6				
7				
8				
9				
10				
11				
12				
		97	= Total Cover	
Woody vine stratum	(Plot size: r = 30 feet)			
1	*Toxicodendron radicans*	20	Y	FAC
2	*Smilax rotundifolia*	3	N	FAC
3				
4				
5				
		23	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across all Strata:	6	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	66.67%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	2	x 2 =	4
FAC species	125	x 3 =	375
FACU species	46	x 4 =	184
UPL species	0	x 5 =	0
Column totals	173 (A)		563 (B)

Prevalence Index = B/A = 3.25

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 27

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

Equipment unavailable for proper soil sample.

PHOTOGRAPHS Sampling Point: 27

Photograph 1. Data Point 27 Vicinity

Photograph 2. Data Point 27 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	5-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	28
Investigator(s):	M. Molnar (PWD) & C. Bishop	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Swale	Local relief (concave, convex, none):	Concave	Slope (%):	5
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.59950567	Long:	-78.32129543
Datum:	NAD83				
Soil Map Unit Name:	20B - Halifax-Delanco complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)		Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
Water-Stained Leaves (B9)		Shallow Aquitard (D3)
Aquatic Fauna (B13)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 28

	Tree Stratum (Plot size: r = 30 feet)	Absolute % Cover	Dominant Species?	Indicator Staus
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
	Sapling stratum (Plot size: r = 15 feet)			
1	*Juglans nigra*	5	Y	FACU
2	*Ulmus americana*	5	Y	FACW
3	*Acer rubrum*	5	Y	FAC
4				
5				
6				
7				
		15	= Total Cover	
	Shrub stratum (Plot size: r = 15 feet)			
1	*Rosa multiflora*	30	Y	FACU
2				
3				
4				
5				
6				
7				
		30	= Total Cover	
	Herb stratum (Plot size: r = 5 feet)			
1	*Microstegium vimineum*	60	Y	FAC
2	*Solidago rugosa*	20	Y	FAC
3	*Ambrosia artemisiifolia*	5	N	FACU
4	*Galium aparine*	5	N	FACU
5	*Verbascum thapsus*	5	N	FACU
6	*Verbesina alternifolia*	3	N	FAC
7	*Geum canadense*	2	N	FACU
8				
9				
10				
11				
12				
		100	= Total Cover	
	Woody vine stratum (Plot size: r = 30 feet)			
1	*Vitis rotundifolia*	30	Y	FAC
2	*Campsis radicans*	5	N	FAC
3				
4				
5				
		35	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across all Strata:	7	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	71.43%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	5	x 2 =	10	
FAC species	123	x 3 =	369	
FACU species	52	x 4 =	208	
UPL species	0	x 5 =	0	
Column totals	180	(A)	587	(B)
Prevalence Index = B/A =			3.26	

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 28

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-18	7.5YR 5/4	100%					Clay loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS Sampling Point: 28

Photograph 1. Data Point 28 Soil

Photograph 2. Data Point 28 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	5-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	29
Investigator(s):	M. Molnar (PWD) & C. Bishop	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Swale	Local relief (concave, convex, none):	Concave	Slope (%):	3
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.60081683	Long:	-78.32072266
Datum:	NAD83				
Soil Map Unit Name:	20B - Halifax-Delanco complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		True Aquatic Plants (B14)
	High Water Table (A2)		Hydrogen Sulfide Odor (C1)
X	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)
	Water Marks (B1)		Presence of Reduced Iron (C4)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)
	Drift Deposits (B3)		Thin Muck Surface (C7)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)
	Iron Deposits (B5)		
	Inundation Visible on Aerial Imagery (B7)		
	Water-Stained Leaves (B9)		
	Aquatic Fauna (B13)		

Secondary Indicators (minimum of two required)

	Surface Soil Cracks (B6)
	Sparsely Vegetated Concave Surface (B8)
	Drainage Patterns (B10)
	Moss Trim Lines (B16)
	Dry-Season Water Table (C2)
	Crayfish Burrows (C8)
	Saturation Visible on Aerial Imagery (C9)
	Stunted or Stressed Plants (D1)
	Geomorphic Position (D2)
	Shallow Aquitard (D3)
	Microtopographic Relief (D4)
X	FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	N/A
Water table present?	Yes		No	X	Depth (inches):	N/A
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 29

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Sapling stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Mimulus ringens*	40	Y	OBL
2	*Scirpus cyperinus*	30	Y	FACW
3	*Juncus effusus*	15	N	FACW
4	*Ludwigia alternifolia*	5	N	FACW
5	*Rubus argutus*	5	N	FACU
6	*Boehmeria cylindrica*	5	N	FACW
7				
8				
9				
10				
11				
12				
		100	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
		0	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across all Strata:	2	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	100.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	40	x 1 =	40
FACW species	55	x 2 =	110
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column totals	100 (A)		170 (B)

Prevalence Index = B/A = 1.70

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 29

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	95%	10YR 4/6	5%	C	M	Sandy loam	
8-18	10YR 5/1	98%	10YR 4/6	2%	C	M	Sandy loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

PHOTOGRAPHS Sampling Point: 29

Photograph 1. Data Point 29 Soil

Photograph 2. Data Point 29 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	5-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	30
Investigator(s):	M. Molnar (PWD) & C. Bishop	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Hillside	Local relief (concave, convex, none):	None	Slope (%):	2
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat: 37.60086209	Long: -78.3207155	Datum:	NAD83
Soil Map Unit Name:	20B - Halifax-Delanco complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)		Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
Water-Stained Leaves (B9)		Shallow Aquitard (D3)
Aquatic Fauna (B13)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 30

Tree Stratum (Plot size: r = 30 feet)	Absolute % Cover	Dominant Species?	Indicator Staus
1			
2			
3			
4			
5			
6			
7			
	0	= Total Cover	

Sapling stratum (Plot size: r = 30 feet)			
1			
2			
3			
4			
5			
6			
7			
	0	= Total Cover	

Shrub stratum (Plot size: r = 15 feet)			
1	*Rosa multiflora*	Y	FACU
2			
3			
4			
5			
6			
7			
	5	= Total Cover	

Herb stratum (Plot size: r = 5 feet)			
1	*Dichanthelium clandestinum*	Y	FAC
2	*Solidago rugosa*	N	FAC
3	*Rubus argutus*	N	FACU
4	*Ambrosia artemisiifolia*	N	FACU
5	*Ludwigia alternifolia*	N	FACW
6	*Verbascum thapsus*	N	FACU
7	*Geum canadense*	N	FACU
8			
9			
10			
11			
12			
	90	= Total Cover	

Woody vine stratum (Plot size: r = 30 feet)			
1	*Lonicera japonica*	Y	FACU
2			
3			
4			
5			
	10	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across all Strata:	3	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	33.33%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	5	x 2 =	10	
FAC species	65	x 3 =	195	
FACU species	35	x 4 =	140	
UPL species	0	x 5 =	0	
Column totals	105	(A)	345	(B)
Prevalence Index = B/A =			3.29	

Hydrophytic Vegetation Indicators:

- 1 – Rapid Test for Hydrophytic Vegetation
- 2 – Dominance Test is >50%
- 3 – Prevalence Index is ≤3.0[1]
- 4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 30

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-2	7.5YR 3/2	100%					Sandy loam	
2-8	10YR 4/3	100%					Sandy loam	
8-18	2.5YR 5/4	95%	10YR 4/6	5%	C	M	Sandy loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS Sampling Point: 30

Photograph 1. Data Point 30 Soil

Photograph 2. Data Point 30 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	7-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	31
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Swale	Local relief (concave, convex, none):	Concave	Slope (%):	2
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.60285405	Long:	-78.3214925
Datum:	NAD83				
Soil Map Unit Name:	20B - Halifax-Delanco complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

	Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
	Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
X	High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
X	Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
	Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
	Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
	Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
	Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)		Stunted or Stressed Plants (D1)
	Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
	Water-Stained Leaves (B9)		Shallow Aquitard (D3)
	Aquatic Fauna (B13)		Microtopographic Relief (D4)
			FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes	X	No		Depth (inches): 6
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches): Surface

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 31

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum	(Plot size: r = 30 feet)			
1	*Betula nigra*	7	Y	FACW
2				
3				
4				
5				
6				
7				
		7	= Total Cover	
Sapling stratum	(Plot size: r = 30 feet)			
1	*Acer rubrum*	3	Y	FAC
2	*Rhus glabra*	3	Y	UPL
3				
4				
5				
6				
7				
		6	= Total Cover	
Shrub stratum	(Plot size: r = 15 feet)			
1	*Lindera benzoin*	5	Y	FAC
2	*Cercis canadensis*	5	Y	FACU
3				
4				
5				
6				
7				
		10	= Total Cover	
Herb stratum	(Plot size: r = 5 feet)			
1	*Microstegium vimineum*	40	Y	FAC
2	*Carex lurida*	15	Y	OBL
3	*Eupatorium perfoliatum*	10	N	FACW
4	*Boehmeria cylindrica*	5	N	FACW
5	*Mimulus ringens*	5	N	OBL
6	*Hypericum mutilum*	3	N	FACW
7	*Lonicera japonica*	3	N	FACU
8	*Conoclinium coelestinum*	2	N	FAC
9	*Vitis rotundifolia*	2	N	FAC
10	*Juncus effusus*	2	N	FACW
11	*Smilax rotundifolia*	1	N	FAC
12				
		88	= Total Cover	
Woody vine stratum	(Plot size: r = 30 feet)			
1				
2				
3				
4				
5				
		0	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across all Strata:	7	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	71.43%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	20	x 1 =	20	
FACW species	27	x 2 =	54	
FAC species	53	x 3 =	159	
FACU species	8	x 4 =	32	
UPL species	3	x 5 =	15	
Column totals	111	(A)	280	(B)
Prevalence Index = B/A =			2.52	

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 31

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-4	10YR 3/1	100%					Sandy clay loam	
4-10	10YR 4/2	95%	10YR 5/6	5%	C	M	Sandy clay loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compacted rock

Depth (inches): 10

Hydric Soil Present? Y

Remarks:

PHOTOGRAPHS Sampling Point: 31

Photograph 1: Data Point 31 Soil

Photograph 2: Data Point 31 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	7-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	32
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Swale	Local relief (concave, convex, none):	concave	Slope (%):	2
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.60292087	Long:	-78.32152196
Datum:	NAD83				
Soil Map Unit Name:	20B - Halifax-Delanco complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)		Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
Water-Stained Leaves (B9)		Shallow Aquitard (D3)
Aquatic Fauna (B13)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 32

	Tree Stratum (Plot size: r = 30 feet)	Absolute % Cover	Dominant Species?	Indicator Staus
1	*Pinus taeda*	20	Y	FAC
2	*Cercis canadensis*	10	Y	FACU
3				
4				
5				
6				
7				
		30	= Total Cover	

	Sapling stratum (Plot size: r = 30 feet)			
1	*Ilex opaca*	5	Y	FACU
2	*Fraxinus pennsylvanica*	3	Y	FACW
3	*Quercus rubra*	3	Y	FACU
4	*Pinus taeda*	3	Y	FAC
5	*Acer rubrum*	2	N	FAC
6				
7				
		16	= Total Cover	

	Shrub stratum (Plot size: r = 15 feet)			
1	*Cercis canadensis*	15	Y	FACU
2	*Symphoricarpos orbiculatus*	10	Y	FACU
3				
4				
5				
6				
7				
		25	= Total Cover	

	Herb stratum (Plot size: r = 5 feet)			
1	*Rubus argutus*	7	Y	FACU
2	*Verbascum thapsus*	5	Y	FACU
3	*Cercis canadensis*	5	Y	FACU
4	*Galium aparine*	5	Y	FACU
5	*Dichanthelium clandestinum*	3	N	FAC
6	*Polystichum acrostichoides*	3	N	FACU
7	*Chamaecrista fasciculata*	3	N	FACU
8	*Taraxacum officinale*	2	N	UPL
9	*Ambrosia artemisiifolia*	2	N	FACU
10				
11				
12				
		35	= Total Cover	

	Woody vine stratum (Plot size: r = 30 feet)			
1				
2				
3				
4				
5				
		0	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across all Strata:	12	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	25.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	3	x 2 =	6	
FAC species	28	x 3 =	84	
FACU species	73	x 4 =	292	
UPL species	2	x 5 =	10	
Column totals	106	(A)	392	(B)
Prevalence Index = B/A =			3.70	

Hydrophytic Vegetation Indicators:

- 1 – Rapid Test for Hydrophytic Vegetation
- 2 – Dominance Test is >50%
- 3 – Prevalence Index is ≤3.0[1]
- 4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 32

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-4	2.5Y 3/2	100%					Sandy loam	
4-12	10YR 5/4	95%	2.5Y 3/2	5%	C	M	Sandy loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Compacted sand and gravel

Depth (inches): 12

Hydric Soil Present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	7-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	33
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Toeslope	Local relief (concave, convex, none):	concave	Slope (%):	1
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat: 37.60492362	Long: -78.32189337	Datum:	NAD83
Soil Map Unit Name:	20B - Halifax-Delanco complex		NWI Classification:	None	

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)
	Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
	High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
X	Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
	Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
	Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
	Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
	Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)		Stunted or Stressed Plants (D1)
	Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
	Water-Stained Leaves (B9)		Shallow Aquitard (D3)
	Aquatic Fauna (B13)		Microtopographic Relief (D4)
			FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	N/A
Water table present?	Yes		No	X	Depth (inches):	N/A
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	Surface

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 33

Tree Stratum (Plot size: r = 30 feet)	Absolute % Cover	Dominant Species?	Indicator Staus
1 *Platanus occidentalis*	30	Y	FACW
2			
3			
4			
5			
6			
7			
	30	= Total Cover	

Sapling stratum (Plot size: r = 30 feet)			
1 *Acer rubrum*	10	Y	FAC
2 *Cercis canadensis*	10	Y	FACU
3 *Acer rubrum*	5	N	FAC
4 *Hamamelis virginiana*	3	N	FACU
5			
6			
7			
	28	= Total Cover	

Shrub stratum (Plot size: r = 15 feet)			
1			
2			
3			
4			
5			
6			
7			
	0	= Total Cover	

Herb stratum (Plot size: r = 5 feet)			
1 *Solidago canadensis*	20	Y	FACU
2 *Boehmeria cylindrica*	10	Y	FACW
3 *Impatiens capensis*	10	Y	FACW
4 *Microstegium vimineum*	10	Y	FAC
5 *Eutrochium purpureum*	5	N	FAC
6 *Woodwardia areolata*	3	N	FACW
7 *Onoclea sensibilis*	3	N	FACW
8 *Elymus hystrix*	2	N	UPL
9 *Dichanthelium clandestinum*	2	N	FAC
10			
11			
12			
	65	= Total Cover	

Woody vine stratum (Plot size: r = 30 feet)			
1 *Lonicera japonica*	5	Y	FACU
2			
3			
4			
5			
	5	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across all Strata:	8	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	62.50%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	56	x 2 =	112	
FAC species	32	x 3 =	96	
FACU species	38	x 4 =	152	
UPL species	2	x 5 =	10	
Column totals	128	(A)	370	(B)

Prevalence Index = B/A = 2.89

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 33

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-6	7.5YR 5/1	95%	7.5YR 3/4	5%	C	M	Silty clay loam	
6-18	5YR 4/1	100%					Silt clay	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

PHOTOGRAPHS Sampling Point: 33

Photograph 1: Data Point 33 Soil

Photograph 2: Data Point 33 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	7-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	34
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Flat	Local relief (concave, convex, none):	none	Slope (%):	0
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.60507394	Long:	-78.32193184
Datum:	NAD83				
Soil Map Unit Name:	20B - Halifax-Delanco complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)		Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
Water-Stained Leaves (B9)		Shallow Aquitard (D3)
Aquatic Fauna (B13)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 34

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum	(Plot size: r = 30 feet)			
1	*Acer rubrum*	10	Y	FAC
2	*Ulmus americana*	10	Y	FACW
3	*Liriodendron tulipifera*	5	N	FACU
4	*Quercus palustris*	5	N	FACW
5				
6				
7				
		30	= Total Cover	
Sapling stratum	(Plot size: r = 30 feet)			
1	*Ulmus americana*	5	Y	FACW
2	*Ilex opaca*	3	Y	FACU
3				
4				
5				
6				
7				
		8	= Total Cover	
Shrub stratum	(Plot size: r = 15 feet)			
1	*Lindera benzoin*	10	Y	FAC
2	*Cercis canadensis*	3	Y	FACU
3				
4				
5				
6				
7				
		13	= Total Cover	
Herb stratum	(Plot size: r = 5 feet)			
1	*Microstegium vimineum*	40	Y	FAC
2	*Rubus argutus*	5	N	FACU
3	*Agrostis gigantea*	5	N	FACW
4	*Amphicarpaea bracteata*	3	N	FAC
5	*Galium aparine*	3	N	FACU
6	*Rosa multiflora*	3	N	FACU
7				
8				
9				
10				
11				
12				
		59	= Total Cover	
Woody vine stratum	(Plot size: r = 30 feet)			
1	*Smilax rotundifolia*	5	Y	FAC
2				
3				
4				
5				
		5	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	6	(A)
Total Number of Dominant Species Across all Strata:	8	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	75.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	25	x 2 =	50
FAC species	68	x 3 =	204
FACU species	22	x 4 =	88
UPL species	0	x 5 =	0
Column totals	115 (A)		342 (B)

Prevalence Index = B/A = 2.97

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: 34

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	10YR 3/4	100%					Silty clay loam	
3-18	10YR 5/4	95%	5YR 4/6	5%	C	M	Sandy clay loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS

Sampling Point: 34

Photograph 1: Data Point 34 Soil

Photograph 2: Data Point 34 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	15-Sep-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	35
Investigator(s):	L. Rader-Dixon	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Toe of Slope	Local relief (concave, convex, none):	Concave	Slope (%):	3-5%
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.61103037	Long:	-78.31891381
Datum:	NAD83				
Soil Map Unit Name:	Delanco Loam	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

At inner edge of a terrace.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)	
	Surface Water (A1)		True Aquatic Plants (B14)		Surface Soil Cracks (B6)
	High Water Table (A2)		Hydrogen Sulfide Odor (C1)		Sparsely Vegetated Concave Surface (B8)
	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)		Drainage Patterns (B10)
	Water Marks (B1)		Presence of Reduced Iron (C4)		Moss Trim Lines (B16)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Thin Muck Surface (C7)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)				Stunted or Stressed Plants (D1)
	Inundation Visible on Aerial Imagery (B7)			X	Geomorphic Position (D2)
	Water-Stained Leaves (B9)				Shallow Aquitard (D3)
	Aquatic Fauna (B13)				Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	N/A
Water table present?	Yes		No	X	Depth (inches):	N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches):	N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: 35

Tree Stratum (Plot size: r = 30 feet)		Absolute % Cover	Dominant Species?	Indicator Staus
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Sapling stratum (Plot size: r = 30 feet)				
1	*Platanus occidentalis*	25	Y	FACW
2	*Pyrus calleryana*	15	Y	
3	*Crataegus phaenopyrum*	10	N	FAC
4	*Pinus taeda*	10	N	FAC
5				
6				
7				
		60	= Total Cover	
Shrub stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Herb stratum (Plot size: r = 30 feet)				
1	*Agrimonia striata*	35	Y	FACU
2	*Juncus tenuis*	20	Y	FAC
3	*Tridens flavus*	10	N	FACU
4	*Verbesina alternifolia*	5	N	FAC
5	*Vernonia noveboracensis*	5	N	FACW
6	*Setaria pumila*	5	N	FAC
7				
8				
9				
10				
11				
12				
		80	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1	*Lonicera japonica*	25	Y	FACU
2	*Vitis rotundifolia*	25	Y	FAC
3	*Toxicodendron radicans*	10	N	FAC
4				
5				
		60	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across all Strata:	6	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	50.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	30	x 2 =	60	
FAC species	85	x 3 =	255	
FACU species	70	x 4 =	280	
UPL species	0	x 5 =	0	
Column totals	185	(A)	595	(B)
Prevalence Index = B/A =			3.22	

Hydrophytic Vegetation Indicators:

- 1 – Rapid Test for Hydrophytic Vegetation
- 2 – Dominance Test is >50%
- 3 – Prevalence Index is ≤3.0[1]
- 4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: 35

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	7.5YR 3/3	100%					Sandy Clay Loam	
3-10	7.5YR 4/4	85%	7.5YR 5/3	15%	C	M	Sandy Clay Loam	
10-18	7.5YR 4/4	90%	7.5YR 5/6	10%	C	M	Sandy Clay Loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

soil very dry, used spray to moisten for colors

PHOTOGRAPHS Sampling Point: 35

Photograph 1. Data Point 35 Soil

Photograph 2. Data Point 35 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	7-Aug-2020
Applicant/Owner:	RES, LLC	State:	VA	Sampling Point:	X36
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Depression	Local relief (concave, convex, none):	Concave	Slope (%):	1-2%
Subregion (LRR or MLRA):	MLRA 136 of LRR P	Lat:	37.61500499	Long:	-78.33263861
Datum:	NAD 83				
Soil Map Unit Name:	12A - Codorus-Hatboro complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)
	Surface Water (A1)		True Aquatic Plants (B14)		Surface Soil Cracks (B6)
	High Water Table (A2)		Hydrogen Sulfide Odor (C1)		Sparsely Vegetated Concave Surface (B8)
X	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)		Drainage Patterns (B10)
	Water Marks (B1)		Presence of Reduced Iron (C4)		Moss Trim Lines (B16)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Thin Muck Surface (C7)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)				Stunted or Stressed Plants (D1)
	Inundation Visible on Aerial Imagery (B7)				Geomorphic Position (D2)
	Water-Stained Leaves (B9)				Shallow Aquitard (D3)
	Aquatic Fauna (B13)			X	Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	N/A	
Water table present?	Yes		No	X	Depth (inches):	N/A	**Wetland Hydrology Present?** Y
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	10	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: X36

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1	*Liriodendron tulipifera*	20	Y	FACU
2				
3				
4				
5				
6				
7				
		20	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1	*Lindera benzoin*	10	Y	FAC
2	*Carpinus caroliniana*	5	Y	FAC
3				
4				
5				
6				
7				
		15	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Microstegium vimineum*	40	Y	FAC
2	*Lycopus virginicus*	7	N	OBL
3	*Boehmeria cylindrica*	5	N	FACW
4	*Juncus effusus*	5	N	FACW
5	*Dichanthelium dichotomum*	5	N	FAC
6	*Carpinus caroliniana*	3	N	FAC
7	*Athyrium filix-femina*	3	N	FAC
8				
9				
10				
11				
12				
		68	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1	*Lonicera japonica*	3	Y	FACU
2				
3				
4				
5				
		3	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across all Strata:	5	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	60.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	7	x 1 =	7	
FACW species	10	x 2 =	20	
FAC species	66	x 3 =	198	
FACU species	23	x 4 =	92	
UPL species	0	x 5 =	0	
Column totals	106	(A)	317	(B)
Prevalence Index = B/A =			2.99	

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: X36

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-2	10YR 4/2	100%					Sandy loam	
2-18	10YR 5/1	85%	10YR 5/3	10%	C	M	Sandy loam	
			7.5YR 4/6	5%	C	M		

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

PHOTOGRAPHS Sampling Point: X36

Photograph 1. Data Point X36 Soil

Photograph 2. Data Point X36 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	12-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	X37
Investigator(s):	S. Vonada & C. Bishop	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Depression	Local relief (concave, convex, none):	Concave	Slope (%):	1%
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.61604921	Long:	-78.33003956
Datum:	NAD83				
Soil Map Unit Name:	30D - Oak Level-Siloam complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		True Aquatic Plants (B14)
	High Water Table (A2)		Hydrogen Sulfide Odor (C1)
	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)
	Water Marks (B1)		Presence of Reduced Iron (C4)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)
	Drift Deposits (B3)		Thin Muck Surface (C7)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)
	Iron Deposits (B5)		
	Inundation Visible on Aerial Imagery (B7)		
X	Water-Stained Leaves (B9)		
	Aquatic Fauna (B13)		

Secondary Indicators (minimum of two required)

	Surface Soil Cracks (B6)
	Sparsely Vegetated Concave Surface (B8)
	Drainage Patterns (B10)
	Moss Trim Lines (B16)
	Dry-Season Water Table (C2)
	Crayfish Burrows (C8)
	Saturation Visible on Aerial Imagery (C9)
	Stunted or Stressed Plants (D1)
X	Geomorphic Position (D2)
	Shallow Aquitard (D3)
	Microtopographic Relief (D4)
X	FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: X37

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1	*Acer rubrum*	10	Y	FAC
2	*Ulmus americana*	5	Y	FACW
3				
4				
5				
6				
7				
		15	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1	*Liquidambar styraciflua*	20	Y	FAC
2	*Ulmus americana*	15	Y	FACW
3	*Cephalanthus occidentalis*	5	N	OBL
4	*Ostrya virginiana*	3	N	FACU
5	*Ilex opaca*	3	N	FACU
6	*Fagus grandifolia*	3	N	FACU
7	*Alnus serrulata*	2	N	OBL
		51	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Athyrium filix-femina*	20	Y	FAC
2	*Dulichium arundinaceum*	12	Y	OBL
3	*Juncus tenuis*	2	N	FAC
4	*Onoclea sensibilis*	2	N	FACW
5	*Boehmeria cylindrica*	2	N	FACW
6	*Peltandra virginica*	1	N	OBL
7				
8				
9				
10				
11				
12				
		39	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1	*Campsis radicans*	5	Y	FAC
2	*Smilax rotundifolia*	2	Y	FAC
3				
4				
5				
		7	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	8	(A)
Total Number of Dominant Species Across all Strata:	8	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	100.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	20	x 1 =	20	
FACW species	24	x 2 =	48	
FAC species	59	x 3 =	177	
FACU species	9	x 4 =	36	
UPL species	0	x 5 =	0	
Column totals	112	(A)	281	(B)
Prevalence Index = B/A =			2.51	

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: X37

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	7.5YR 4/2	95%	5YR 4/6	5%	C	M	Clay Loam	
3-6	7.5YR 5/1	85%	5YR 4/6	15%	C	M	Silt Clay Loam	
6-18	10YR 5/1	90%	5YR 4/6	10%	C	M	Silt Clay Loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	12-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	X38
Investigator(s):	S. Vonada & C. Bishop	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Swale	Local relief (concave, convex, none):	Concave	Slope (%):	2-3%
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.61602561	Long: -78.3299376	Datum: NAD83
Soil Map Unit Name:	30D - Oak Level-Siloam complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: X38

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1	*Ulmus americana*	20	Y	FACW
2	*Acer rubrum*	20	Y	FAC
3	*Liquidambar styraciflua*	5	N	FAC
4				
5				
6				
7				
		45	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1	*Corylus americana*	20	Y	FACU
2	*Ilex opaca*	15	Y	FACU
3	*Lindera benzoin*	10	Y	FAC
4	*Fagus grandifolia*	2	N	FACU
5				
6				
7				
		47	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Microstegium vimineum*	25	Y	FAC
2	*Elymus hystrix*	20	Y	UPL
3	*Amphicarpaea bracteata*	10	N	FAC
4	*Dulichium arundinaceum*	10	N	OBL
5	*Geum canadense*	5	N	FACU
6	*Carex stipata*	3	N	OBL
7	*Carex comosa*	2	N	OBL
8	*Arisaema triphyllum*	1	N	FACW
9				
10				
11				
12				
		76	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1	*Lonicera japonica*	15	Y	FACU
2	*Smilax rotundifolia*	10	Y	FAC
3	*Parthenocissus quinquefolia*	5	N	FACU
4	*Campsis radicans*	3	N	FAC
5				
		33	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across all Strata:	9	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	55.56%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	15	x 1 =	15	
FACW species	21	x 2 =	42	
FAC species	83	x 3 =	249	
FACU species	62	x 4 =	248	
UPL species	20	x 5 =	100	
Column totals	201	(A)	654	(B)
Prevalence Index = B/A =			3.25	

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: X38

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-8	10YR 3/3	100%					Fine Sandy Loam	
8-12	10YR 4/3	97%	5YR 5/6	3%	C	M	Silty Clay	
12-18	10YR 5/3	95%	5YR 5/8	5%	C	M	Silty Clay Loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	19-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	X39
Investigator(s):	S. Vonada, C.Bishop	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Flat	Local relief (concave, convex, none):	None	Slope (%):	0
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.61542269	Long:	-78.32610425
Datum:	NAD 83				
Soil Map Unit Name:	12A - Codorus-Hatboro complex	NWI Classification:	PFO1A		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)		Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
Water-Stained Leaves (B9)		Shallow Aquitard (D3)
Aquatic Fauna (B13)		Microtopographic Relief (D4)
		X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: X39

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1	*Carpinus caroliniana*	55	Y	FAC
2	*Pinus virginiana*	5	N	UPL
3	*Alnus serrulata*	5	N	OBL
4	*Quercus alba*	5	N	FACU
5				
6				
7				
		70	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1	*Carpinus caroliniana*	3	Y	FAC
2	*Ilex opaca*	2	Y	FACU
3	*Liriodendron tulipifera*	2	Y	FACU
4				
5				
6				
7				
		7	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1	*Lindera benzoin*	2		FAC
2				
3				
4				
5				
6				
7				
		2	= Total Cover	
Herb stratum (Plot size: r = 30 feet)				
1	*Alnus serrulata*	5	Y	OBL
2	*Campsis radicans*	3	Y	FAC
3	*Lonicera japonica*	2	N	FACU
4	*Lindera benzoin*	2	N	FAC
5	*Parthenocissus quinquefolia*	1	N	FACU
6	*Sceptridium biternatum*	1	N	FAC
7				
8				
9				
10				
11				
12				
		14	= Total Cover	
Woody vine stratum (Plot size: r = 5 feet)				
1	*Smilax rotundifolia*	10	Y	FAC
2	*Lonicera japonica*	5	Y	FACU
3				
4				
5				
		15	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across all Strata:	8	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	62.50%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	10	x 1 =	10	
FACW species	0	x 2 =	0	
FAC species	76	x 3 =	228	
FACU species	17	x 4 =	68	
UPL species	5	x 5 =	25	
Column totals	108	(A)	331	(B)
Prevalence Index = B/A =			3.06	

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: X39

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3"	10YR 3/3	100%					Sandy Clay Loam	
3-4"	10YR 4/3	100%					Sandy Clay Loam	
4-10"	10YR 6/3	90%					Sandy Clay Loam	
	7.5YR 4/6	10%						
10+"	10YR 5/3	66%	7.5YR 5/1	3%	D	M	Sandy Clay Loam	
	7.5YR 5/4	30%						

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS Sampling Point: X39

Photograph 1. Data Point X39 Soil

Photograph 2. Data Point X39 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham, County	Sampling Date:	19-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	X40
Investigator(s):	S. Vonada & C.Bishop	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Flat	Local relief (concave, convex, none):	None	Slope (%):	0
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat:	37.6154364	Long:	-78.32604996
Datum:	NAD83				
Soil Map Unit Name:	12A - Codorus-Hatboro complex	NWI Classification:	PFO1A		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

X	Surface Water (A1)		True Aquatic Plants (B14)
	High Water Table (A2)		Hydrogen Sulfide Odor (C1)
	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)
	Water Marks (B1)		Presence of Reduced Iron (C4)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)
	Drift Deposits (B3)		Thin Muck Surface (C7)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)
	Iron Deposits (B5)		
	Inundation Visible on Aerial Imagery (B7)		
	Water-Stained Leaves (B9)		
	Aquatic Fauna (B13)		

Secondary Indicators (minimum of two required)

	Surface Soil Cracks (B6)
	Sparsely Vegetated Concave Surface (B8)
	Drainage Patterns (B10)
	Moss Trim Lines (B16)
	Dry-Season Water Table (C2)
	Crayfish Burrows (C8)
	Saturation Visible on Aerial Imagery (C9)
	Stunted or Stressed Plants (D1)
	Geomorphic Position (D2)
	Shallow Aquitard (D3)
	Microtopographic Relief (D4)
X	FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	X	No		Depth (inches):	1
Water table present?	Yes		No	X	Depth (inches):	N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches):	N/A

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: X40

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1	*Carpinus caroliniana*	45	Y	FAC
2	*Quercus palustris*	15	Y	FACW
3	*Prunus serotina*	10	N	FACU
4				
5				
6				
7				
		70	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1	*Ulmus americana*	3	Y	FACW
2	*Alnus serrulata*	3	Y	OBL
3				
4				
5				
6				
7				
		6	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Chasmanthium laxum*	10	Y	FAC
2	*Acer rubrum*	3	Y	FAC
3	*Campsis radicans*	2	N	FAC
4	*Smilax rotundifolia*	2	N	FAC
5	*Solidago rugosa*	1	N	FAC
6	*Lindera benzoin*	1	N	FAC
7	*Lobelia inflata*	1	N	FACU
8	*Dulichium arundinaceum*	1	N	OBL
9				
10				
11				
12				
		21	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1	*Smilax rotundifolia*	3	Y	FAC
2				
3				
4				
5				
		3	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	7	(A)
Total Number of Dominant Species Across all Strata:	7	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	100.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	4	x 1 =	4
FACW species	18	x 2 =	36
FAC species	67	x 3 =	201
FACU species	11	x 4 =	44
UPL species	0	x 5 =	0
Column totals	100 (A)		285 (B)

Prevalence Index = B/A = 2.85

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: X40

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	10YR 3/3	100%					Sandy Loam	
3-4	10YR 5/2	90%					Sandy Clay Loam	
	7.5YR 3/4	10%						
4-10	10YR 5/1	90%					Sandy Clay Loam	
	7.5YR 4/6	10%						
10+	10YR 4/1	95%					Sandy Clay Loam	
	7.5YR 4/4	5%						

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

PHOTOGRAPHS

Sampling Point: X40

Photograph 1. Data Point X40 Soil

Photograph 2. Data Point X40 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	19-Aug-2020
Applicant/Owner:	RES, LLC	State:	VA	Sampling Point:	X41
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Floodplain	Local relief (concave, convex, none):	Convex	Slope (%):	None
Subregion (LRR or MLRA):	MLRA 136 of LRR P	Lat: 37.61541852	Long: -78.32603337	Datum:	NAD 83
Soil Map Unit Name:	Codorus-Hatboro complex	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)
	Surface Water (A1)		True Aquatic Plants (B14)		Surface Soil Cracks (B6)
X	High Water Table (A2)		Hydrogen Sulfide Odor (C1)		Sparsely Vegetated Concave Surface (B8)
X	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)		Drainage Patterns (B10)
	Water Marks (B1)		Presence of Reduced Iron (C4)		Moss Trim Lines (B16)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Thin Muck Surface (C7)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)				Stunted or Stressed Plants (D1)
	Inundation Visible on Aerial Imagery (B7)				Geomorphic Position (D2)
	Water-Stained Leaves (B9)				Shallow Aquitard (D3)
	Aquatic Fauna (B13)				Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	N/A
Water table present?	Yes	X	No		Depth (inches):	10
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	8

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Rain in the last 24 hours.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: X41

Tree Stratum (Plot size: r = 30 feet)	Absolute % Cover	Dominant Species?	Indicator Staus
1			
2			
3			
4			
5			
6			
7			
	0	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)			
1 *Acer rubrum*	15	Y	FAC
2 *Carpinus caroliniana*	15	Y	FAC
3			
4			
5			
6			
7			
	30	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)			
1 *Lindera benzoin*	5	Y	FAC
2			
3			
4			
5			
6			
7			
	5	= Total Cover	
Herb stratum (Plot size: r = 5 feet)			
1 *Thelypteris noveboracensis*	5	Y	FAC
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
	5	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)			
1 *Campsis radicans*	5	Y	FAC
2			
3			
4			
5			
	5	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across all Strata:	5	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	100.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	45	x 3 =	135	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	45	(A)	135	(B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: X41

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	10YR 3/2	100%					Sandy clay loam	
3-12	10YR 5/3	90%	7.5YR 3/4	10%	C	M	Sandy clay loam	
12-18	10YR 5/1	90%	7.5YR 3/4	10%	C	M	Sandy clay loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS Sampling Point: X41

Photograph 1. Data Point X41 Soil

Photograph 2. Data Point X41 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	19-Aug-2020
Applicant/Owner:	RES, LLC	State:	VA	Sampling Point:	X42
Investigator(s):	M. Molnar (PWD)& G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Floodplain	Local relief (concave, convex, none):	Flat	Slope (%):	None
Subregion (LRR or MLRA):	MLRA 136 of LRR P	Lat:	37.6150202	Long:	-78.32313157
Datum:	NAD 83				
Soil Map Unit Name:	30D - Oak Level-Siloam complex	NWI Classification:	PFO1A		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)		
	Surface Water (A1)		True Aquatic Plants (B14)		Surface Soil Cracks (B6)
X	High Water Table (A2)		Hydrogen Sulfide Odor (C1)		Sparsely Vegetated Concave Surface (B8)
X	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)		Drainage Patterns (B10)
	Water Marks (B1)		Presence of Reduced Iron (C4)		Moss Trim Lines (B16)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Thin Muck Surface (C7)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)				Stunted or Stressed Plants (D1)
	Inundation Visible on Aerial Imagery (B7)				Geomorphic Position (D2)
	Water-Stained Leaves (B9)				Shallow Aquitard (D3)
	Aquatic Fauna (B13)				Microtopographic Relief (D4)
				X	FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	N/A
Water table present?	Yes	X	No		Depth (inches):	1
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Rainfall in the last 24 hours.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: X42

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1	*Acer rubrum*	15	Y	FAC
2	*Ulmus americana*	10	Y	FACW
3	*Liquidambar styraciflua*	5	N	FAC
4				
5				
6				
7				
		30	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1	*Carpinus caroliniana*	15	Y	FAC
2	*Acer rubrum*	5	Y	FAC
3				
4				
5				
6				
7				
		20	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1	*Lindera benzoin*	10	Y	FAC
2	*Clethra alnifolia*	5	Y	FAC
3				
4				
5				
6				
7				
		15	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Carex grayi*	10	Y	FACW
2	*Dulichium arundinaceum*	10	Y	OBL
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
		20	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
		0	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	8	(A)
Total Number of Dominant Species Across all Strata:	8	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	100.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	10	x 1 =	10	
FACW species	20	x 2 =	40	
FAC species	55	x 3 =	165	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	85	(A)	215	(B)

Prevalence Index = B/A = 2.53

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: X42

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-1	7.5YR 3/2	100%					Sandy loam	
1-8	7.5YR 5/3	97%	7.5YR 4/4	3%	C	M	Clay loam	
8-18	7.5YR 5/3	85%	7.5YR 4/4	15%	C	M	Sandy clay loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS Sampling Point: X42

Photograph 1. Data Point X42 Soil

Photograph 2. Data Point X42 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	19-Aug-2020
Applicant/Owner:	RES, LLC	State:	VA	Sampling Point:	X43
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Ditch	Local relief (concave, convex, none):	Concave	Slope (%):	None
Subregion (LRR or MLRA):	MLRA 136 of LRR P	Lat:	37.61495491	Long:	-78.32317164
Datum:	NAD 83				
Soil Map Unit Name:	30D - Oak Level-Siloam complex	NWI Classification:	PFO1A		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

	Surface Water (A1)		True Aquatic Plants (B14)
	High Water Table (A2)		Hydrogen Sulfide Odor (C1)
	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)
	Water Marks (B1)		Presence of Reduced Iron (C4)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)
	Drift Deposits (B3)		Thin Muck Surface (C7)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)
	Iron Deposits (B5)		
	Inundation Visible on Aerial Imagery (B7)		
X	Water-Stained Leaves (B9)		
	Aquatic Fauna (B13)		

Secondary Indicators (minimum of two required)

	Surface Soil Cracks (B6)
X	Sparsely Vegetated Concave Surface (B8)
	Drainage Patterns (B10)
	Moss Trim Lines (B16)
	Dry-Season Water Table (C2)
	Crayfish Burrows (C8)
	Saturation Visible on Aerial Imagery (C9)
	Stunted or Stressed Plants (D1)
	Geomorphic Position (D2)
	Shallow Aquitard (D3)
	Microtopographic Relief (D4)
	FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: X43

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
		0	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1				
2				
3				
4				
5				
		0	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across all Strata:	0	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	0.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	0	(A)	0	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
	2 – Dominance Test is >50%
	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
X	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Area is a sparsely vegetated floodplain depression in the woods, and meets both wetland hydrology and soil indicators.

SOIL Sampling Point: X43

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 5/2	95%	7.5YR 5/6	5%	C	M	Clay loam	
6-10	7.5YR 5/2	60%	7.5YR 5/6	40%	C	M	Clay loam	
10-18	10YR 5/1	95%	7.5YR 4/6	5%	C	M	Sandy clay	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

PHOTOGRAPHS

Sampling Point: X43

Photograph 1. Data Point X43 Soil

Photograph 2. Data Point X43 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	11-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	X44
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Floodplain	Local relief (concave, convex, none):	None	Slope (%):	0
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat: 37.60646662	Long: -78.32269095	Datum:	NAD83
Soil Map Unit Name:	12A - Codorus-Hatboro complex		NWI Classification:	None	

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

Surface Water (A1)	True Aquatic Plants (B14)	Surface Soil Cracks (B6)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Oxidized Rhizospheres on Living Roots (C3)	Drainage Patterns (B10)
Water Marks (B1)	Presence of Reduced Iron (C4)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Recent Iron Reduction in Tilled Soils (C6)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Thin Muck Surface (C7)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)		Stunted or Stressed Plants (D1)
Inundation Visible on Aerial Imagery (B7)		Geomorphic Position (D2)
Water-Stained Leaves (B9)		Shallow Aquitard (D3)
Aquatic Fauna (B13)		Microtopographic Relief (D4)
		FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches): N/A
Water table present?	Yes		No	X	Depth (inches): N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches): N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: X44

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1	*Carpinus caroliniana*	40	Y	FAC
2	*Betula nigra*	20	Y	FACW
3				
4				
5				
6				
7				
		60	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1	*Carpinus caroliniana*	5	Y	FAC
2				
3				
4				
5				
6				
7				
		5	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Microstegium vimineum*	15	Y	FAC
2	*Rubus argutus*	10	Y	FACU
3	*Thelypteris noveboracensis*	10	Y	FAC
4	*Polystichum acrostichoides*	10	Y	FACU
5	*Maianthemum racemosum*	5	N	FACU
6	*Geum canadense*	5	N	FACU
7				
8				
9				
10				
11				
12				
		55	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1	*Lonicera japonica*	5	Y	FACU
2	*Smilax rotundifolia*	5	Y	FAC
3				
4				
5				
		10	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	6	(A)
Total Number of Dominant Species Across all Strata:	9	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	66.67%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	75	x 3 =	225
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column totals	130 (A)		405 (B)

Prevalence Index = B/A = 3.12

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: X44

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-1	7.5YR 3/2	100%					Sandy laom	
1-9	10YR 4/4	100%					Sandy loam	
9-18	10YR 4/4	88%	10YR 5/3	10%	C	M	Sandy loam	
			10YR 5/2	2%	D	M		

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS

Sampling Point: X44

Photograph 1. Data Point X44 Soil.

Photograph 2. Data Point X44 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	15-Sep-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	X45
Investigator(s):	L. Rader-Dixon	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Surface Drainage	Local relief (concave, convex, none):	Concave	Slope (%):	0-3%
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat: 37.60969326	Long: -78.32012478	Datum:	NAD83
Soil Map Unit Name:	Cordorus-Hatboro	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

Remnants from overflow channel from stream (strong events). Main source of hydro to wetland is groundwater.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)	
	Surface Water (A1)		True Aquatic Plants (B14)		Surface Soil Cracks (B6)
	High Water Table (A2)		Hydrogen Sulfide Odor (C1)		Sparsely Vegetated Concave Surface (B8)
	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)		Drainage Patterns (B10)
	Water Marks (B1)		Presence of Reduced Iron (C4)		Moss Trim Lines (B16)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Thin Muck Surface (C7)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)				Stunted or Stressed Plants (D1)
	Inundation Visible on Aerial Imagery (B7)				Geomorphic Position (D2)
	Water-Stained Leaves (B9)				Shallow Aquitard (D3)
	Aquatic Fauna (B13)			X	Microtopographic Relief (D4)
					FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	N/A
Water table present?	Yes		No	X	Depth (inches):	N/A
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches):	N/A

Wetland Hydrology Present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: X45

	Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)			
1			
2			
3			
4			
5			
6			
7			
	0 = Total Cover		
Sapling stratum (Plot size: r = 30 feet)			
1 *Acer rubrum*	10	Y	FAC
2 *Platanus occidentalis*	10	Y	FACW
3			
4			
5			
6			
7			
	20 = Total Cover		
Shrub stratum (Plot size: r = 30 feet)			
1			
2			
3			
4			
5			
6			
7			
	0 = Total Cover		
Herb stratum (Plot size: r = 30 feet)			
1 *Microstegium vimineum*	50	Y	FAC
2 *Agrimonia parviflora*	10	N	FACW
3 *Tridens flavus*	10	N	FACU
4 *Pycnanthemum virginianum*	5	N	FAC
5			
6			
7			
8			
9			
10			
11			
12			
	75 = Total Cover		
Woody vine stratum (Plot size: r = 30 feet)			
1 *Lonicera japonica*	10	Y	FACU
2 *Vitis rotundifolia*	10	Y	FAC
3 *Campsis radicans*	5	Y	FAC
4			
5			
	25 = Total Cover		

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across all Strata:	6	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	83.33%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	20	x 2 =	40	
FAC species	80	x 3 =	240	
FACU species	20	x 4 =	80	
UPL species	0	x 5 =	0	
Column totals	120	(A)	360	(B)
Prevalence Index = B/A =			3.00	

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: X45

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-6	5YR 4/4	100%					Sandy Loam	
6-12	5YR 6/4	100%					Sandy Loam	
12-18	5YR 6/4	93%	5YR 7/2	7%	D	M	Sandy Loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

PHOTOGRAPHS Sampling Point: X45

Photograph 1. Data Point X45 Soil

Photograph 2. Data Point X45 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	15-Sep-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	X46
Investigator(s):	L. Rader-Dixon	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Floodplain	Local relief (concave, convex, none):	Concave	Slope (%):	0-3%
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat: 37.60985899	Long: -78.32006464	Datum:	NAD83
Soil Map Unit Name:	Cordorus Hatboro	NWI Classification:	None		

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y		

Remarks: (Explain alternative procedures here or in a separate report)

area shows signs of ditching but shallow and did not seem to effect hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)
	Surface Water (A1)		True Aquatic Plants (B14)		Surface Soil Cracks (B6)
	High Water Table (A2)		Hydrogen Sulfide Odor (C1)		Sparsely Vegetated Concave Surface (B8)
X	Saturation (A3)		Oxidized Rhizospheres on Living Roots (C3)		Drainage Patterns (B10)
	Water Marks (B1)		Presence of Reduced Iron (C4)		Moss Trim Lines (B16)
	Sediment Deposits (B2)		Recent Iron Reduction in Tilled Soils (C6)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Thin Muck Surface (C7)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Other (Explain in Remarks)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)				Stunted or Stressed Plants (D1)
	Inundation Visible on Aerial Imagery (B7)				Geomorphic Position (D2)
	Water-Stained Leaves (B9)				Shallow Aquitard (D3)
	Aquatic Fauna (B13)			X	Microtopographic Relief (D4)
				X	FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	N/A
Water table present?	Yes		No	X	Depth (inches):	N/A
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	10

Wetland Hydrology Present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Overflow drainage area from creek events it not water source- groundwater is water source.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: X46

	Tree Stratum (Plot size: r = 30 feet)	Absolute % Cover	Dominant Species?	Indicator Staus
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
	Sapling stratum (Plot size: r = 30 feet)			
1	*Acer rubrum*	30	Y	FAC
2	*Betula nigra*	30	Y	FACW
3	*Platanus occidentalis*	20	Y	FACW
4	*Liriodendron tulipifera*	10	N	FACU
5	*Nyssa sylvatica*	5	N	FAC
6	*Pinus taeda*	5	N	FAC
7				
		100	= Total Cover	
	Shrub stratum (Plot size: r = 30 feet)			
1				
2				
3				
4				
5				
6				
7				
		0	= Total Cover	
	Herb stratum (Plot size: r = 30 feet)			
1	*Agrimonia parviflora*	25	Y	FACW
2	*Microstegium vimineum*	25	Y	FAC
3	*Juncus tenuis*	10	N	FAC
4	*Juncus effusus*	5	N	FACW
5	*Geum canadense*	5	N	FACU
6	*Lysimachia nummularia*	5	N	FACW
7	*Onoclea sensibilis*	5	N	FACW
8				
9				
10				
11				
12				
		80	= Total Cover	
	Woody vine stratum (Plot size: r = 30 feet)			
1	*Rosa multiflora*	15	Y	FACU
2	*Smilax rotundifolia*	15	Y	FAC
3	*Smilax bona-nox*	10	Y	FACU
4	*Vitis rotundifolia*	5	N	FAC
5				
		45	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	6	(A)
Total Number of Dominant Species Across all Strata:	8	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	75.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	90	x 2 =	180	
FAC species	95	x 3 =	285	
FACU species	40	x 4 =	160	
UPL species	0	x 5 =	0	
Column totals	225	(A)	625	(B)

Prevalence Index = B/A = 2.78

Hydrophytic Vegetation Indicators:

	1 – Rapid Test for Hydrophytic Vegetation
X	2 – Dominance Test is >50%
X	3 – Prevalence Index is ≤3.0[1]
	4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
	Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: X46

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-1	5YR 3/2	100%					Sandy Clay Loam	
1-8	5YR 4/3	80%	2.5YR 4/4	20%	C	PL/M	Sandy Clay Loam	
8-15	5YR 6/3	90%	5YR 4/4	10%	C	PL/M	Sandy Clay Loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- X Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Y

Remarks:

The conditions met the requirements to use the F19. The soils and hydrology of the area was previously disturbed.

PHOTOGRAPHS

Sampling Point: X46

Photograph 1. Data Point X46 Soil

Photograph 2. Data Point X46 Vicinity

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont

Project/Site:	Boxwood 404	City/County:	Buckingham County	Sampling Date:	11-Aug-2020
Applicant/Owner:	RES, LLC	State:	Virginia	Sampling Point:	X47
Investigator(s):	M. Molnar (PWD) & G. Shell	Section, Township, Range:	N/A		
Landform (hillslope, terrace, etc.):	Floodplain	Local relief (concave, convex, none):	Concave	Slope (%):	0.5
Subregion (LRR or MLRA):	MLRA 136 in LRR P	Lat: 37.61435966	Long: -78.31527018	Datum:	NAD83
Soil Map Unit Name:	5B - Banister fine sandy loam		NWI Classification:	None	

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes ____	No X	Depth (inches):	N/A	
Water table present?	Yes ____	No X	Depth (inches):	N/A	**Wetland Hydrology Present?** N
Saturation present? (includes capillary fringe)	Yes ____	No X	Depth (inches):	N/A	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: X47

		Absolute % Cover	Dominant Species?	Indicator Staus
Tree Stratum (Plot size: r = 30 feet)				
1	*Liriodendron tulipifera*	20	Y	FACU
2	*Liquidambar styraciflua*	20	Y	FAC
3	*Carpinus caroliniana*	10	Y	FAC
4				
5				
6				
7				
		50	= Total Cover	
Sapling stratum (Plot size: r = 15 feet)				
1	*Carya tomentosa*	5	Y	UPL
2	*Ilex opaca*	5	Y	FACU
3				
4				
5				
6				
7				
		10	= Total Cover	
Shrub stratum (Plot size: r = 15 feet)				
1	*Hamamelis virginiana*	5	Y	FACU
2	*Celtis occidentalis*	5	Y	FACU
3				
4				
5				
6				
7				
		10	= Total Cover	
Herb stratum (Plot size: r = 5 feet)				
1	*Onoclea sensibilis*	15	Y	FACW
2	*Symphoricarpos orbiculatus*	5	N	FACU
3	*Geum canadense*	5	N	FACU
4	*Rubus argutus*	5	N	FACU
5				
6				
7				
8				
9				
10				
11				
12				
		30	= Total Cover	
Woody vine stratum (Plot size: r = 30 feet)				
1	*Campsis radicans*	10	Y	FAC
2	*Lonicera japonica*	10	Y	FACU
3				
4				
5				
		20	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across all Strata:	10	(B)
Percent of Dominant Species that are OBL, FACW, or FAC:	40.00%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	15	x 2 =	30	
FAC species	40	x 3 =	120	
FACU species	60	x 4 =	240	
UPL species	5	x 5 =	25	
Column totals	120	(A)	415	(B)
Prevalence Index = B/A =			3.46	

Hydrophytic Vegetation Indicators:

- 1 – Rapid Test for Hydrophytic Vegetation
- 2 – Dominance Test is >50%
- 3 – Prevalence Index is ≤3.0[1]
- 4 – Morphogical Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL Sampling Point: X47

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (In.)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-2	10YR 3/2	100%					Loam	
2-18	10YR 5/4	100%					Sandy loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. [2]Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) **(LRR N)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- Thin Dark Surface (S9) **(MLRA 147, 148)**
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- Umbric Surface (F13) **(MLRA 136, 122)**
- Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- 2cm Muck (A10) **(MLRA 147)**
- Coast Prairie Redox (A16) **(MLRA 147, 148)**
- Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (explain in remarks)

[3]Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

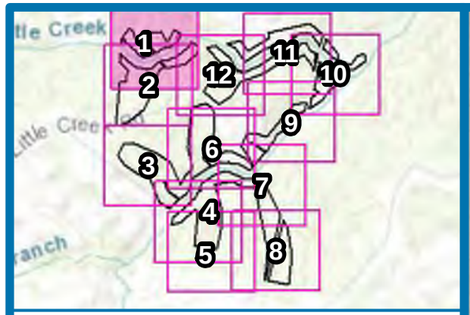
Type:

Depth (inches):

Hydric Soil Present? N

Remarks:

APPENDIX D
WATERS OF THE U.S. DELINEATION MAP



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PFO/G2
R3/G1
PFO/10A
PEM/D1
PFO/10B
R4/A1
PFO/2C
DELINEATED UNDER NAO-2020-0076
PSS/S4
R4/S3
PEM/5
DELINEATED UNDER NAO-2020-0076
Little Creek Rd
PFO/S1
SHEET 1
SHEET 12
SHEET 1
SHEET 2
R4/G3A
PFO/G39
R6/G3A
R4/G3

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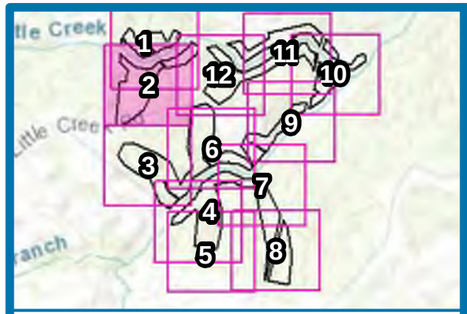
WATERS OF THE U.S.
DELINEATION MAP

BUCKINGHAM COUNTY, VIRGINIA

PROJECT MANAGER:	RA
DRAWN:	LC
JOB NUMBER:	102581
DATE:	10/28/2020
REVISIONS:	NONE
SHEET:	1 OF 12



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0 100 200 400

FEET

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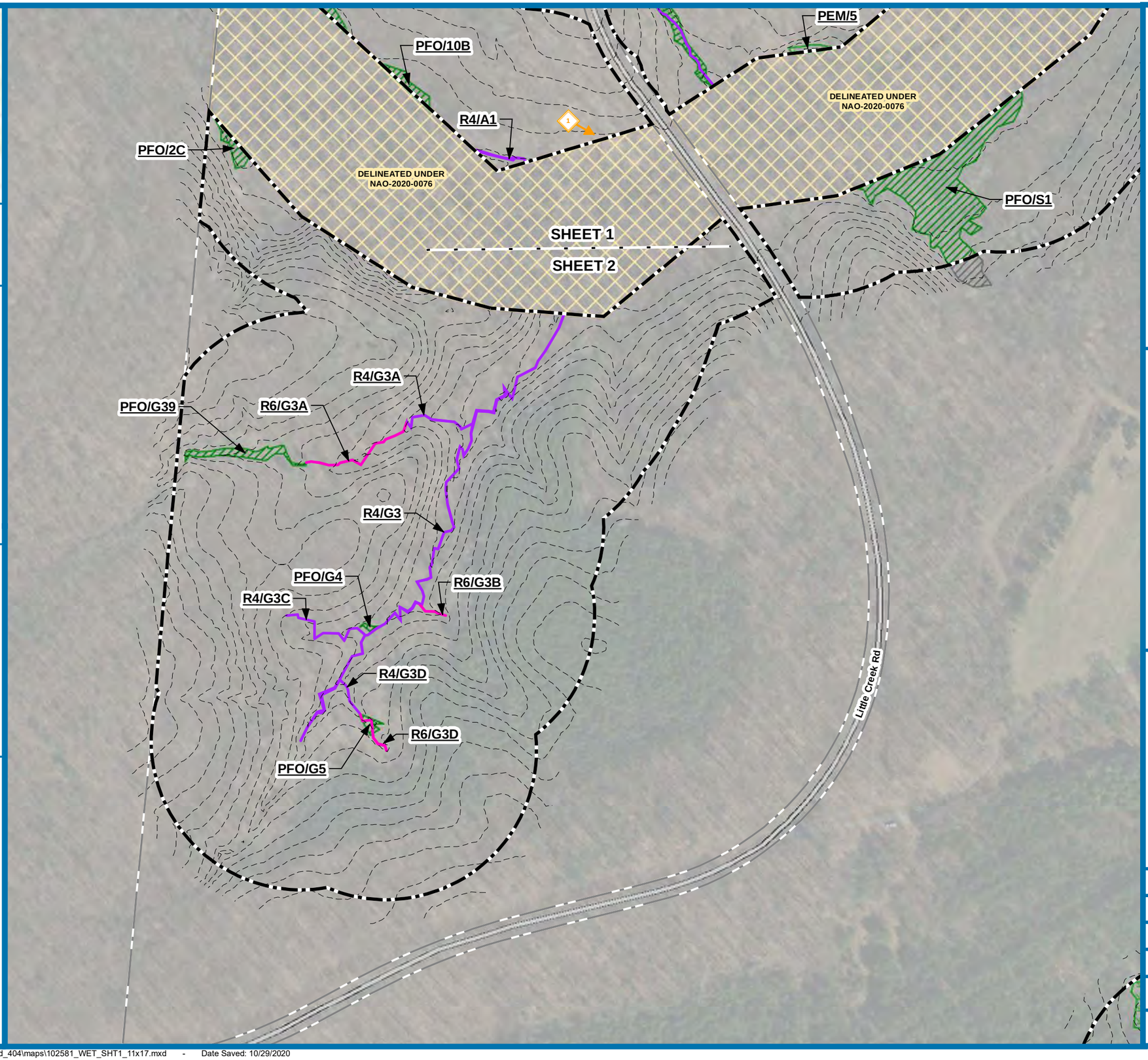

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WATERS OF THE U.S.
DELINEATION MAP

BUCKINGHAM COUNTY, VIRGINIA

PROJECT MANAGER: RA
DRAWN: LC
JOB NUMBER: 102581
DATE: 10/28/2020
REVISIONS: NONE
SHEET: 2 OF 12

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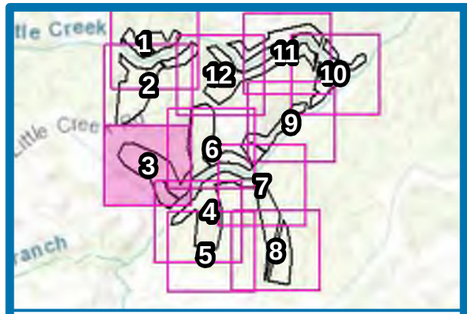

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0 100 200 400 FEET

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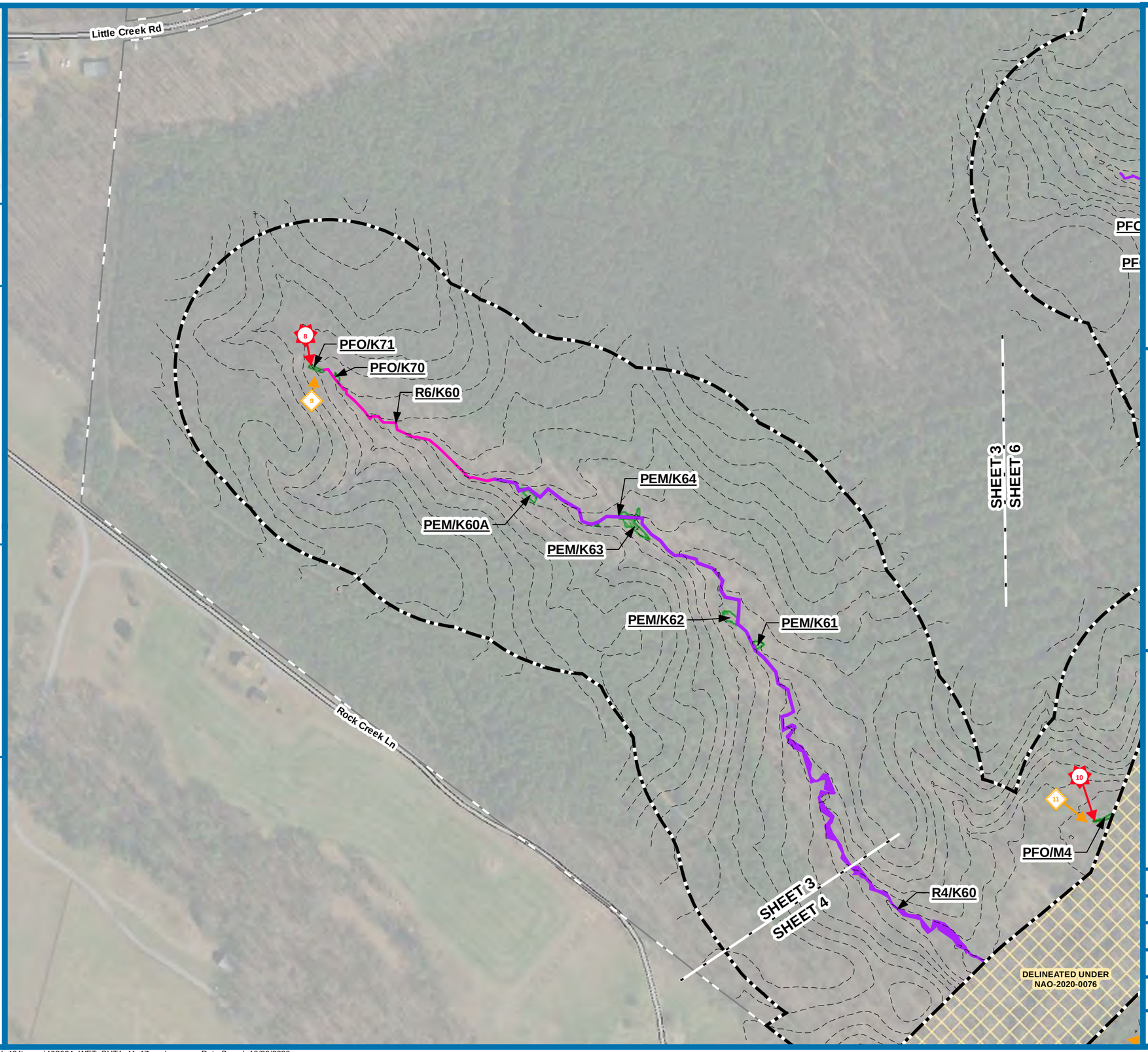

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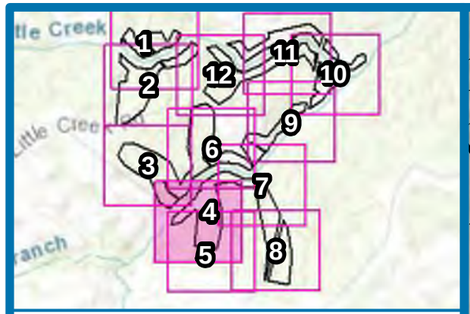
SHEET:	3 OF 12



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SHEET 6
SHEET 4
SHEET 3
SHEET 4
SHEET 4
SHEET 7
SHEET 4
SHEET 5

PFO/M4
R4/K60
PFO/M2A
PEM/M2B
PEM/M2C
PEM/M2D
PEM/M2E
PFO/M3
PEM/M2H
PEM/M2G
PEM/M2I
R4/M2
PEM/M2L
PEM/M2J
PFO/M2K
PEM/MK
PFO/MK
PEM/MM
PEM/M2M
PEM/M2O
PFO/M2M

DELINEATED UNDER NAO-2020-0076

10 11 17 18 16 15 14 12 13

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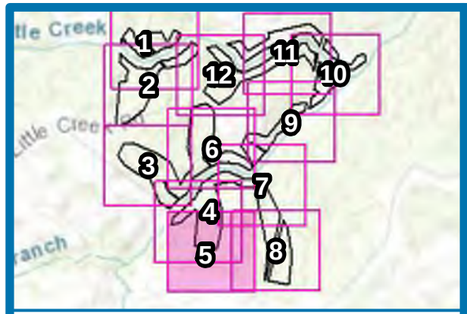

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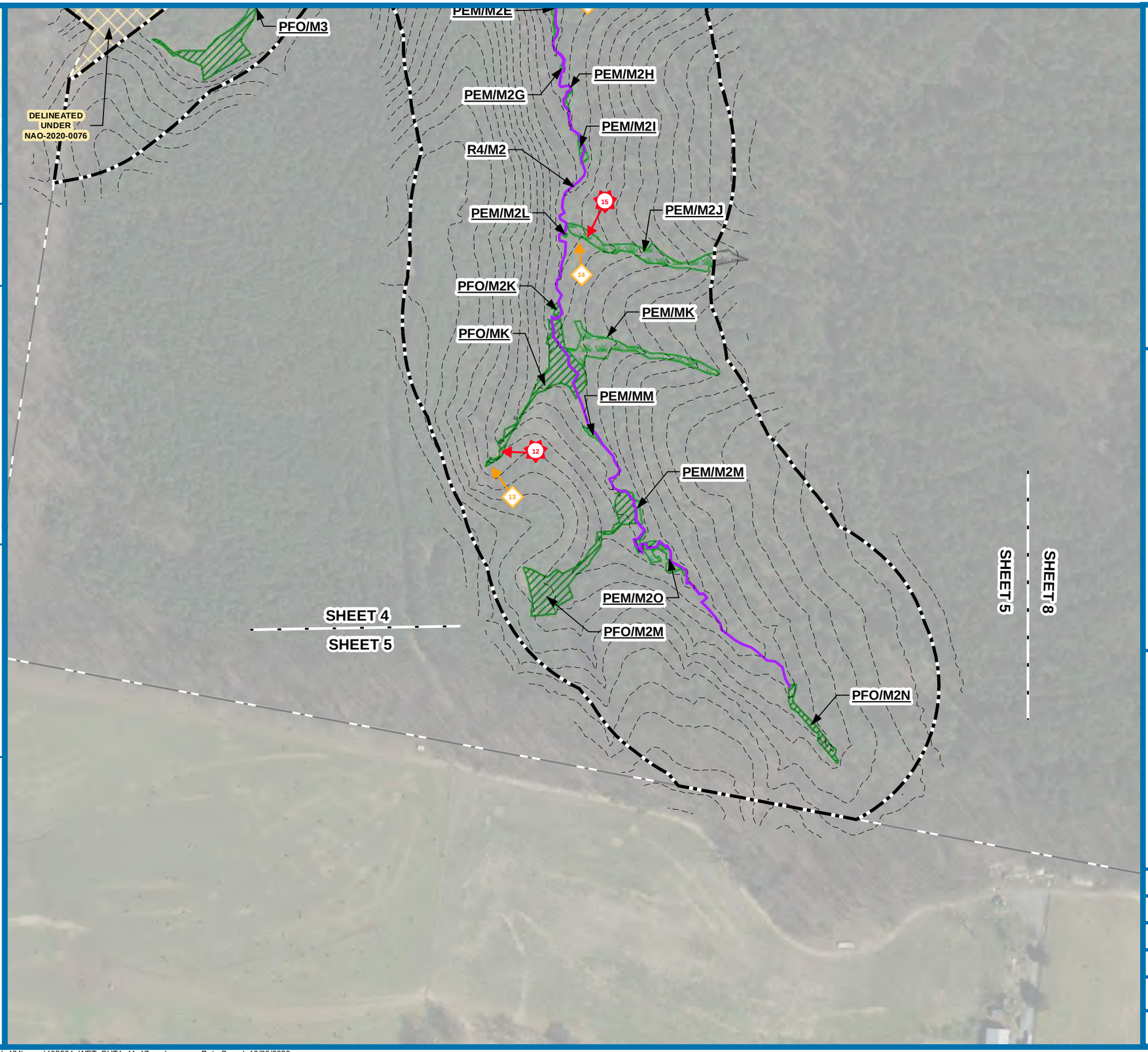

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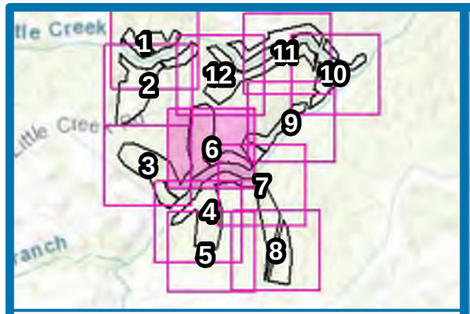

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SHEET 12
SHEET 6
PEM/S8D
R6/V1
R4/S7
PEM/S14
PEM/V2
PFO/S7
PFO/S8C
PFO/S8B
PEM/S8A
R4/S6
PEM/S8E
SHEET 3
SHEET 6
SHEET 6
SHEET 9
PEM/H1
PEM/S5
R6/L1
PEM/S10
PEM/L3
PEM/S9
DELINEATED UNDER
NAO-2020-0076
SHEET 6
SHEET 7
SHEET 6
SHEET 4

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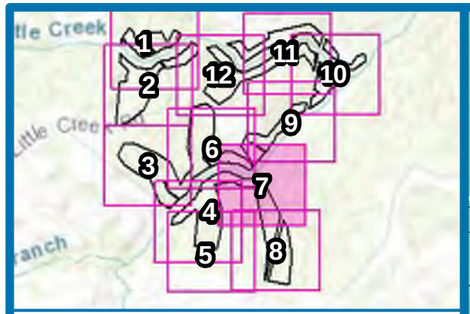
WATERS OF THE U.S.
DELINEATION MAP

BUCKINGHAM COUNTY, VIRGINIA

PROJECT MANAGER:	RA
DRAWN:	LC
JOB NUMBER:	102581
DATE:	10/28/2020
REVISIONS:	NONE
SHEET:	6 OF 12



1 INCH = 200 FEET

0 100 200 400 FEET

LEGEND

- UPLAND DATA POINT
- WETLAND DATA POINT
- APPROXIMATE PROJECT LIMITS
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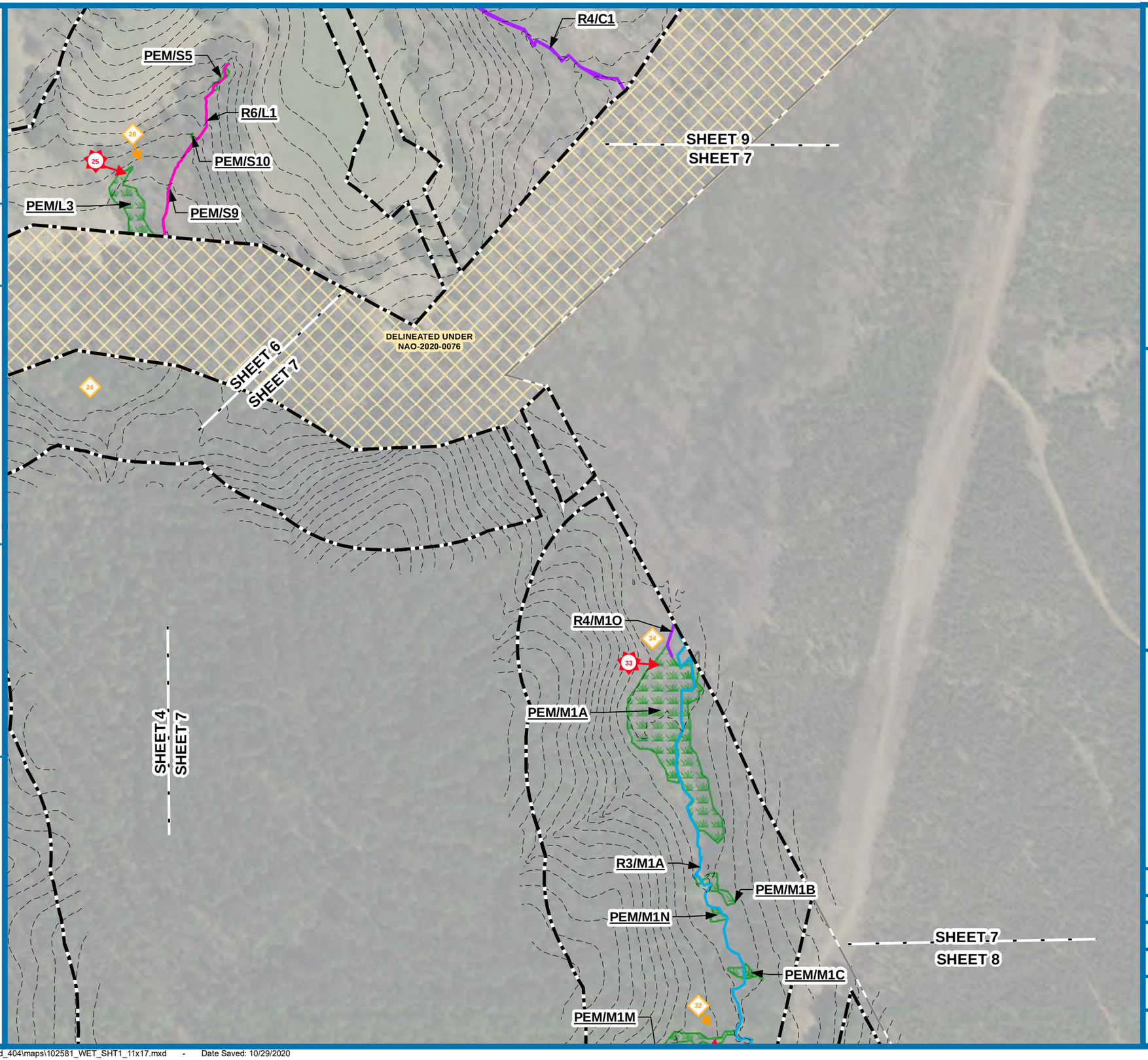

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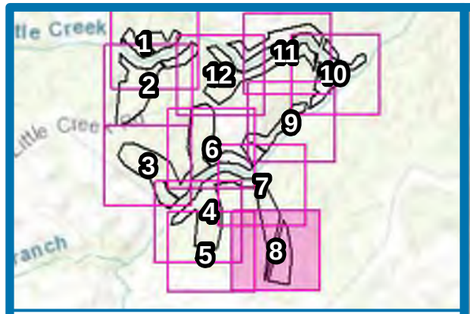
WATERS OF THE U.S.
DELINEATION MAP

BUCKINGHAM COUNTY, VIRGINIA

PROJECT MANAGER:	RA
DRAWN:	LC
JOB NUMBER:	102581
DATE:	10/28/2020
REVISIONS:	NONE
SHEET:	7 OF 12



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0 100 200 400 FEET

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R3/M1A
PEM/M1B
PEM/M1N
SHEET 7
SHEET 8
PEM/M1C
PEM/M1M
32
31
R3/M1B
PEM/M1D
30
29
PEM/ML
PEM/M1F
PEM/M1E
PEM/M1O
R3/M1B
PEM/M1G
PEM/M1I
PEM/M1H
PEM/M1K
28
PEM/M1J
PEM/M1L
SHEET 5
SHEET 8
PFO/M2N

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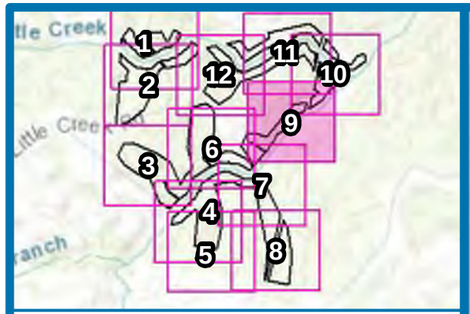
WATERS OF THE U.S. DELINEATION MAP

BUCKINGHAM COUNTY, VIRGINIA

PROJECT MANAGER:	RA
DRAWN:	LC
JOB NUMBER:	102581
DATE:	10/28/2020
REVISIONS:	NONE
SHEET:	8 OF 12



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0 100 200 400 FEET

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PSS/LAB5
PEM/LAB5
PFO/LAB4
PSS/LAB3
35
20
DELINEATED UNDER NAO-2020-0076
SHEET 9
SHEET 10
SHEET 6
SHEET 9
PSS/S1A
R4/C1
SHEET 9
SHEET 7

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WATERS OF THE U.S. DELINEATION MAP

BUCKINGHAM COUNTY, VIRGINIA

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DRAWN: LC
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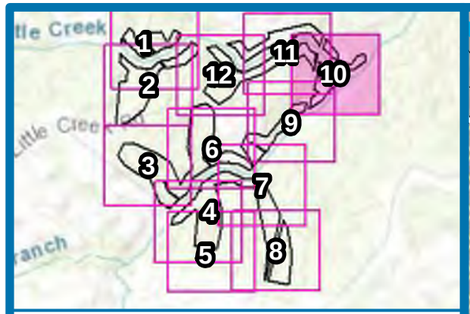
REVISIONS: NONE
SHEET: 9 OF 12



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PFO/104A
PEM/104B
PEM/104C
R4/B1
PEM/F1
PEM/E1
PEM/20
PSS/LAB5
PEM/LAB5
PFO/LAB4
PSS/LAB3
SHEET 11
SHEET 10
SHEET 9
SHEET 10
DELINEATED UNDER NAO-2020-0076
35
20

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BUCKINGHAM COUNTY, VIRGINIA

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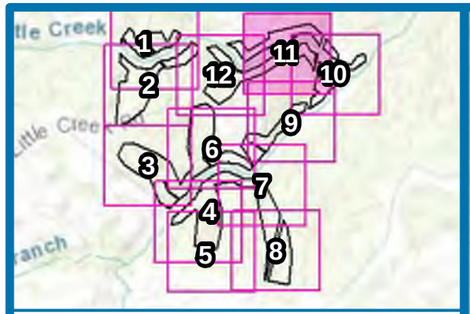
SHEET: 10 OF 12



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R3/G11
R3/G12
PEM/G11B
PEM/G11A
PEM/29A
DELINEATED UNDER NAO-2020-0076
PFO/104A
PEM/104B
PEM/104C
R4/B1
/G10
FO/G14
SHEET 12
SHEET 11
SHEET 11
SHEET 10
DELINEATED UNDER NAO-2020-0076

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WATERS OF THE U.S.
DELINEATION MAP

BUCKINGHAM COUNTY, VIRGINIA

PROJECT MANAGER: RA
DRAWN: LC
JOB NUMBER: 102581
DATE: 10/28/2020
REVISIONS: NONE
SHEET: 11 OF 12

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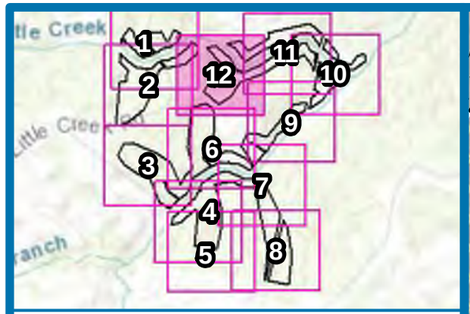

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DELINEATED UNDER NAO-2020-0076

SHEET 1

SHEET 12

PFO/S1

PFO/S11

PSS/S16

PFO/G10

R6/S16

DELINEATED UNDER NAO-2020-0076

SHEET 12

SHEET 11

PFO/33

PFO/G14

R6/S10A

R4/S10

R6/S10

SHEET 12

SHEET 6

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WATERS OF THE U.S.
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BUCKINGHAM COUNTY, VIRGINIA

PROJECT MANAGER: RA
DRAWN: LC
JOB NUMBER: 102581
DATE: 10/28/2020
REVISIONS: NONE
SHEET: 12 OF 12

Attachment E

Draft Declaration of Restrictions Documents

DRAFT

DECLARATION OF EASEMENTS AND RESTRICTIONS

OF

GREEN RIDGE RECYCLING AND DISPOSAL FACILITY, LLC

CUMBERLAND COUNTY, VIRGINIA

THIS DECLARATION OF EASEMENTS AND RESTRICTIVE COVENANTS is made this _____day of _____, 2020, by GREEN RIDGE RECYCLING AND DISPOSAL FACILITY LLC (the "**Owner**").

WHEREAS, the owner is the owner of the Property, rights and interests more fully described on Exhibit A attached hereto (the "Property"); it being a portion of the Property conveyed to Owner, by deed from _____, dated _____, and duly recorded in the Clerk's Office of the County of Cumberland in Deed Book ____, at page _____ on the 78 acres;

WHEREAS, by one or more agreements (together the "**_____Agreement**") by and between the Owner and Green Ridge Recycling and Disposal Facility LLC, ("**Green Ridge Landfill**" – the **"Developer"**): (a) the Developer agreed to provide compensatory mitigation to Green Ridge Landfill utilizing a portion of the Property; and (b) the Owner agreed to: (i) permit Developer to develop stream mitigation on the Property; (ii) to grant Developer and others the necessary licenses and easements to construct and maintain stream mitigation on the Property; and (iii) to enter into restrictive covenants in order to protect the stream mitigation areas, all as more particularly set forth in the _____Agreement.

WHEREAS, USACE regulations, at 33 C.F.R. § 332.7, require that the aquatic habitats, riparian areas, buffers, and uplands that comprise an overall compensatory mitigation project (the Mitigation Area) must be provided long-term protection through a real estate instrument, such as this Declaration;

WHEREAS, Owner desires to impose on said Property easements and restrictive covenants expressing Owner's intent to preserve 30.2 acres, more or less, of said Property as shown on Exhibit B and as described as the "Conservation Easement Area" (the "**Mitigation Area**") in perpetuity in its natural state as detailed below which easements and covenants shall run with and bind the Mitigation Area and are imposed by Owner freely and voluntarily, in order to provide compensation for aquatic impacts pursuant to U.S. Army Corps of Engineers ("**Corps**" or "**USACE**") Permit No. _____.

WHEREAS, Owner obtained authorization through Virginia Department of Environmental Quality ("**DEQ**") Permit Number _____, issued on _____, by the DEQ in accordance with State Water Control Law Sections 62.1-44.5 and 62.1-44.15:20 for impacts to State Waters.

WHEREAS, on account of the fact that the Property will serve as compensation for such above-

referenced impacts, the USACE and DEQ are third-party beneficiaries under this Declaration of Easements and Restrictions ("Declaration").

NOW THEREFORE THIS DECLARATION WITNESSETH: Owner does hereby declare, covenant and agree, for itself and its successors and assigns, that the Mitigation Area as shown on Exhibit B, shall be hereafter held, leased, transferred, and sold subject to the following conditions and restrictions which shall run with the land and be binding on all parties and persons claiming under them.

Covenants and Restrictions: Preservation Area

Owner shall ensure that this Declaration is recorded in the land records of Cumberland County, and shall ensure that this Declaration is indexed against the land records for the Property. Owner shall ensure that these Covenants and Restrictions run with the Property in perpetuity and be binding on Owner and its successors, assigns, lessees, and any other occupiers or users of the Property.

Owner declares, for itself and its successors and assigns, that the Mitigation Area shall hereafter be held exclusively for conservation purposes, unless otherwise provided herein.

That portion of the Property described as the Mitigation Area and shown on Exhibit B attached hereto shall be preserved in perpetuity in its natural state, by **prohibiting** the following activities:

1. Destruction or alteration of the Mitigation Area shown on Exhibit B other than those alterations expressly authorized in writing by the Norfolk District, USACE, or DEQ, *provided that* the following activities are **allowed**:

   i. Alteration necessary to ensure the success of the Mitigation Area including monitoring, reconstruction or maintenance of the constructed Mitigation Area, as approved by the USACE and DEQ;

   ii. Alteration to construct structures such as walkways, boardwalks, foot trails, wildlife observation or management structures, benches, observation decks, picnic tables, fence posts, and ecological, biological, hydrological or chemical monitoring, observation or management equipment including, without limitation, monitoring wells, or interpretive stations, or other structures as approved by the USACE and DEQ, provided that:

      1. any such structures permit, and do not impede, the natural movement of water, and

      2. structures and/or facilities do not alter the physical, biological, or chemical nature of the protected resource and/or its protected buffer

3. such facilities are constructed and maintained in accordance with all applicable federal and state laws;

iii. Addition of signs constructed in public rights of way by or on behalf of the Virginia Department of Transportation or other governmental agencies;

iv. Removal of vegetation (where not precluded by federal or state law) when approved by the USACE and DEQ and conducted for:

1. Removal of noxious or invasive plants; or

2. Public safety purposes

v. Planting of native species of plants by hand for aesthetic landscaping or screening purposes; and

vi. Alteration as reasonably necessary to comply with state or federal law or appropriate court order.

2. Construction, maintenance or placement of any structures or fills (other than those which currently exist) including but not limited to buildings, mobile homes, fences, signs or other permanent structures that include but are not limited to stream crossings, camp sites, hunting blinds and/or target shooting structures without prior express written approval of the USACE and DEQ. However, boardwalks, wildlife management structures, observation decks, one informative sign, and unpaved foot trails may be placed within the Mitigation Area provided that any such structure does not alter streams, permits the natural movement of water and preserves the natural contour of the ground and subject to prior express written approval by the USACE and DEQ;

3. Ditching, land clearing or discharge of dredge or fill material, including diking, damming, filling, excavating, grading, plowing, flooding/ponding, draining, mining, drilling, placing of trash and yard debris or removing/adding topsoil, sand, or other materials (except as may be necessary on a case-by-case basis with prior express written approval by USACE and DEQ);

4. The use of gas/diesel powered watercraft or vehicles in any location or manner that would alter the preservation area. However, the collection of game and non-commercial use of roads and trails outside of streams in a manner that does not alter the Mitigation Area is permitted.

5. Permitting livestock to graze, inhabit or otherwise enter the Mitigation Area.

6. Cultivating, harvesting, cutting, logging, planting, and pruning of trees and plants, or using fertilizers and spraying with biocides (except as may be necessary on a case-by-case basis with prior express written approval by USACE and DEQ);

Easement

Owner hereby grants, conveys and provides to Developer, USACE, and DEQ, and their

respective agents, employees, contractors, successors and assigns (together, the "**Authorized Parties**"), a non-exclusive easement and right of way for vehicular access, ingress and egress over the Property into the Mitigation Area (collectively, the "**Access Roads**"), in order to perform studies and to perform construction, maintenance, monitoring and inspection of the Mitigation Area. Owner does also hereby grant, convey and provide to the Authorized Parties, and to each of them, a perpetual, non-exclusive easement over the Mitigation Area in order to perform studies and to perform construction, maintenance, monitoring and inspection of the Mitigation Area.

Other Restrictions.

Owner represents and warrants that no restriction of record on the use of the Mitigation Area, nor any presently existing future estate or interest in the Property, nor any lien, obligation, covenant, limitation, lease, mortgage, or encumbrance of any kind precludes the imposition or maintenance of this Declaration or the restrictions established herein.

Notice of Legal Action

The USACE and DEQ shall be provided with a 60-day advance written notice of any legal action concerning this Declaration or of any action to extinguish, void or modify this Declaration in whole or in part.

Amendment

The easements and covenants contained herein shall not hereafter be altered in any respect without the express written approval and consent of the Owner or its successor in interest and the USACE and DEQ. The Owner or its successor may apply to the USACE and DEQ for vacation or modification of this Declaration; however, after recording, these easements and restrictive covenants may only be amended or vacated by a recorded document signed by the USACE, DEQ, and the Owner or its successor in interest.

This Declaration is intended to survive foreclosure, bankruptcy, condemnation or judgments affecting the Property.

Compliance Inspections and Enforcement

The USACE, DEQ, and their authorized agents shall have the right to enter and go upon the Property to inspect the Property and take actions necessary to verify compliance with these restrictive covenants, however, USACE and DEQ shall make a good faith effort to provide reasonable advance notice prior to entering the property and shall limit all access to only that which is necessary to carry out the purposes of the Mitigation project. The restrictive covenants herein shall be enforceable by any proceeding at law or in equity or administrative proceeding by the USACE and DEQ. Failure by any agency (or owner) to enforce any covenant of restriction contained herein shall in no event be deemed a waiver of the right to do so thereafter.

Provision

Should an easement, right, interest or lease on or to the Property, not acknowledged herein, listed in Exhibit A, or identified on Exhibit B, and prior in time and recording to this Declaration, or unrecorded, be exercised in such a manner that it conflicts with or voids the prohibited uses of the Property set out in this Declaration, then Green Ridge Landfill, as the Permittee of USACE Permit No. _____ and of DEQ Permit No. _____, shall be responsible for providing alternative compensatory mitigation in such amounts and of such service and function as the Corps, or any enforcer of this Declaration shall determine in its sole discretion, in accordance with the Clean Water Act and/or Sections 62.1-44.15:20-23 of the Code of Virginia.

Eminent Domain

If any part of the Preservation Area is taken in whole or in part through eminent domain (taking), the Owner is obligated, and hereby agrees, to use the proceeds that represent the proportionate value of the compensation for the taking that represents the functions and values provided by the Mitigation Area, to procure and replace the functions and values of the Mitigation Area; such replacement to be determined by the Corps and DEQ. Any valuation of the Property or Mitigation Area should include consideration of the values and functions of the Mitigation Area, with particular regard to the cost of providing or obtaining replacement functions and values from mitigation banks or in-lieu fee sites in the same watershed.

Separability Provision

The provisions hereof shall be deemed individual and severable and the invalidity or partial invalidity or unenforceability of any one provision or any portion thereof shall not affect the validity or enforceability of any other provision thereof.

Notice to Government

Any permit application or request made to any government entity, which would affect the Mitigation Area on the Property, shall provide notice and copy of this Declaration to the government entity.

Property Transfers

Owner covenants to provide notice of this Declaration on any legal instrument used to convey any interest in the Property, provided that failure to include such notice shall not extinguish or otherwise impair the validity or enforceability of the restrictions and covenants established by this Declaration.

[*REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK; SIGNATURES APPEAR ON THE FOLLOWING PAGE*]

WITNESS the following signature the day and year first above written.

OWNER:

_____
GREEN RIDGE RECYCLING AND DISPOSAL FACILITY, LLC

COMMONWEALTH OF VIRGINIA,

CITY/COUNTY OF _____, to-wit:

The foregoing instrument was acknowledged before me this ___ day of _____, 201__, by _____, as _____ of _____, a _____, on behalf of the Owner.

My commission expires: _____

My registration number is: _____

_____
Notary Public

DRAFT

DECLARATION OF EASEMENTS AND RESTRICTIONS

OF

GREEN RIDGE RECYCLING AND DISPOSAL FACILITY, LLC

CUMBERLAND COUNTY, VIRGINIA

THIS DECLARATION OF EASEMENTS AND RESTRICTIVE COVENANTS is made this _____day of _____, 2020, by GREEN RIDGE RECYCLING AND DISPOSAL FACILITY LLC (the "**Owner**").

WHEREAS, the owner is the owner of the Property, rights and interests more fully described on Exhibit A attached hereto (the "Property"); it being a portion of the Property conveyed to Owner, by deed from _____, dated _____, and duly recorded in the Clerk's Office of the County of Cumberland in Deed Book ____, at page _____ on the 163.746 acres;

WHEREAS, by one or more agreements (together the "**_____Agreement**") by and between the Owner and Green Ridge Recycling and Disposal Facility LLC, ("**Green Ridge Landfill**" – the **"Developer"**): (a) the Developer agreed to provide compensatory mitigation to Green Ridge Landfill utilizing a portion of the Property; and (b) the Owner agreed to: (i) permit Developer to develop stream mitigation on the Property; (ii) to grant Developer and others the necessary licenses and easements to construct and maintain stream mitigation on the Property; and (iii) to enter into restrictive covenants in order to protect the stream mitigation areas, all as more particularly set forth in the _____Agreement.

WHEREAS, USACE regulations, at 33 C.F.R. § 332.7, require that the aquatic habitats, riparian areas, buffers, and uplands that comprise an overall compensatory mitigation project (the Mitigation Area) must be provided long-term protection through a real estate instrument, such as this Declaration;

WHEREAS, Owner desires to impose on said Property easements and restrictive covenants expressing Owner's intent to preserve 41.8 acres, more or less, of said Property as shown on Exhibit B and as described as the "Conservation Easement Area" (the "**Mitigation Area**") in perpetuity in its natural state as detailed below which easements and covenants shall run with and bind the Mitigation Area and are imposed by Owner freely and voluntarily, in order to provide compensation for aquatic impacts pursuant to U.S. Army Corps of Engineers ("**Corps**" or "**USACE**") Permit No. _____.

WHEREAS, Owner obtained authorization through Virginia Department of Environmental Quality ("**DEQ**") Permit Number _____ issued on _____, by the DEQ in accordance with State Water Control Law Sections 62.1-44.5 and 62.1-44.15:20 for impacts to State Waters.

WHEREAS, on account of the fact that the Property will serve as compensation for such above-

referenced impacts, the USACE and DEQ are third-party beneficiaries under this Declaration of Easements and Restrictions ("Declaration").

NOW THEREFORE THIS DECLARATION WITNESSETH: Owner does hereby declare, covenant and agree, for itself and its successors and assigns, that the Mitigation Area as shown on Exhibit B, shall be hereafter held, leased, transferred, and sold subject to the following conditions and restrictions which shall run with the land and be binding on all parties and persons claiming under them.

Covenants and Restrictions: Preservation Area

Owner shall ensure that this Declaration is recorded in the land records of Cumberland County, and shall ensure that this Declaration is indexed against the land records for the Property. Owner shall ensure that these Covenants and Restrictions run with the Property in perpetuity and be binding on Owner and its successors, assigns, lessees, and any other occupiers or users of the Property.

Owner declares, for itself and its successors and assigns, that the Mitigation Area shall hereafter be held exclusively for conservation purposes, unless otherwise provided herein.

That portion of the Property described as the Mitigation Area and shown on Exhibit B attached hereto shall be preserved in perpetuity in its natural state, by **prohibiting** the following activities:

1. Destruction or alteration of the Mitigation Area shown on Exhibit B other than those alterations expressly authorized in writing by the Norfolk District, USACE, or DEQ, *provided that* the following activities are **allowed**:

   i. Alteration necessary to ensure the success of the Mitigation Area including monitoring, reconstruction or maintenance of the constructed Mitigation Area, as approved by the USACE and DEQ;

   ii. Alteration to construct structures such as walkways, boardwalks, foot trails, wildlife observation or management structures, benches, observation decks, picnic tables, fence posts, and ecological, biological, hydrological or chemical monitoring, observation or management equipment including, without limitation, monitoring wells, or interpretive stations, or other structures as approved by the USACE and DEQ, provided that:

      1. any such structures permit, and do not impede, the natural movement of water, and

      2. structures and/or facilities do not alter the physical, biological, or chemical nature of the protected resource and/or its protected buffer

3. such facilities are constructed and maintained in accordance with all applicable federal and state laws;

iii. Addition of signs constructed in public rights of way by or on behalf of the Virginia Department of Transportation or other governmental agencies;

iv. Removal of vegetation (where not precluded by federal or state law) when approved by the USACE and DEQ and conducted for:

1. Removal of noxious or invasive plants; or

2. Public safety purposes

v. Planting of native species of plants by hand for aesthetic landscaping or screening purposes; and

vi. Alteration as reasonably necessary to comply with state or federal law or appropriate court order.

2. Construction, maintenance or placement of any structures or fills (other than those which currently exist) including but not limited to buildings, mobile homes, fences, signs or other permanent structures that include but are not limited to stream crossings, camp sites, hunting blinds and/or target shooting structures without prior express written approval of the USACE and DEQ. However, boardwalks, wildlife management structures, observation decks, one informative sign, and unpaved foot trails may be placed within the Mitigation Area provided that any such structure does not alter streams, permits the natural movement of water and preserves the natural contour of the ground and subject to prior express written approval by the USACE and DEQ;

3. Ditching, land clearing or discharge of dredge or fill material, including diking, damming, filling, excavating, grading, plowing, flooding/ponding, draining, mining, drilling, placing of trash and yard debris or removing/adding topsoil, sand, or other materials (except as may be necessary on a case-by-case basis with prior express written approval by USACE and DEQ);

4. The use of gas/diesel powered watercraft or vehicles in any location or manner that would alter the preservation area. However, the collection of game and non-commercial use of roads and trails outside of streams in a manner that does not alter the Mitigation Area is permitted.

5. Permitting livestock to graze, inhabit or otherwise enter the Mitigation Area.

6. Cultivating, harvesting, cutting, logging, planting, and pruning of trees and plants, or using fertilizers and spraying with biocides (except as may be necessary on a case-by-case basis with prior express written approval by USACE and DEQ);

Easement

Owner hereby grants, conveys and provides to Developer, USACE, and DEQ, and their

respective agents, employees, contractors, successors and assigns (together, the "**Authorized Parties**"), a non-exclusive easement and right of way for vehicular access, ingress and egress over the Property into the Mitigation Area (collectively, the "**Access Roads**"), in order to perform studies and to perform construction, maintenance, monitoring and inspection of the Mitigation Area. Owner does also hereby grant, convey and provide to the Authorized Parties, and to each of them, a perpetual, non-exclusive easement over the Mitigation Area in order to perform studies and to perform construction, maintenance, monitoring and inspection of the Mitigation Area.

Other Restrictions.

Owner represents and warrants that no restriction of record on the use of the Mitigation Area, nor any presently existing future estate or interest in the Property, nor any lien, obligation, covenant, limitation, lease, mortgage, or encumbrance of any kind precludes the imposition or maintenance of this Declaration or the restrictions established herein.

Notice of Legal Action

The USACE and DEQ shall be provided with a 60-day advance written notice of any legal action concerning this Declaration or of any action to extinguish, void or modify this Declaration in whole or in part.

Amendment

The easements and covenants contained herein shall not hereafter be altered in any respect without the express written approval and consent of the Owner or its successor in interest and the USACE and DEQ. The Owner or its successor may apply to the USACE and DEQ for vacation or modification of this Declaration; however, after recording, these easements and restrictive covenants may only be amended or vacated by a recorded document signed by the USACE, DEQ, and the Owner or its successor in interest.

This Declaration is intended to survive foreclosure, bankruptcy, condemnation or judgments affecting the Property.

Compliance Inspections and Enforcement

The USACE, DEQ, and their authorized agents shall have the right to enter and go upon the Property to inspect the Property and take actions necessary to verify compliance with these restrictive covenants, however, USACE and DEQ shall make a good faith effort to provide reasonable advance notice prior to entering the property and shall limit all access to only that which is necessary to carry out the purposes of the Mitigation project. The restrictive covenants herein shall be enforceable by any proceeding at law or in equity or administrative proceeding by the USACE and DEQ. Failure by any agency (or owner) to enforce any covenant of restriction contained herein shall in no event be deemed a waiver of the right to do so thereafter.

Provision

Should an easement, right, interest or lease on or to the Property, not acknowledged herein, listed in Exhibit A, or identified on Exhibit B, and prior in time and recording to this Declaration, or unrecorded, be exercised in such a manner that it conflicts with or voids the prohibited uses of the Property set out in this Declaration, then Green Ridge Landfill, as the Permittee of USACE Permit No. _____ and of DEQ Permit No. _____, shall be responsible for providing alternative compensatory mitigation in such amounts and of such service and function as the Corps, or any enforcer of this Declaration shall determine in its sole discretion, in accordance with the Clean Water Act and/or Sections 62.1-44.15:20-23 of the Code of Virginia.

Eminent Domain

If any part of the Preservation Area is taken in whole or in part through eminent domain (taking), the Owner is obligated, and hereby agrees, to use the proceeds that represent the proportionate value of the compensation for the taking that represents the functions and values provided by the Mitigation Area, to procure and replace the functions and values of the Mitigation Area; such replacement to be determined by the Corps and DEQ. Any valuation of the Property or Mitigation Area should include consideration of the values and functions of the Mitigation Area, with particular regard to the cost of providing or obtaining replacement functions and values from mitigation banks or in-lieu fee sites in the same watershed.

Separability Provision

The provisions hereof shall be deemed individual and severable and the invalidity or partial invalidity or unenforceability of any one provision or any portion thereof shall not affect the validity or enforceability of any other provision thereof.

Notice to Government

Any permit application or request made to any government entity, which would affect the Mitigation Area on the Property, shall provide notice and copy of this Declaration to the government entity.

Property Transfers

Owner covenants to provide notice of this Declaration on any legal instrument used to convey any interest in the Property, provided that failure to include such notice shall not extinguish or otherwise impair the validity or enforceability of the restrictions and covenants established by this Declaration.

[*REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK; SIGNATURES APPEAR ON THE FOLLOWING PAGE*]

WITNESS the following signature the day and year first above written.

OWNER:

_____
GREEN RIDGE RECYCLING AND DISPOSAL FACILITY, LLC

COMMONWEALTH OF VIRGINIA,

CITY/COUNTY OF _____, to-wit:

The foregoing instrument was acknowledged before me this ___ day of _____, 201__, by _____, as _____ of _____, a _____, on behalf of the Owner.

My commission expires: _____

My registration number is: _____

_____
Notary Public

DRAFT

DECLARATION OF EASEMENTS AND RESTRICTIONS

OF

GREEN RIDGE RECYCLING AND DISPOSAL FACILITY, LLC

CUMBERLAND COUNTY, VIRGINIA

THIS DECLARATION OF EASEMENTS AND RESTRICTIVE COVENANTS is made this _____day of _____, 2020, by GREEN RIDGE RECYCLING AND DISPOSAL FACILITY LLC (the "**Owner**").

WHEREAS, the owner is the owner of the Property, rights and interests more fully described on Exhibit A attached hereto (the "Property"); it being a portion of the Property conveyed to Owner, by deed from _____, dated _____, and duly recorded in the Clerk's Office of the County of Cumberland in Deed Book ____, at page _____ on the 58.18 acres;

WHEREAS, by one or more agreements (together the "**_____Agreement**") by and between the Owner and Green Ridge Recycling and Disposal Facility LLC, ("**Green Ridge Landfill**" – the **"Developer"**): (a) the Developer agreed to provide compensatory mitigation to Green Ridge Landfill utilizing a portion of the Property; and (b) the Owner agreed to: (i) permit Developer to develop stream mitigation on the Property; (ii) to grant Developer and others the necessary licenses and easements to construct and maintain stream mitigation on the Property; and (iii) to enter into restrictive covenants in order to protect the stream mitigation areas, all as more particularly set forth in the _____Agreement.

WHEREAS, USACE regulations, at 33 C.F.R. § 332.7, require that the aquatic habitats, riparian areas, buffers, and uplands that comprise an overall compensatory mitigation project (the Mitigation Area) must be provided long-term protection through a real estate instrument, such as this Declaration;

WHEREAS, Owner desires to impose on said Property easements and restrictive covenants expressing Owner's intent to preserve 12.02 acres, more or less, of said Property as shown on Exhibit B and as described as the "Conservation Easement Area" (the "**Mitigation Area**") in perpetuity in its natural state as detailed below which easements and covenants shall run with and bind the Mitigation Area and are imposed by Owner freely and voluntarily, in order to provide compensation for aquatic impacts pursuant to U.S. Army Corps of Engineers ("**Corps**" or "**USACE**") Permit No. _____.

WHEREAS, Owner obtained authorization through Virginia Department of Environmental Quality ("**DEQ**") Permit Number _____, issued on _____, by the DEQ in accordance with State Water Control Law Sections 62.1-44.5 and 62.1-44.15:20 for impacts to State Waters.

WHEREAS, on account of the fact that the Property will serve as compensation for such above-

referenced impacts, the USACE and DEQ are third-party beneficiaries under this Declaration of Easements and Restrictions ("Declaration").

NOW THEREFORE THIS DECLARATION WITNESSETH: Owner does hereby declare, covenant and agree, for itself and its successors and assigns, that the Mitigation Area as shown on Exhibit B, shall be hereafter held, leased, transferred, and sold subject to the following conditions and restrictions which shall run with the land and be binding on all parties and persons claiming under them.

Covenants and Restrictions: Preservation Area

Owner shall ensure that this Declaration is recorded in the land records of Cumberland County, and shall ensure that this Declaration is indexed against the land records for the Property. Owner shall ensure that these Covenants and Restrictions run with the Property in perpetuity and be binding on Owner and its successors, assigns, lessees, and any other occupiers or users of the Property.

Owner declares, for itself and its successors and assigns, that the Mitigation Area shall hereafter be held exclusively for conservation purposes, unless otherwise provided herein.

That portion of the Property described as the Mitigation Area and shown on Exhibit B attached hereto shall be preserved in perpetuity in its natural state, by **prohibiting** the following activities:

1. Destruction or alteration of the Mitigation Area shown on Exhibit B other than those alterations expressly authorized in writing by the Norfolk District, USACE, or DEQ, *provided that* the following activities are **allowed**:

   i. Alteration necessary to ensure the success of the Mitigation Area including monitoring, reconstruction or maintenance of the constructed Mitigation Area, as approved by the USACE and DEQ;

   ii. Alteration to construct structures such as walkways, boardwalks, foot trails, wildlife observation or management structures, benches, observation decks, picnic tables, fence posts, and ecological, biological, hydrological or chemical monitoring, observation or management equipment including, without limitation, monitoring wells, or interpretive stations, or other structures as approved by the USACE and DEQ, provided that:

      1. any such structures permit, and do not impede, the natural movement of water, and

      2. structures and/or facilities do not alter the physical, biological, or chemical nature of the protected resource and/or its protected buffer

3. such facilities are constructed and maintained in accordance with all applicable federal and state laws;

iii. Addition of signs constructed in public rights of way by or on behalf of the Virginia Department of Transportation or other governmental agencies;

iv. Removal of vegetation (where not precluded by federal or state law) when approved by the USACE and DEQ and conducted for:

1. Removal of noxious or invasive plants; or

2. Public safety purposes

v. Planting of native species of plants by hand for aesthetic landscaping or screening purposes; and

vi. Alteration as reasonably necessary to comply with state or federal law or appropriate court order.

2. Construction, maintenance or placement of any structures or fills (other than those which currently exist) including but not limited to buildings, mobile homes, fences, signs or other permanent structures that include but are not limited to stream crossings, camp sites, hunting blinds and/or target shooting structures without prior express written approval of the USACE and DEQ. However, boardwalks, wildlife management structures, observation decks, one informative sign, and unpaved foot trails may be placed within the Mitigation Area provided that any such structure does not alter streams, permits the natural movement of water and preserves the natural contour of the ground and subject to prior express written approval by the USACE and DEQ;

3. Ditching, land clearing or discharge of dredge or fill material, including diking, damming, filling, excavating, grading, plowing, flooding/ponding, draining, mining, drilling, placing of trash and yard debris or removing/adding topsoil, sand, or other materials (except as may be necessary on a case-by-case basis with prior express written approval by USACE and DEQ);

4. The use of gas/diesel powered watercraft or vehicles in any location or manner that would alter the preservation area. However, the collection of game and non-commercial use of roads and trails outside of streams in a manner that does not alter the Mitigation Area is permitted.

5. Permitting livestock to graze, inhabit or otherwise enter the Mitigation Area.

6. Cultivating, harvesting, cutting, logging, planting, and pruning of trees and plants, or using fertilizers and spraying with biocides (except as may be necessary on a case-by-case basis with prior express written approval by USACE and DEQ);

Easement

Owner hereby grants, conveys and provides to Developer, USACE, and DEQ, and their

respective agents, employees, contractors, successors and assigns (together, the "**Authorized Parties**"), a non-exclusive easement and right of way for vehicular access, ingress and egress over the Property into the Mitigation Area (collectively, the "**Access Roads**"), in order to perform studies and to perform construction, maintenance, monitoring and inspection of the Mitigation Area. Owner does also hereby grant, convey and provide to the Authorized Parties, and to each of them, a perpetual, non-exclusive easement over the Mitigation Area in order to perform studies and to perform construction, maintenance, monitoring and inspection of the Mitigation Area.

Other Restrictions.

Owner represents and warrants that no restriction of record on the use of the Mitigation Area, nor any presently existing future estate or interest in the Property, nor any lien, obligation, covenant, limitation, lease, mortgage, or encumbrance of any kind precludes the imposition or maintenance of this Declaration or the restrictions established herein.

Notice of Legal Action

The USACE and DEQ shall be provided with a 60-day advance written notice of any legal action concerning this Declaration or of any action to extinguish, void or modify this Declaration in whole or in part.

Amendment

The easements and covenants contained herein shall not hereafter be altered in any respect without the express written approval and consent of the Owner or its successor in interest and the USACE and DEQ. The Owner or its successor may apply to the USACE and DEQ for vacation or modification of this Declaration; however, after recording, these easements and restrictive covenants may only be amended or vacated by a recorded document signed by the USACE, DEQ, and the Owner or its successor in interest.

This Declaration is intended to survive foreclosure, bankruptcy, condemnation or judgments affecting the Property.

Compliance Inspections and Enforcement

The USACE, DEQ, and their authorized agents shall have the right to enter and go upon the Property to inspect the Property and take actions necessary to verify compliance with these restrictive covenants, however, USACE and DEQ shall make a good faith effort to provide reasonable advance notice prior to entering the property and shall limit all access to only that which is necessary to carry out the purposes of the Mitigation project. The restrictive covenants herein shall be enforceable by any proceeding at law or in equity or administrative proceeding by the USACE and DEQ. Failure by any agency (or owner) to enforce any covenant of restriction contained herein shall in no event be deemed a waiver of the right to do so thereafter.

Provision

Should an easement, right, interest or lease on or to the Property, not acknowledged herein, listed in Exhibit A, or identified on Exhibit B, and prior in time and recording to this Declaration, or unrecorded, be exercised in such a manner that it conflicts with or voids the prohibited uses of the Property set out in this Declaration, then Green Ridge Landfill, as the Permittee of USACE Permit No. _____ and of DEQ Permit No. _____, shall be responsible for providing alternative compensatory mitigation in such amounts and of such service and function as the Corps, or any enforcer of this Declaration shall determine in its sole discretion, in accordance with the Clean Water Act and/or Sections 62.1-44.15:20-23 of the Code of Virginia.

Eminent Domain

If any part of the Preservation Area is taken in whole or in part through eminent domain (taking), the Owner is obligated, and hereby agrees, to use the proceeds that represent the proportionate value of the compensation for the taking that represents the functions and values provided by the Mitigation Area, to procure and replace the functions and values of the Mitigation Area; such replacement to be determined by the Corps and DEQ. Any valuation of the Property or Mitigation Area should include consideration of the values and functions of the Mitigation Area, with particular regard to the cost of providing or obtaining replacement functions and values from mitigation banks or in-lieu fee sites in the same watershed.

Separability Provision

The provisions hereof shall be deemed individual and severable and the invalidity or partial invalidity or unenforceability of any one provision or any portion thereof shall not affect the validity or enforceability of any other provision thereof.

Notice to Government

Any permit application or request made to any government entity, which would affect the Mitigation Area on the Property, shall provide notice and copy of this Declaration to the government entity.

Property Transfers

Owner covenants to provide notice of this Declaration on any legal instrument used to convey any interest in the Property, provided that failure to include such notice shall not extinguish or otherwise impair the validity or enforceability of the restrictions and covenants established by this Declaration.

[*REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK; SIGNATURES APPEAR ON THE FOLLOWING PAGE*]

WITNESS the following signature the day and year first above written.

OWNER:

_____
GREEN RIDGE RECYCLING AND DISPOSAL FACILITY, LLC

COMMONWEALTH OF VIRGINIA,

CITY/COUNTY OF _____, to-wit:

The foregoing instrument was acknowledged before me this ___ day of _____, 201__, by _____, as _____ of _____, a _____, on behalf of the Owner.

My commission expires: _____

My registration number is: _____

_____
Notary Public

DRAFT

DECLARATION OF EASEMENTS AND RESTRICTIONS

OF

GREEN RIDGE RECYCLING AND DISPOSAL FACILITY, LLC

CUMBERLAND COUNTY, VIRGINIA

THIS DECLARATION OF EASEMENTS AND RESTRICTIVE COVENANTS is made this _____day of _____, 2020, by GREEN RIDGE RECYCLING AND DISPOSAL FACILITY LLC (the "**Owner**").

WHEREAS, the owner is the owner of the Property, rights and interests more fully described on Exhibit A attached hereto (the "Property"); it being a portion of the Property conveyed to Owner, by deed from _____, dated _____, and duly recorded in the Clerk's Office of the County of Cumberland in Deed Book _____, at page _____ on the 133.18 acres;

WHEREAS, by one or more agreements (together the "**_____Agreement**") by and between the Owner and Green Ridge Recycling and Disposal Facility LLC, ("**Green Ridge Landfill**" – the **"Developer"**): (a) the Developer agreed to provide compensatory mitigation to Green Ridge Landfill utilizing a portion of the Property; and (b) the Owner agreed to: (i) permit Developer to develop stream mitigation on the Property; (ii) to grant Developer and others the necessary licenses and easements to construct and maintain stream mitigation on the Property; and (iii) to enter into restrictive covenants in order to protect the stream mitigation areas, all as more particularly set forth in the _____Agreement.

WHEREAS, USACE regulations, at 33 C.F.R. § 332.7, require that the aquatic habitats, riparian areas, buffers, and uplands that comprise an overall compensatory mitigation project (the Mitigation Area) must be provided long-term protection through a real estate instrument, such as this Declaration;

WHEREAS, Owner desires to impose on said Property easements and restrictive covenants expressing Owner's intent to preserve 5.34 acres, more or less, of said Property as shown on Exhibit B and as described as the "Conservation Easement Area" (the "**Mitigation Area**") in perpetuity in its natural state as detailed below which easements and covenants shall run with and bind the Mitigation Area and are imposed by Owner freely and voluntarily, in order to provide compensation for aquatic impacts pursuant to U.S. Army Corps of Engineers ("**Corps**" or "**USACE**") Permit No. _____.

WHEREAS, Owner obtained authorization through Virginia Department of Environmental Quality ("**DEQ**") Permit Number _____, issued on _____, by the DEQ in accordance with State Water Control Law Sections 62.1-44.5 and 62.1-44.15:20 for impacts to State Waters.

WHEREAS, on account of the fact that the Property will serve as compensation for such above-

referenced impacts, the USACE and DEQ are third-party beneficiaries under this Declaration of Easements and Restrictions ("Declaration").

NOW THEREFORE THIS DECLARATION WITNESSETH: Owner does hereby declare, covenant and agree, for itself and its successors and assigns, that the Mitigation Area as shown on Exhibit B, shall be hereafter held, leased, transferred, and sold subject to the following conditions and restrictions which shall run with the land and be binding on all parties and persons claiming under them.

Covenants and Restrictions: Preservation Area

Owner shall ensure that this Declaration is recorded in the land records of Cumberland County, and shall ensure that this Declaration is indexed against the land records for the Property. Owner shall ensure that these Covenants and Restrictions run with the Property in perpetuity and be binding on Owner and its successors, assigns, lessees, and any other occupiers or users of the Property.

Owner declares, for itself and its successors and assigns, that the Mitigation Area shall hereafter be held exclusively for conservation purposes, unless otherwise provided herein.

That portion of the Property described as the Mitigation Area and shown on Exhibit B attached hereto shall be preserved in perpetuity in its natural state, by **prohibiting** the following activities:

1. Destruction or alteration of the Mitigation Area shown on Exhibit B other than those alterations expressly authorized in writing by the Norfolk District, USACE, or DEQ, *provided that* the following activities are **allowed**:

   i. Alteration necessary to ensure the success of the Mitigation Area including monitoring, reconstruction or maintenance of the constructed Mitigation Area, as approved by the USACE and DEQ;

   ii. Alteration to construct structures such as walkways, boardwalks, foot trails, wildlife observation or management structures, benches, observation decks, picnic tables, fence posts, and ecological, biological, hydrological or chemical monitoring, observation or management equipment including, without limitation, monitoring wells, or interpretive stations, or other structures as approved by the USACE and DEQ, provided that:

      1. any such structures permit, and do not impede, the natural movement of water, and

      2. structures and/or facilities do not alter the physical, biological, or chemical nature of the protected resource and/or its protected buffer

3. such facilities are constructed and maintained in accordance with all applicable federal and state laws;

iii. Addition of signs constructed in public rights of way by or on behalf of the Virginia Department of Transportation or other governmental agencies;

iv. Removal of vegetation (where not precluded by federal or state law) when approved by the USACE and DEQ and conducted for:

1. Removal of noxious or invasive plants; or

2. Public safety purposes

v. Planting of native species of plants by hand for aesthetic landscaping or screening purposes; and

vi. Alteration as reasonably necessary to comply with state or federal law or appropriate court order.

2. Construction, maintenance or placement of any structures or fills (other than those which currently exist) including but not limited to buildings, mobile homes, fences, signs or other permanent structures that include but are not limited to stream crossings, camp sites, hunting blinds and/or target shooting structures without prior express written approval of the USACE and DEQ. However, boardwalks, wildlife management structures, observation decks, one informative sign, and unpaved foot trails may be placed within the Mitigation Area provided that any such structure does not alter streams, permits the natural movement of water and preserves the natural contour of the ground and subject to prior express written approval by the USACE and DEQ;

3. Ditching, land clearing or discharge of dredge or fill material, including diking, damming, filling, excavating, grading, plowing, flooding/ponding, draining, mining, drilling, placing of trash and yard debris or removing/adding topsoil, sand, or other materials (except as may be necessary on a case-by-case basis with prior express written approval by USACE and DEQ);

4. The use of gas/diesel powered watercraft or vehicles in any location or manner that would alter the preservation area. However, the collection of game and non-commercial use of roads and trails outside of streams in a manner that does not alter the Mitigation Area is permitted.

5. Permitting livestock to graze, inhabit or otherwise enter the Mitigation Area.

6. Cultivating, harvesting, cutting, logging, planting, and pruning of trees and plants, or using fertilizers and spraying with biocides (except as may be necessary on a case-by-case basis with prior express written approval by USACE and DEQ);

Easement

Owner hereby grants, conveys and provides to Developer, USACE, and DEQ, and their

respective agents, employees, contractors, successors and assigns (together, the "**Authorized Parties**"), a non-exclusive easement and right of way for vehicular access, ingress and egress over the Property into the Mitigation Area (collectively, the "**Access Roads**"), in order to perform studies and to perform construction, maintenance, monitoring and inspection of the Mitigation Area. Owner does also hereby grant, convey and provide to the Authorized Parties, and to each of them, a perpetual, non-exclusive easement over the Mitigation Area in order to perform studies and to perform construction, maintenance, monitoring and inspection of the Mitigation Area.

Other Restrictions.

Owner represents and warrants that no restriction of record on the use of the Mitigation Area, nor any presently existing future estate or interest in the Property, nor any lien, obligation, covenant, limitation, lease, mortgage, or encumbrance of any kind precludes the imposition or maintenance of this Declaration or the restrictions established herein.

Notice of Legal Action

The USACE and DEQ shall be provided with a 60-day advance written notice of any legal action concerning this Declaration or of any action to extinguish, void or modify this Declaration in whole or in part.

Amendment

The easements and covenants contained herein shall not hereafter be altered in any respect without the express written approval and consent of the Owner or its successor in interest and the USACE and DEQ. The Owner or its successor may apply to the USACE and DEQ for vacation or modification of this Declaration; however, after recording, these easements and restrictive covenants may only be amended or vacated by a recorded document signed by the USACE, DEQ, and the Owner or its successor in interest.

This Declaration is intended to survive foreclosure, bankruptcy, condemnation or judgments affecting the Property.

Compliance Inspections and Enforcement

The USACE, DEQ, and their authorized agents shall have the right to enter and go upon the Property to inspect the Property and take actions necessary to verify compliance with these restrictive covenants, however, USACE and DEQ shall make a good faith effort to provide reasonable advance notice prior to entering the property and shall limit all access to only that which is necessary to carry out the purposes of the Mitigation project. The restrictive covenants herein shall be enforceable by any proceeding at law or in equity or administrative proceeding by the USACE and DEQ. Failure by any agency (or owner) to enforce any covenant of restriction contained herein shall in no event be deemed a waiver of the right to do so thereafter.

Provision

Should an easement, right, interest or lease on or to the Property, not acknowledged herein, listed in Exhibit A, or identified on Exhibit B, and prior in time and recording to this Declaration, or unrecorded, be exercised in such a manner that it conflicts with or voids the prohibited uses of the Property set out in this Declaration, then Green Ridge Landfill, as the Permittee of USACE Permit No. _____ and of DEQ Permit No. _____, shall be responsible for providing alternative compensatory mitigation in such amounts and of such service and function as the Corps, or any enforcer of this Declaration shall determine in its sole discretion, in accordance with the Clean Water Act and/or Sections 62.1-44.15:20-23 of the Code of Virginia.

Eminent Domain

If any part of the Preservation Area is taken in whole or in part through eminent domain (taking), the Owner is obligated, and hereby agrees, to use the proceeds that represent the proportionate value of the compensation for the taking that represents the functions and values provided by the Mitigation Area, to procure and replace the functions and values of the Mitigation Area; such replacement to be determined by the Corps and DEQ. Any valuation of the Property or Mitigation Area should include consideration of the values and functions of the Mitigation Area, with particular regard to the cost of providing or obtaining replacement functions and values from mitigation banks or in-lieu fee sites in the same watershed.

Separability Provision

The provisions hereof shall be deemed individual and severable and the invalidity or partial invalidity or unenforceability of any one provision or any portion thereof shall not affect the validity or enforceability of any other provision thereof.

Notice to Government

Any permit application or request made to any government entity, which would affect the Mitigation Area on the Property, shall provide notice and copy of this Declaration to the government entity.

Property Transfers

Owner covenants to provide notice of this Declaration on any legal instrument used to convey any interest in the Property, provided that failure to include such notice shall not extinguish or otherwise impair the validity or enforceability of the restrictions and covenants established by this Declaration.

[*REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK; SIGNATURES APPEAR ON THE FOLLOWING PAGE*]

WITNESS the following signature the day and year first above written.

OWNER:

_____
GREEN RIDGE RECYCLING AND DISPOSAL FACILITY, LLC

COMMONWEALTH OF VIRGINIA,

CITY/COUNTY OF _____, to-wit:

The foregoing instrument was acknowledged before me this ___ day of _____, 201__, by _____, as _____ of _____, a _____, on behalf of the Owner.

My commission expires: _____

My registration number is: _____

_____
Notary Public

DRAFT

DECLARATION OF EASEMENTS AND RESTRICTIONS

OF

GREEN RIDGE RECYCLING AND DISPOSAL FACILITY, LLC

CUMBERLAND COUNTY, VIRGINIA

THIS DECLARATION OF EASEMENTS AND RESTRICTIVE COVENANTS is made this _____day of _____, 2020, by GREEN RIDGE RECYCLING AND DISPOSAL FACILITY LLC (the "**Owner**").

WHEREAS, the owner is the owner of the Property, rights and interests more fully described on Exhibit A attached hereto (the "Property"); it being a portion of the Property conveyed to Owner, by deed from _____, dated _____, and duly recorded in the Clerk's Office of the County of Cumberland in Deed Book ____, at page _____ on the 171 acres;

WHEREAS, by one or more agreements (together the "**_____Agreement**") by and between the Owner and Green Ridge Recycling and Disposal Facility LLC, ("**Green Ridge Landfill**" – the **"Developer"**): (a) the Developer agreed to provide compensatory mitigation to Green Ridge Landfill utilizing a portion of the Property; and (b) the Owner agreed to: (i) permit Developer to develop stream mitigation on the Property; (ii) to grant Developer and others the necessary licenses and easements to construct and maintain stream mitigation on the Property; and (iii) to enter into restrictive covenants in order to protect the stream mitigation areas, all as more particularly set forth in the _____Agreement.

WHEREAS, USACE regulations, at 33 C.F.R. § 332.7, require that the aquatic habitats, riparian areas, buffers, and uplands that comprise an overall compensatory mitigation project (the Mitigation Area) must be provided long-term protection through a real estate instrument, such as this Declaration;

WHEREAS, Owner desires to impose on said Property easements and restrictive covenants expressing Owner's intent to preserve 53.45 acres, more or less, of said Property as shown on Exhibit B and as described as the "Conservation Easement Area" (the "**Mitigation Area**") in perpetuity in its natural state as detailed below which easements and covenants shall run with and bind the Mitigation Area and are imposed by Owner freely and voluntarily, in order to provide compensation for aquatic impacts pursuant to U.S. Army Corps of Engineers ("**Corps**" or "**USACE**") Permit No. _____.

WHEREAS, Owner obtained authorization through Virginia Department of Environmental Quality ("**DEQ**") Permit Number _____, issued on _____, by the DEQ in accordance with State Water Control Law Sections 62.1-44.5 and 62.1-44.15:20 for impacts to State Waters.

WHEREAS, on account of the fact that the Property will serve as compensation for such above-

referenced impacts, the USACE and DEQ are third-party beneficiaries under this Declaration of Easements and Restrictions ("Declaration").

NOW THEREFORE THIS DECLARATION WITNESSETH: Owner does hereby declare, covenant and agree, for itself and its successors and assigns, that the Mitigation Area as shown on Exhibit B, shall be hereafter held, leased, transferred, and sold subject to the following conditions and restrictions which shall run with the land and be binding on all parties and persons claiming under them.

Covenants and Restrictions: Preservation Area

Owner shall ensure that this Declaration is recorded in the land records of Cumberland County, and shall ensure that this Declaration is indexed against the land records for the Property. Owner shall ensure that these Covenants and Restrictions run with the Property in perpetuity and be binding on Owner and its successors, assigns, lessees, and any other occupiers or users of the Property.

Owner declares, for itself and its successors and assigns, that the Mitigation Area shall hereafter be held exclusively for conservation purposes, unless otherwise provided herein.

That portion of the Property described as the Mitigation Area and shown on Exhibit B attached hereto shall be preserved in perpetuity in its natural state, by **prohibiting** the following activities:

1. Destruction or alteration of the Mitigation Area shown on Exhibit B other than those alterations expressly authorized in writing by the Norfolk District, USACE, or DEQ, *provided that* the following activities are **allowed**:

   i. Alteration necessary to ensure the success of the Mitigation Area including monitoring, reconstruction or maintenance of the constructed Mitigation Area, as approved by the USACE and DEQ;

   ii. Alteration to construct structures such as walkways, boardwalks, foot trails, wildlife observation or management structures, benches, observation decks, picnic tables, fence posts, and ecological, biological, hydrological or chemical monitoring, observation or management equipment including, without limitation, monitoring wells, or interpretive stations, or other structures as approved by the USACE and DEQ, provided that:

      1. any such structures permit, and do not impede, the natural movement of water, and

      2. structures and/or facilities do not alter the physical, biological, or chemical nature of the protected resource and/or its protected buffer

3. such facilities are constructed and maintained in accordance with all applicable federal and state laws;

iii. Addition of signs constructed in public rights of way by or on behalf of the Virginia Department of Transportation or other governmental agencies;

iv. Removal of vegetation (where not precluded by federal or state law) when approved by the USACE and DEQ and conducted for:

1. Removal of noxious or invasive plants; or

2. Public safety purposes

v. Planting of native species of plants by hand for aesthetic landscaping or screening purposes; and

vi. Alteration as reasonably necessary to comply with state or federal law or appropriate court order.

2. Construction, maintenance or placement of any structures or fills (other than those which currently exist) including but not limited to buildings, mobile homes, fences, signs or other permanent structures that include but are not limited to stream crossings, camp sites, hunting blinds and/or target shooting structures without prior express written approval of the USACE and DEQ. However, boardwalks, wildlife management structures, observation decks, one informative sign, and unpaved foot trails may be placed within the Mitigation Area provided that any such structure does not alter streams, permits the natural movement of water and preserves the natural contour of the ground and subject to prior express written approval by the USACE and DEQ;

3. Ditching, land clearing or discharge of dredge or fill material, including diking, damming, filling, excavating, grading, plowing, flooding/ponding, draining, mining, drilling, placing of trash and yard debris or removing/adding topsoil, sand, or other materials (except as may be necessary on a case-by-case basis with prior express written approval by USACE and DEQ);

4. The use of gas/diesel powered watercraft or vehicles in any location or manner that would alter the preservation area. However, the collection of game and non-commercial use of roads and trails outside of streams in a manner that does not alter the Mitigation Area is permitted.

5. Permitting livestock to graze, inhabit or otherwise enter the Mitigation Area.

6. Cultivating, harvesting, cutting, logging, planting, and pruning of trees and plants, or using fertilizers and spraying with biocides (except as may be necessary on a case-by-case basis with prior express written approval by USACE and DEQ);

Easement

Owner hereby grants, conveys and provides to Developer, USACE, and DEQ, and their

respective agents, employees, contractors, successors and assigns (together, the "**Authorized Parties**"), a non-exclusive easement and right of way for vehicular access, ingress and egress over the Property into the Mitigation Area (collectively, the "**Access Roads**"), in order to perform studies and to perform construction, maintenance, monitoring and inspection of the Mitigation Area. Owner does also hereby grant, convey and provide to the Authorized Parties, and to each of them, a perpetual, non-exclusive easement over the Mitigation Area in order to perform studies and to perform construction, maintenance, monitoring and inspection of the Mitigation Area.

Other Restrictions.

Owner represents and warrants that no restriction of record on the use of the Mitigation Area, nor any presently existing future estate or interest in the Property, nor any lien, obligation, covenant, limitation, lease, mortgage, or encumbrance of any kind precludes the imposition or maintenance of this Declaration or the restrictions established herein.

Notice of Legal Action

The USACE and DEQ shall be provided with a 60-day advance written notice of any legal action concerning this Declaration or of any action to extinguish, void or modify this Declaration in whole or in part.

Amendment

The easements and covenants contained herein shall not hereafter be altered in any respect without the express written approval and consent of the Owner or its successor in interest and the USACE and DEQ. The Owner or its successor may apply to the USACE and DEQ for vacation or modification of this Declaration; however, after recording, these easements and restrictive covenants may only be amended or vacated by a recorded document signed by the USACE, DEQ, and the Owner or its successor in interest.

This Declaration is intended to survive foreclosure, bankruptcy, condemnation or judgments affecting the Property.

Compliance Inspections and Enforcement

The USACE, DEQ, and their authorized agents shall have the right to enter and go upon the Property to inspect the Property and take actions necessary to verify compliance with these restrictive covenants, however, USACE and DEQ shall make a good faith effort to provide reasonable advance notice prior to entering the property and shall limit all access to only that which is necessary to carry out the purposes of the Mitigation project. The restrictive covenants herein shall be enforceable by any proceeding at law or in equity or administrative proceeding by the USACE and DEQ. Failure by any agency (or owner) to enforce any covenant of restriction contained herein shall in no event be deemed a waiver of the right to do so thereafter.

Provision

Should an easement, right, interest or lease on or to the Property, not acknowledged herein, listed in Exhibit A, or identified on Exhibit B, and prior in time and recording to this Declaration, or unrecorded, be exercised in such a manner that it conflicts with or voids the prohibited uses of the Property set out in this Declaration, then Green Ridge Landfill, as the Permittee of USACE Permit No. _____ and of DEQ Permit No. _____ shall be responsible for providing alternative compensatory mitigation in such amounts and of such service and function as the Corps, or any enforcer of this Declaration shall determine in its sole discretion, in accordance with the Clean Water Act and/or Sections 62.1-44.15:20-23 of the Code of Virginia.

Eminent Domain

If any part of the Preservation Area is taken in whole or in part through eminent domain (taking), the Owner is obligated, and hereby agrees, to use the proceeds that represent the proportionate value of the compensation for the taking that represents the functions and values provided by the Mitigation Area, to procure and replace the functions and values of the Mitigation Area; such replacement to be determined by the Corps and DEQ. Any valuation of the Property or Mitigation Area should include consideration of the values and functions of the Mitigation Area, with particular regard to the cost of providing or obtaining replacement functions and values from mitigation banks or in-lieu fee sites in the same watershed.

Separability Provision

The provisions hereof shall be deemed individual and severable and the invalidity or partial invalidity or unenforceability of any one provision or any portion thereof shall not affect the validity or enforceability of any other provision thereof.

Notice to Government

Any permit application or request made to any government entity, which would affect the Mitigation Area on the Property, shall provide notice and copy of this Declaration to the government entity.

Property Transfers

Owner covenants to provide notice of this Declaration on any legal instrument used to convey any interest in the Property, provided that failure to include such notice shall not extinguish or otherwise impair the validity or enforceability of the restrictions and covenants established by this Declaration.

[*REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK; SIGNATURES APPEAR ON THE FOLLOWING PAGE*]

WITNESS the following signature the day and year first above written.

OWNER:

_____
GREEN RIDGE RECYCLING AND DISPOSAL FACILITY, LLC

COMMONWEALTH OF VIRGINIA,

CITY/COUNTY OF _____, to-wit:

The foregoing instrument was acknowledged before me this ___ day of _____, 201__, by _____, as _____ of _____, a _____, on behalf of the Owner.

My commission expires: _____

My registration number is: _____

_____
Notary Public

DRAFT

DECLARATION OF EASEMENTS AND RESTRICTIONS

OF

GREEN RIDGE RECYCLING AND DISPOSAL FACILITY, LLC

CUMBERLAND COUNTY, VIRGINIA

THIS DECLARATION OF EASEMENTS AND RESTRICTIVE COVENANTS is made this _____day of _____, 2020, by GREEN RIDGE RECYCLING AND DISPOSAL FACILITY LLC (the "**Owner**").

WHEREAS, the owner is the owner of the Property, rights and interests more fully described on Exhibit A attached hereto (the "Property"); it being a portion of the Property conveyed to Owner, by deed from _____, dated _____, and duly recorded in the Clerk's Office of the County of Cumberland in Deed Book _____, at page _____ on the 82 acres;

WHEREAS, by one or more agreements (together the "**_____Agreement**") by and between the Owner and Green Ridge Recycling and Disposal Facility LLC, ("**Green Ridge Landfill**" – the **"Developer"**): (a) the Developer agreed to provide compensatory mitigation to Green Ridge Landfill utilizing a portion of the Property; and (b) the Owner agreed to: (i) permit Developer to develop stream mitigation on the Property; (ii) to grant Developer and others the necessary licenses and easements to construct and maintain stream mitigation on the Property; and (iii) to enter into restrictive covenants in order to protect the stream mitigation areas, all as more particularly set forth in the _____Agreement.

WHEREAS, USACE regulations, at 33 C.F.R. § 332.7, require that the aquatic habitats, riparian areas, buffers, and uplands that comprise an overall compensatory mitigation project (the Mitigation Area) must be provided long-term protection through a real estate instrument, such as this Declaration;

WHEREAS, Owner desires to impose on said Property easements and restrictive covenants expressing Owner's intent to preserve 8.33 acres, more or less, of said Property as shown on Exhibit B and as described as the "Conservation Easement Area" (the "**Mitigation Area**") in perpetuity in its natural state as detailed below which easements and covenants shall run with and bind the Mitigation Area and are imposed by Owner freely and voluntarily, in order to provide compensation for aquatic impacts pursuant to U.S. Army Corps of Engineers ("**Corps**" or "**USACE**") Permit No. _____.

WHEREAS, Owner obtained authorization through Virginia Department of Environmental Quality ("**DEQ**") Permit Number _____, issued on _____, by the DEQ in accordance with State Water Control Law Sections 62.1-44.5 and 62.1-44.15:20 for impacts to State Waters.

WHEREAS, on account of the fact that the Property will serve as compensation for such above-

referenced impacts, the USACE and DEQ are third-party beneficiaries under this Declaration of Easements and Restrictions ("Declaration").

NOW THEREFORE THIS DECLARATION WITNESSETH: Owner does hereby declare, covenant and agree, for itself and its successors and assigns, that the Mitigation Area as shown on Exhibit B, shall be hereafter held, leased, transferred, and sold subject to the following conditions and restrictions which shall run with the land and be binding on all parties and persons claiming under them.

Covenants and Restrictions: Preservation Area

Owner shall ensure that this Declaration is recorded in the land records of Cumberland County, and shall ensure that this Declaration is indexed against the land records for the Property. Owner shall ensure that these Covenants and Restrictions run with the Property in perpetuity and be binding on Owner and its successors, assigns, lessees, and any other occupiers or users of the Property.

Owner declares, for itself and its successors and assigns, that the Mitigation Area shall hereafter be held exclusively for conservation purposes, unless otherwise provided herein.

That portion of the Property described as the Mitigation Area and shown on Exhibit B attached hereto shall be preserved in perpetuity in its natural state, by **prohibiting** the following activities:

1. Destruction or alteration of the Mitigation Area shown on Exhibit B other than those alterations expressly authorized in writing by the Norfolk District, USACE, or DEQ, *provided that* the following activities are **allowed**:

   i. Alteration necessary to ensure the success of the Mitigation Area including monitoring, reconstruction or maintenance of the constructed Mitigation Area, as approved by the USACE and DEQ;

   ii. Alteration to construct structures such as walkways, boardwalks, foot trails, wildlife observation or management structures, benches, observation decks, picnic tables, fence posts, and ecological, biological, hydrological or chemical monitoring, observation or management equipment including, without limitation, monitoring wells, or interpretive stations, or other structures as approved by the USACE and DEQ, provided that:

      1. any such structures permit, and do not impede, the natural movement of water, and

      2. structures and/or facilities do not alter the physical, biological, or chemical nature of the protected resource and/or its protected buffer

3. such facilities are constructed and maintained in accordance with all applicable federal and state laws;

iii. Addition of signs constructed in public rights of way by or on behalf of the Virginia Department of Transportation or other governmental agencies;

iv. Removal of vegetation (where not precluded by federal or state law) when approved by the USACE and DEQ and conducted for:

1. Removal of noxious or invasive plants; or

2. Public safety purposes

v. Planting of native species of plants by hand for aesthetic landscaping or screening purposes; and

vi. Alteration as reasonably necessary to comply with state or federal law or appropriate court order.

2. Construction, maintenance or placement of any structures or fills (other than those which currently exist) including but not limited to buildings, mobile homes, fences, signs or other permanent structures that include but are not limited to stream crossings, camp sites, hunting blinds and/or target shooting structures without prior express written approval of the USACE and DEQ. However, boardwalks, wildlife management structures, observation decks, one informative sign, and unpaved foot trails may be placed within the Mitigation Area provided that any such structure does not alter streams, permits the natural movement of water and preserves the natural contour of the ground and subject to prior express written approval by the USACE and DEQ;

3. Ditching, land clearing or discharge of dredge or fill material, including diking, damming, filling, excavating, grading, plowing, flooding/ponding, draining, mining, drilling, placing of trash and yard debris or removing/adding topsoil, sand, or other materials (except as may be necessary on a case-by-case basis with prior express written approval by USACE and DEQ);

4. The use of gas/diesel powered watercraft or vehicles in any location or manner that would alter the preservation area. However, the collection of game and non-commercial use of roads and trails outside of streams in a manner that does not alter the Mitigation Area is permitted.

5. Permitting livestock to graze, inhabit or otherwise enter the Mitigation Area.

6. Cultivating, harvesting, cutting, logging, planting, and pruning of trees and plants, or using fertilizers and spraying with biocides (except as may be necessary on a case-by-case basis with prior express written approval by USACE and DEQ);

Easement

Owner hereby grants, conveys and provides to Developer, USACE, and DEQ, and their

respective agents, employees, contractors, successors and assigns (together, the "**Authorized Parties**"), a non-exclusive easement and right of way for vehicular access, ingress and egress over the Property into the Mitigation Area (collectively, the "**Access Roads**"), in order to perform studies and to perform construction, maintenance, monitoring and inspection of the Mitigation Area. Owner does also hereby grant, convey and provide to the Authorized Parties, and to each of them, a perpetual, non-exclusive easement over the Mitigation Area in order to perform studies and to perform construction, maintenance, monitoring and inspection of the Mitigation Area.

Other Restrictions.

Owner represents and warrants that no restriction of record on the use of the Mitigation Area, nor any presently existing future estate or interest in the Property, nor any lien, obligation, covenant, limitation, lease, mortgage, or encumbrance of any kind precludes the imposition or maintenance of this Declaration or the restrictions established herein.

Notice of Legal Action

The USACE and DEQ shall be provided with a 60-day advance written notice of any legal action concerning this Declaration or of any action to extinguish, void or modify this Declaration in whole or in part.

Amendment

The easements and covenants contained herein shall not hereafter be altered in any respect without the express written approval and consent of the Owner or its successor in interest and the USACE and DEQ. The Owner or its successor may apply to the USACE and DEQ for vacation or modification of this Declaration; however, after recording, these easements and restrictive covenants may only be amended or vacated by a recorded document signed by the USACE, DEQ, and the Owner or its successor in interest.

This Declaration is intended to survive foreclosure, bankruptcy, condemnation or judgments affecting the Property.

Compliance Inspections and Enforcement

The USACE, DEQ, and their authorized agents shall have the right to enter and go upon the Property to inspect the Property and take actions necessary to verify compliance with these restrictive covenants, however, USACE and DEQ shall make a good faith effort to provide reasonable advance notice prior to entering the property and shall limit all access to only that which is necessary to carry out the purposes of the Mitigation project. The restrictive covenants herein shall be enforceable by any proceeding at law or in equity or administrative proceeding by the USACE and DEQ. Failure by any agency (or owner) to enforce any covenant of restriction contained herein shall in no event be deemed a waiver of the right to do so thereafter.

Provision

Should an easement, right, interest or lease on or to the Property, not acknowledged herein, listed in Exhibit A, or identified on Exhibit B, and prior in time and recording to this Declaration, or unrecorded, be exercised in such a manner that it conflicts with or voids the prohibited uses of the Property set out in this Declaration, then Green Ridge Landfill, as the Permittee of USACE Permit No. _____ and of DEQ Permit No. _____, shall be responsible for providing alternative compensatory mitigation in such amounts and of such service and function as the Corps, or any enforcer of this Declaration shall determine in its sole discretion, in accordance with the Clean Water Act and/or Sections 62.1-44.15:20-23 of the Code of Virginia.

Eminent Domain

If any part of the Preservation Area is taken in whole or in part through eminent domain (taking), the Owner is obligated, and hereby agrees, to use the proceeds that represent the proportionate value of the compensation for the taking that represents the functions and values provided by the Mitigation Area, to procure and replace the functions and values of the Mitigation Area; such replacement to be determined by the Corps and DEQ. Any valuation of the Property or Mitigation Area should include consideration of the values and functions of the Mitigation Area, with particular regard to the cost of providing or obtaining replacement functions and values from mitigation banks or in-lieu fee sites in the same watershed.

Separability Provision

The provisions hereof shall be deemed individual and severable and the invalidity or partial invalidity or unenforceability of any one provision or any portion thereof shall not affect the validity or enforceability of any other provision thereof.

Notice to Government

Any permit application or request made to any government entity, which would affect the Mitigation Area on the Property, shall provide notice and copy of this Declaration to the government entity.

Property Transfers

Owner covenants to provide notice of this Declaration on any legal instrument used to convey any interest in the Property, provided that failure to include such notice shall not extinguish or otherwise impair the validity or enforceability of the restrictions and covenants established by this Declaration.

[*REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK; SIGNATURES APPEAR ON THE FOLLOWING PAGE*]

WITNESS the following signature the day and year first above written.

OWNER:

_____
GREEN RIDGE RECYCLING AND DISPOSAL FACILITY, LLC

COMMONWEALTH OF VIRGINIA,

CITY/COUNTY OF _____, to-wit:

The foregoing instrument was acknowledged before me this ___ day of _____, 201__, by _____, as _____ of _____, a _____, on behalf of the Owner.

My commission expires: _____

My registration number is: _____

_____
Notary Public

Attachment F

Threatened and Endangered Species and

Cultural and Historic Resources Database Search

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Date: **April 14, 2022**

Self-Certification Letter

Project Name: **Boxwood PRM**

Dear Applicant: **RES, LLC**

Thank you for using the U.S. Fish and Wildlife Service (Service) Virginia Ecological Services online project review process. By printing this letter in conjunction with your project review package, you are certifying that you have completed the online project review process for the project named above in accordance with all instructions provided, using the best available information to reach your conclusions. This letter, and the enclosed project review package, completes the review of your project in accordance with the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (ESA). This letter also provides information for your project review under the National Environmental Policy Act of 1969 (P.L. 91-190, 42 U.S.C. 4321-4347, 83 Stat. 852), as amended. A copy of this letter and the project review package must be submitted to this office for this certification to be valid. This letter and the project review package will be maintained in our records.

The species conclusions table in the enclosed project review package summarizes your ESA conclusions. These conclusions resulted in:

- "no effect" determinations for proposed/listed species and/or proposed/designated critical habitat; and/or
- Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR § 17.40(o) [as determined through the Information, Planning, and Consultation System (IPaC) northern long-eared bat assisted determination key]; and/or
- "may affect, not likely to adversely affect" determinations for proposed/listed species and/or proposed/designated critical habitat.

We certify that use of the online project review process in strict accordance with the instructions provided as documented in the enclosed project review package results in reaching the appropriate determinations. Therefore, we concur with the "no effect" or "may affect, not likely to adversely affect" determinations for proposed and listed species and proposed and designated critical habitat. Additional coordination with this office is not needed.

Candidate species are not legally protected pursuant to the ESA. However, the Service encourages consideration of these species by avoiding adverse impacts to them. Please contact this office for additional coordination if your project action area contains candidate species.

Should project plans change or if additional information on the distribution of proposed or listed species, proposed or designated critical habitat becomes available, this determination may be reconsidered. This certification letter is valid for 1 year.

Information about the online project review process including instructions and use, species information, and other information regarding project reviews within Virginia is available at our website http://www.fws.gov/northeast/virginiafield/endspecies/project_reviews.html. If you have any questions, please contact Troy Andersen of this office at (804) 824-2428.

Sincerely,

Cindy Schulz
Field Supervisor
Virginia Ecological Services

Enclosures - project review package

Species Conclusions Table

Project Name: Boxwood PRM

Date: April 14, 2022

Species / Resource Name	Conclusion	ESA Section 7 / Eagle Act Determination	Notes / Documentation
Northern Long-eared Bat (Myotis septentrionalis)	Applying 4(d) Rule; excepted from take	May affect	The project area is not located within 150 feet of a maternity roost or within a quarter mile of a hibernacula. Relying on 4(d) rule.
Critical habitat (IPaC)	No critical habitat present	No effect	The project area is not located within Bland, Lee, Scott, Smyth, Russell, Tazewell, Washington, Wise or Wythe County.
Bald eagles	Unlikely to disturb nesting bald eagles; Does not intersect with an eagle concentration area	No Eagle Act permit required	No bald eagle nests within 660' of the project area and it is not located within an eagle concentration area

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032
http://www.fws.gov/northeast/virginiafield/

In Reply Refer To:
Project Code: 2022-0031773
Project Name: Boxwood PRM

April 14, 2022

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Project Code in the header of this

letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

Project Summary

Project Code: 2022-0031773
Event Code: None
Project Name: Boxwood PRM
Project Type: Restoration / Enhancement of Waterbody
Project Description: PRM Stream Restoration Project
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.6106958,-78.3262704292882,14z

Counties: Buckingham County, Virginia

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

THERE ARE NO FWS MIGRATORY BIRDS OF CONCERN WITHIN THE VICINITY OF YOUR PROJECT AREA.

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical

Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

IPaC User Contact Information

Agency: RES llc
Name: Leah Purdy
Address: 1408 Roseneath Rd
City: Richmond
State: VA
Zip: 23230
Email lpurdy@res.us
Phone: 6104624595

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032
http://www.fws.gov/northeast/virginiafield/

In Reply Refer To:
Project code: 2022-0031873
Project Name: Boxwood PRM

April 14, 2022

Subject: Verification letter for the 'Boxwood PRM' project under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions.

Dear Leah Purdy:

The U.S. Fish and Wildlife Service (Service) received on April 14, 2022 your effects determination for the 'Boxwood PRM' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take"[1] prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, the Action is consistent with activities analyzed in the PBO. The Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the PBO satisfies and concludes your responsibilities for this Action under ESA Section 7(a)(2) with respect to the northern long-eared bat.

Please report to our office any changes to the information about the Action that you submitted in IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation. If the Action is not completed within one year of the date of this letter, you must update and resubmit the information required in the IPaC key.

This IPaC-assisted determination allows you to rely on the PBO for compliance with ESA Section 7(a)(2) only for the northern long-eared bat. It **does not** apply to the following ESA-protected species that also may occur in the Action area:

- Monarch Butterfly *Danaus plexippus* Candidate

If the Action may affect other federally listed species besides the northern long-eared bat, a proposed species, and/or designated critical habitat, additional consultation between you and this Service office is required. If the Action may disturb bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act is recommended.

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[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Boxwood PRM

2. Description

The following description was provided for the project 'Boxwood PRM':

> PRM stream restoration

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.605050899999995,-78.32925025922466,14z

Determination Key Result

This Federal Action may affect the northern long-eared bat in a manner consistent with the description of activities addressed by the Service's PBO dated January 5, 2016. Any taking that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o). Therefore, the PBO satisfies your responsibilities for this Action under ESA Section 7(a)(2) relative to the northern long-eared bat.

Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on May 15, 2017. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for Federal actions is to assist determinations as to whether proposed actions are consistent with those analyzed in the Service's PBO dated January 5, 2016.

Federal actions that may cause prohibited take of northern long-eared bats, affect ESA-listed species other than the northern long-eared bat, or affect any designated critical habitat, require ESA Section 7(a)(2) consultation in addition to the use of this key. Federal actions that may

affect species proposed for listing or critical habitat proposed for designation may require a conference under ESA Section 7(a)(4).

Determination Key Result

This project may affect the threatened Northern long-eared bat; therefore, consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.) is required. However, based on the information you provided, this project may rely on the Service's January 5, 2016, *Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions* to fulfill its Section 7(a)(2) consultation obligation.

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   Yes

2. Have you determined that the proposed action will have "no effect" on the northern long-eared bat? (If you are unsure select "No")

   No

3. Will your activity purposefully **Take** northern long-eared bats?

   No

4. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

5. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

   Yes

6. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

7. Will the action involve Tree Removal?

   Yes

8. Will the action only remove hazardous trees for the protection of human life or property?
   Yes

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type ‘0’ in questions 1-3.

1. Estimated total acres of forest conversion:

1.72

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type ‘0’ in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type ‘0’ in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type ‘0’ in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0

IPaC User Contact Information

Agency: RES llc
Name: Leah Purdy
Address: 1408 Roseneath Rd
City: Richmond
State: VA
Zip: 23230
Email lpurdy@res.us
Phone: 6104624595

Lead Agency Contact Information

Lead Agency: Army Corps of Engineers

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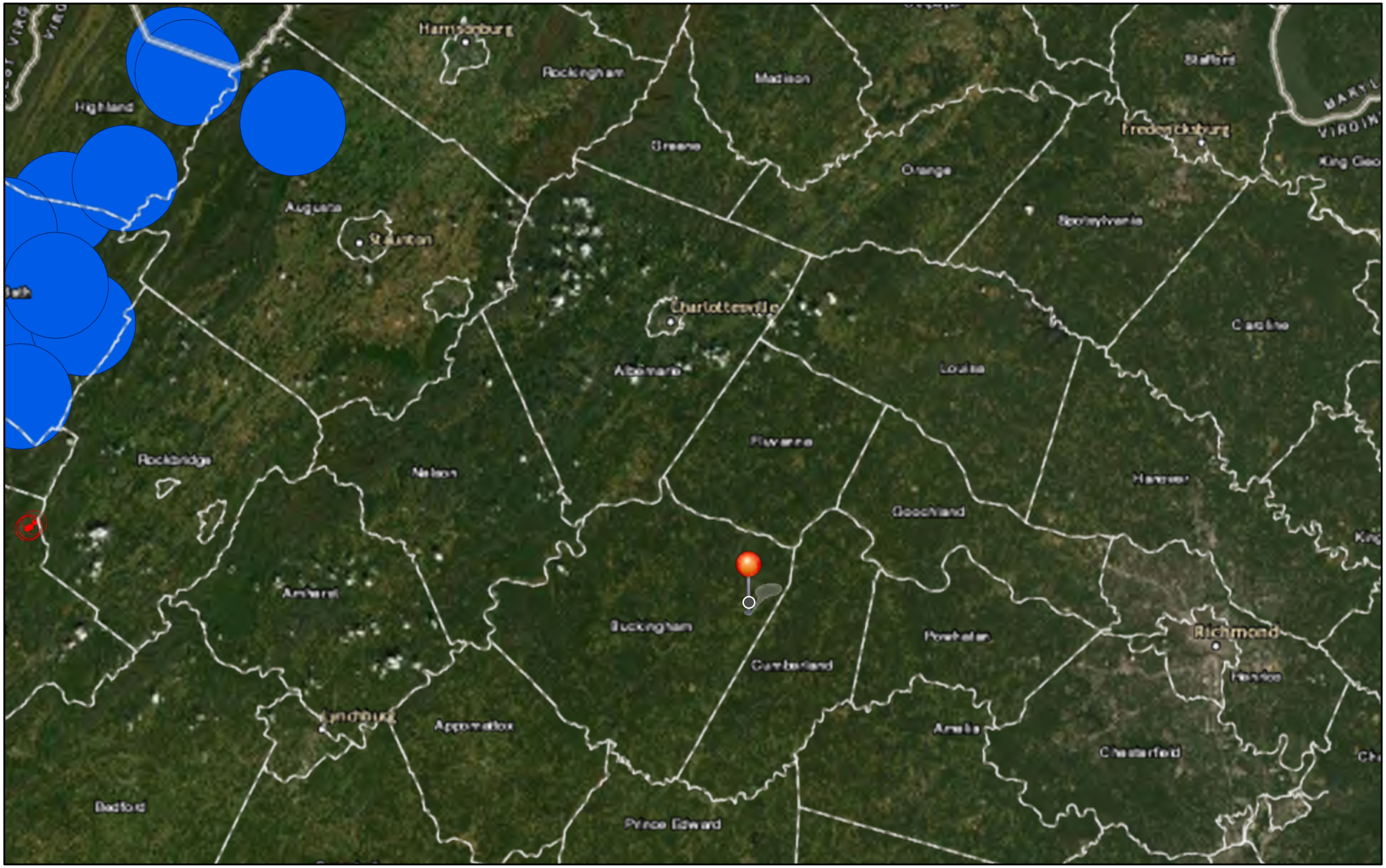

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VaFWIS Search Report Compiled on 4/14/2022, 9:36:51 AM

Help

Known or likely to occur within a **2 mile radius around point 37.6084167 -78.3268056** in **029 Buckingham County, VA**

View Map of Site Location

401 Known or Likely Species ordered by Status Concern for Conservation (displaying first 20) (19 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
060017	FESE	Ia	Spinymussel, James	Parvaspina collina		BOVA
050022	FTST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
060173	FTST	Ia	Pigtoe, Atlantic	Fusconaia masoni		BOVA,HU6
060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		BOVA,HU6
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA
050027	SE	Ia	Bat, tri-colored	Perimyotis subflavus		BOVA
060006	SE	Ib	Floater, brook	Alasmidonta varicosa		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA
060081	ST	IIa	Floater, green	Lasmigona subviridis		BOVA,HU6
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
030063	CC	IIIa	Turtle, spotted	Clemmys guttata		BOVA
030012	CC	IVa	Rattlesnake, timber	Crotalus horridus		BOVA,HU6
060084		Ib	Pigtoe, Virginia	Lexingtonia subplana		BOVA
020023		IIa	Salamander, mole	Ambystoma talpoideum		BOVA
040052		IIa	Duck, American black	Anas rubripes		BOVA,HU6
040320		IIa	Warbler, cerulean	Setophaga cerulea		BOVA,HU6
040140		IIa	Woodcock, American	Scolopax minor	Potential	BOVA,BBA,HU6
040203		IIb	Cuckoo, black-billed	Coccyzus erythropthalmus		BOVA
040105		IIb	Rail, king	Rallus elegans		BOVA
010131		IIIa	Eel, American	Anguilla rostrata	Yes	BOVA,SppObs,HU6

To view **All 401 species** View 401

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need;

IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.;
b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

View Map of All Query Results from All Observation Tables

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams

N/A

Impediments to Fish Passage

N/A

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Species Observations (4 records)

View Map of All Query Results Species Observations

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE*	Highest Tier**	
622291	SppObs	Jun 26 2014	Richard; Browder| Gabriel; Darkwah| Meghan; Bandura| Ken	7		III	Yes
425100	SppObs	Sep 1 2010	VCU - INSTAR	9			Yes
425099	SppObs	Sep 1 2010	VCU - INSTAR	13			Yes
362912	SppObs	Jan 1 1900		1			Yes

Displayed 4 Species Observations

Habitat Predicted for Aquatic WAP Tier I & II Species

N/A

Habitat Predicted for Terrestrial WAP Tier I & II Species

N/A

Virginia Breeding Bird Atlas Blocks (2 records)

View Map of All Query Results
Virginia Breeding Bird Atlas Blocks

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species			View Map
		Different Species	Highest TE*	Highest Tier**	
44106	Arvonia, SE	59		III	Yes
44105	Arvonia, SW	67		II	Yes

Public Holdings:

N/A

Summary of BOVA Species Associated with Cities and Counties of the Commonwealth of Virginia:

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier
029	Buckingham	358	FTSE	I

USGS 7.5' Quadrangles:
Gold Hill
Arvonia

USGS NRCS Watersheds in Virginia:

N/A

USGS National 6th Order Watersheds Summary of Wildlife Action Plan Tier I, II, III, and IV Species:

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
JM58	James River-Bear Garden Creek	55	FTST	I
JM68	Willis River-Bonbrook Creek	49	ST	II
JM69	Randolph Creek	46	ST	II

Compiled on 4/14/2022, 9:36:51 AM I1177397.0 report=all searchType= R dist= 3218 poi= 37.6084167 -78.3268056

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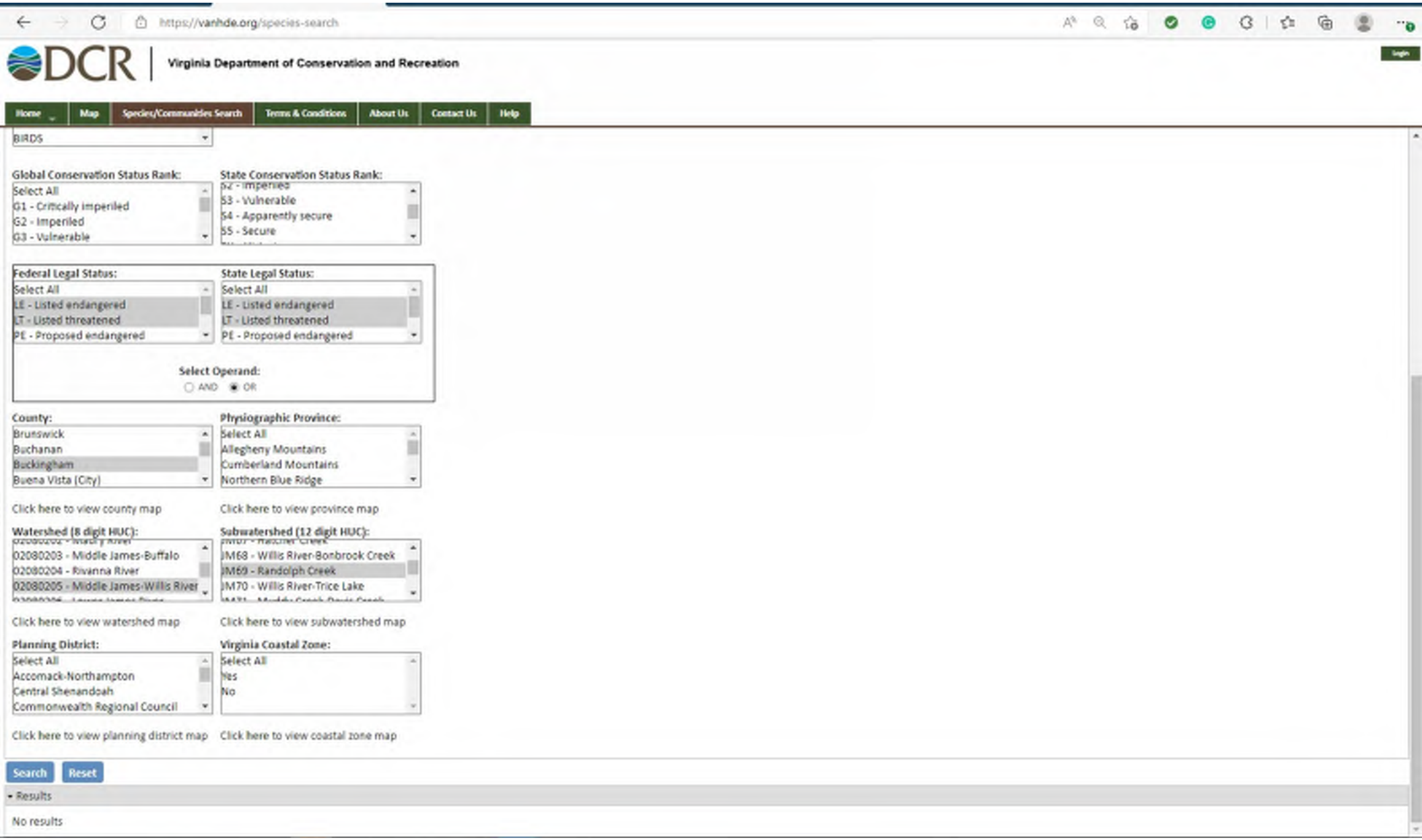

https://vanhde.org/species-search
DCR
Virginia Department of Conservation and Recreation
Login
Home
Map
Species/Communities Search
Terms & Conditions
About Us
Contact Us
Help
BIRDS
Global Conservation Status Rank:
Select All
G1 - Critically imperiled
G2 - Imperiled
G3 - Vulnerable
State Conservation Status Rank:
S3 - Vulnerable
S4 - Apparently secure
S5 - Secure
Federal Legal Status:
Select All
LE - Listed endangered
LT - Listed threatened
PE - Proposed endangered
State Legal Status:
Select All
LE - Listed endangered
LT - Listed threatened
PE - Proposed endangered
Select Operand:
AND
OR
County:
Brunswick
Buchanan
Buckingham
Buena Vista (City)
Physiographic Province:
Select All
Allegheny Mountains
Cumberland Mountains
Northern Blue Ridge
Click here to view county map
Click here to view province map
Watershed (8 digit HUC):
02080203 - Middle James-Buffalo
02080204 - Rivanna River
02080205 - Middle James-Willis River
Subwatershed (12 digit HUC):
JM68 - Willis River-Bonbrook Creek
JM69 - Randolph Creek
JM70 - Willis River-Trice Lake
Click here to view watershed map
Click here to view subwatershed map
Planning District:
Select All
Accomack-Northampton
Central Shenandoah
Commonwealth Regional Council
Virginia Coastal Zone:
Select All
Yes
No
Click here to view planning district map
Click here to view coastal zone map
Search
Reset
Results
No results

CCB Mapping Portal

Layers: VA Eagle Nest Locator, VA Eagle Nest Buffers

Map Center [longitude, latitude]: [-78.23467254638672, 37.614503373949844]

Map Link:
https://ccbbirds.org/maps/#layer=VA+Eagle+Nest+Locator&layer=VA+Eagle+Nest+Buffers&zoom=12&lat=37.614503373949844&lng=-78.23467254638672&legend=legend_tab_7c321b7e-e523-11e4-aaa0-0e0c41326911&base=World+Imagery+%28ESRI%29

Report Generated On: 04/14/2022

The Center for Conservation Biology (CCB) provides certain data online as a free service to the public and the regulatory sector. CCB encourages the use of its data sets in wildlife conservation and management applications. These data are protected by intellectual property laws. All users are reminded to view the Data Use Agreement to ensure compliance with our data use policies. For additional data access questions, view our Data Distribution Policy, or contact our Data Manager, Marie Pitts, at mlpitts@wm.edu or 757-221-7503.

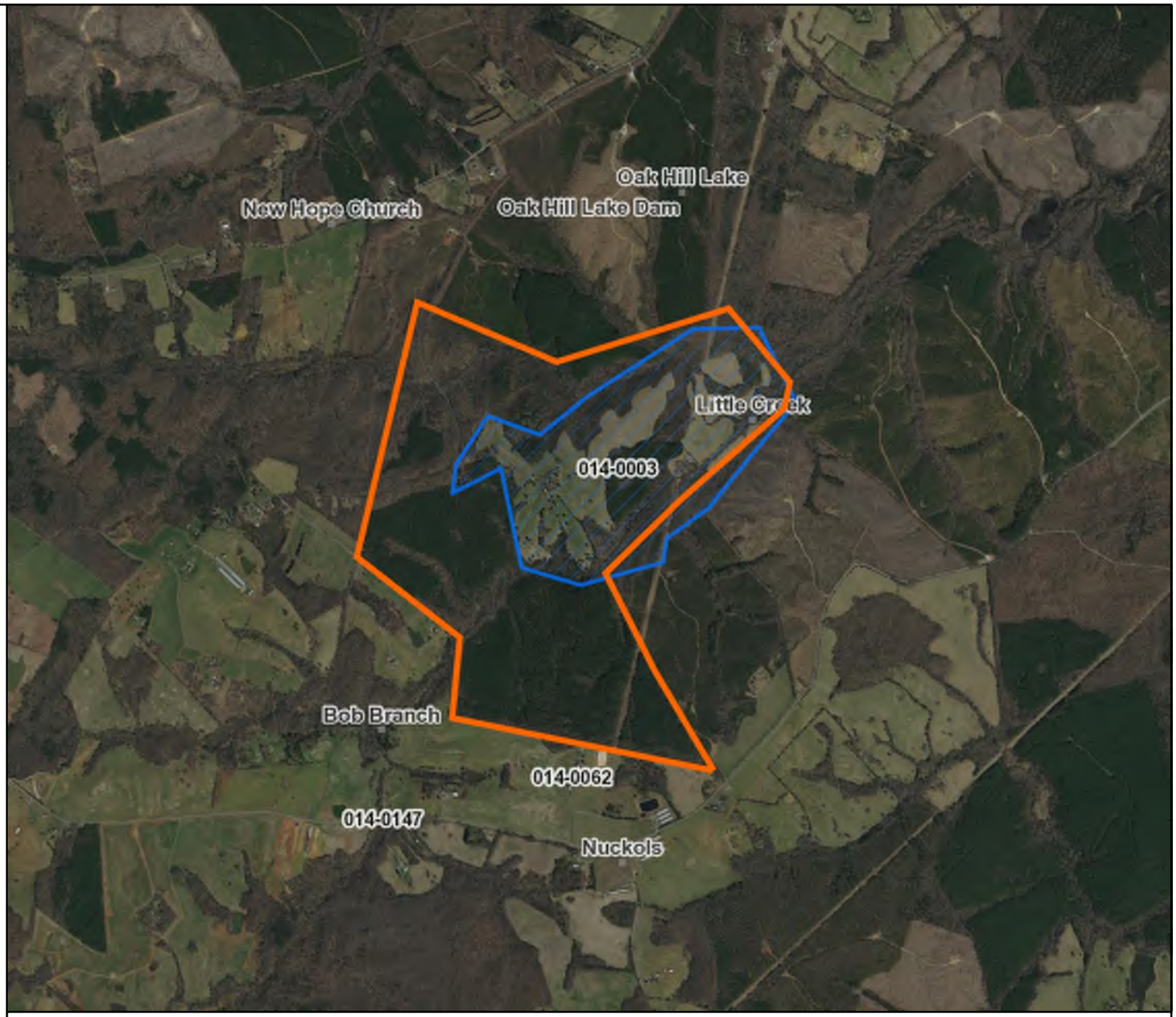
Virginia Dept. of Historic Resources

V-CRIS

Virginia Cultural Resource Information System

Legend

- Architecture Resources
- Architecture Labels
- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
- Archaeology Phase 1 Survey
- DHR Easements
- USGS GIS Place names
- County Boundaries



N

Feet

0 600 1200 1800 2400

1:36,112 / 1"=3,009 Feet

Title: Boxwood PRM Cultural Resources **Date: 4/14/2022**

DISCLAIMER:Records of the Virginia Department of Historic Resources (DHR) have been gathered over many years from a variety of sources and the representation depicted is a cumulative view of field observations over time and may not reflect current ground conditions.The map is for general information purposes and is not intended for engineering, legal or other site-specific uses. Map may contain errors and is provided "as-is". More information is available in the DHR Archives located at DHR's Richmond office.

Notice if AE sites:Locations of archaeological sites may be sensitive the National Historic Preservation Act (NHPA), and the Archaeological Resources Protection Act (ARPA) and Code of Virginia §2.2-3705.7 (10). Release of precise locations may threaten archaeological sites and historic resources.

Property Information

Property Names

Name Explanation	Name
Function/Location	House, 1928 Little Creek Road
Historic	Berryman House
Current	The Marshall Place

Property Evaluation Status

DHR Board: Eligible

Property Addresses

Former - Trents Mill Road Route 622
Current - 1928 Little Creek Road Route 743

County/Independent City(s): Buckingham (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23123, 23936
Magisterial District(s): *No Data*
Tax Parcel(s): 84-34
USGS Quad(s): GOLD HILL

Additional Property Information

Architecture Setting: Rural
Acreage: 640
Site Description:

1957: South of Gold Hill in Buckingham County, on Route 743, two miles from Route 622, off a private road.

1968: Located in the Dillwyn vicinity, 0.4 mile south of Little Creek, 0.5 mile east of Route 743, 1.9 miles east of the intersection of Route 743 and Route 622.

1992: The Marshall Place/Berryman House has nine outbuildings on the property. [640 acres]

Surveyor Assessment:

1957: The house began as a log cabin, and it may have been used as a stopping place for Chief Justice John Marshall. Originally owned by W.A. Berryman and currently owned by five members of the Moseley family.

1968: Currently owned by Charles Moseley.

1992 PIF: This property in Buckingham County was once owned by Chief Justice John Marshall, who used it as a hunting lodge.

Surveyor Recommendation: Recommended Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Associate

Property Associate Name	Property Associate Role
John Marshall	Owner

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Historic District Status: *No Data*
Date of Construction: Ca 1780
Date Source: Written Data
Historic Time Period: Colony to Nation (1751 - 1789)
Historic Context(s): Architecture/Landscape, Domestic
Other ID Number: *No Data*
Architectural Style: Vernacular

Form: *No Data*
Number of Stories: 1.5
Condition: Excellent
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

1957: Early Republican frame home, 1-1/2 stories, built about 1780. Closed stringer stairway and plain fireplaces. The interior doors are out of scale. Bellcast roof. Wooden dado in each room.

1968: Frame with clapboarding, 1-1/2 stories, gable roof with dormers. Late 18th century; altered with additions.

1992 PIF: The original structure consisted of a 1 1/2 story log dwelling. A new portion to the house was constructed in 1826. It has a closed stringer stairway and plain fireplaces. The interior doors are out of scale. The roof is bellcast. There are two hand-hewn sills 18" width at ground level and sills showing marks resulting from pit sawing. A bathroom and west wing were added in 1925.

Exterior Components

Component	Component Type	Material	Material Treatment
Structural System and Exterior Treatment	Wood Frame	Wood	Weatherboard
Windows	Double-hung	Wood	*No Data*
Dormer	Gable	Wood	*No Data*
Chimneys	Interior Slope	Brick	Corbeled
Chimneys	Exterior End	Brick	Corbeled
Porch	1-Story Partial Width	Wood	Not Visible
Foundation	English/Raised	Brick	*No Data*
Roof	Side Gable	Composite	*No Data*

Secondary Resource Information

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: DHR Board: Eligible

DHR ID: 014-0003
Staff Name: State Review Board
Event Date: 10/27/1994
Staff Comment

The State Review Board determined that the Marshall Place appears to meet the criteria for listing on the Virginia Landmarks Register and the National Register of Historic Places. The board concurs with the Department staff that this property appears to be eligible at the local level for significance in the area of architecture.

Event Type: DHR Staff: Eligible

DHR ID: 014-0003
Staff Name: DHR Evaluation Committee
Event Date: 9/8/1994
Staff Comment

Marshall Place, Buckingham County (DHR 14-03), was rated at the local level for significance in the area of architecture. It was found to be

eligible with a score of 36.

Event Type: PIF

Project Review File Number: *No Data*
Investigator: J. Marshall Moseley
Organization/Company: VA Dept. of Historic Resources
Photographic Media: Film
Survey Date: 6/23/1992
Dhr Library Report Number: *No Data*
Project Staff/Notes:

Most photographs submitted by J. Marshall Moseley - 12-28-1993
Additional photographs - neg# 17060 - 1994

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, C - Distinctive Characteristics of Architecture/Construction

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Mary C. Shenkir
Organization/Company: VA Dept. of Historic Resources
Photographic Media: Film
Survey Date: 3/29/1968
Dhr Library Report Number: *No Data*
Project Staff/Notes:

Update of HABSI survey - neg #796

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, C - Distinctive Characteristics of Architecture/Construction

Event Type: HABS/HALS/HAER Documentation

Project Review File Number: *No Data*
Investigator: Fleming McMullin, Jr.
Organization/Company: National Park Service
Photographic Media: Film
Survey Date: 7/19/1957
Dhr Library Report Number: *No Data*
Project Staff/Notes:

No Data

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, C - Distinctive Characteristics of Architecture/Construction

Bibliographic Information

Bibliography:

No Data

Property Notes:

Start Year: 1780 ca
Date Source: Written Data
Type: Original Construction
Notes: Original hunting lodge constructed.

Start Year: 1818 ca
Date Source: Written Data
Type: Sale of Property
Notes: Property is sold to Major Fontaine. New portion constructed in 1826.

Start Year: 1840
Date Source: Written Data
Type: Sale of Property
Notes: Property is sold to James I. Berryman of Lovingston, Va.

Name: Mr. John Marshall Moseley

Address 1: Route 2
Address 2: Box 93
City: Dillwyn
State: Virginia
ZIP: 23536
1992-1994 Notes: Mrs. Genevieve Moseley Schwartz - Co-owner

Property Information

Property Names

Name Explanation	Name
Historic/Current	Cherry Hill

Property Evaluation Status

Not Evaluated

County/Independent City(s): Buckingham (County)
Incorporated Town(s): *No Data*
Zip Code(s): *No Data*
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): GOLD HILL

Additional Property Information

Architecture Setting: Rural
Acreage: *No Data*
Site Description:

The house sits in an overgrown residential yard, surrounded by trees and shrubs.

Surveyor Assessment:

This house though heavily altered still retains its original front facade and is a good example of classic revival architecture in Buckingham County.

Surveyor Recommendation: *No Data*

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Historic District Status: *No Data*
Date of Construction: Post 1789
Date Source: Date Stone/Cornerstone
Historic Time Period: Colony to Nation (1751 - 1789)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Classical Revival
Form: *No Data*
Number of Stories: 2.0
Condition: Fair
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

This house is a two-story frame buildings covered in weatherboards. It has a two story portico topped by a triangular pediment with square posts supporting it. The house has been heavily altered in the rear, with additions leading into further additions.

Exterior Components

Component	Component Type	Material	Material Treatment
Chimneys	Exterior End	Brick	*No Data*

Roof	Gable	*No Data*	Other
Porch	2-story, 1-bay	Wood	Post, Square

Secondary Resource Information

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:HABS Inventory

Project Review File Number: *No Data*
Investigator: Shenkir, M.C.
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: 3/29/1968
Dhr Library Report Number: *No Data*
Project Staff/Notes:
No Data

Bibliographic Information

Bibliography:
No Data
Property Notes:
No Data

Property Information

Property Names

Name Explanation	Name
Historic	Bridge, Route 622
Historic	Randolph Creek Bridge

Property Evaluation Status

DHR Staff: Not Eligible

Property Addresses

Current - Route 622

County/Independent City(s): Buckingham (County)
Incorporated Town(s): *No Data*
Zip Code(s): *No Data*
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): GOLD HILL

Additional Property Information

Architecture Setting: Transportation Corridor
Acreage: *No Data*
Site Description:

Bridge ran along Route 622 and crossed Randolph Creek. Around 1988 it was replaced during highway renovations.

Surveyor Assessment:

Start Year: 1988 ca
End Year: 1989 ca
Date Source: Site Visit
Type: Demolition
Notes: Bridge was torn down to be replaced by a more modern structure, no historic properties were effected by this action.

Though the bridge no longer exists its photos are a good record of early bridge building in Buckingham County.

Surveyor Recommendation: *No Data*

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Transportation
Resource Type: Bridge
NR Resource Type: Structure
Historic District Status: *No Data*
Date of Construction:
Date Source: *No Data*
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Transportation/Communication
Other ID Number: *No Data*
Architectural Style: Other
Form: *No Data*
Number of Stories: *No Data*
Condition: Demolished
Threats to Resource: *No Data*
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

From photos former bridge appears to have been a wooden simple tress structure with an under portion that allowed pedestrians to cross closer to the creek. Bridge was two lanes.

Bridge Information

Structure Number:	*No Data*
VDOT Bridge ID:	*No Data*
Entity Crossed Name:	*No Data*
Entity Crossed Type:	*No Data*
Bridge Type:	*No Data*
Current Use:	*No Data*
Number of Spans:	*No Data*
Number of Lanes:	*No Data*

Secondary Resource Information

Historic District Information

Historic District Name:	*No Data*
Local Historic District Name:	*No Data*
Historic District Significance:	*No Data*

CRM Events

Event Type: DHR Staff: Not Eligible

DHR ID:	014-0147
Staff Name:	DHR
Event Date:	7/29/1988

Staff Comment

No Data

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number:	*No Data*
Investigator:	Historic Landmarks, Virginia Division of
Organization/Company:	Unknown (DSS)
Photographic Media:	*No Data*
Survey Date:	8/1/1986
Dhr Library Report Number:	*No Data*

Project Staff/Notes:

No Data

Project Bibliographic Information:

Record Type: Other
Bibliographic Notes: Memorandum concerning the demolition and replacement of the structure between the VDOT and the Department of Historic Resources.

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Attachment G

Invasive Species Inventory and Management Plan

BOXWOOD PRM
INU MANAGEMENT PLAN

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APPENDICES

Appendix A. INU Invasiveness & Priority Rankings

Appendix B. Priority Rankings: Scoring & Calculation Table

Appendix C. Boxwood PRM Site Baseline INU Data & Mapping

1. Management Plan Strategy and Rational

The strategic goal of the vegetation aspect of this project is to establish an ecologically robust hardwood forest ecosystem that provides a resilient buffer to the sensitive and valuable aquatic resources contained within the PRM site. The management strategy for this project aims to take a comprehensive and holistic approach, based on RES' experience in native plant community design, establishment, and on-going management. A critical component of a comprehensive approach to effective ecosystem management is integrating the realities and lessons learned about invasion ecology, invasive species extents on the larger landscape, effectiveness and limitations when controlling certain plant species, and prioritization of management efforts.

The proposed management plan takes an integrated approach towards ecosystem management with a methodology and Performance Standards that will ensure successful establishment of a native forested ecosystem, while mitigating the negative consequences to local ecosystems and wildlife associated with well-intentioned, but often destructive and/or ineffective invasive species control tactics. As such, an invasive species management strategy has been formulated by assessing existing species extents by their Functional Role in a forested ecosystem, as well as assigning a Priority Ranking to each invasive species.

2. Functional Roles

Invasive species have been grouped into Functional Roles, determined by the respective vegetative strata they occupy in a forested plant community. The delineation of strata generally aligns with the four-stratum sampling design outlined in the USACE's wetland delineation manual. In order from greatest to least significance in meeting the project goals, the Functional Roles are:

a) Canopy Tree Layer—woody species greater than 15 feet in height

b) Sapling-Shrub Layer—woody species between 3 feet and 15 feet in height

c) Climbing Woody Vine Layer—woody vine species greater than 3 feet in height

d) Herbaceous Layer—plants between 0 feet and 3 feet in height, regardless of species

This hierarchy is based on the understanding that the climax community in this region will develop into a hardwood forest with a defined natural hierarchy of plant strata, with canopy trees being the most advantaged stratum. Therefore, an established invasive canopy tree presents a greater threat to achieving the PRM's vegetation goals than a low-growing invasive species present in the herbaceous layer. Consequently, invasive plants that are present in more dominant strata should more strongly influence decision-making when developing and implementing a comprehensive invasive species management strategy.

3. Priority Rankings

Priority Rankings of individual species were determined by utilizing a comprehensive scoring system that assesses invasive species according to a variety of attributes, including:

- Plant size within a forest community's height hierarchy
- Tendency to form monocultures
- Early detection status per the *DCR Invasive Plant List*
- Tendency to proliferate rapidly
- Low resilience to herbicide treatment
- Cost & effort ineffectiveness of best management practices
- Shade intolerance
- Species hybridization & wildlife value

Each of these attributes were assigned a value to effectively weight each factor in a comprehensive manner. Each species was quantitively assessed according to these factors, resulting in a total score. Species were then assigned a Priority Ranking based on their total score, per Table 2, below. Based on additional feedback from the IRT, three naturalized andpervasive invasive herbaceous species that scored in the "Deprioritized" range, but that haveproven to be particularly problematic to control at other sites, have been reclassified as"Pervasive Problematic" species. These three invasive species, namely *Microstegium vimineum*, *Arthraxon hispidus*, and *Murdannia keisak* can also be tolerated in relatively greater amounts within the PRM site, but with the addition of further monitoring and responsecontrols being proposed to ensure that the extent and density of these species does not preclude the development of species-diverse, native hardwood forest communities that are being targeted for the project.

Table 1: Determination of Priority Rankings

Total Score	Invasive Priority Ranking	Acceptable level of abundance within PRM
≥5	Priority Species	Very little tolerance
2 - 4	Secondary Species	Tolerable in lesser amounts
≤1	Deprioritized Species	Tolerable in greater amounts
≤1*	Pervasive Problematic Species	Tolerable in greater amounts with special monitoring and response controls

* Pervasive Problematic Species include *Microstegium vimineum*, *Arthraxon hispidus*, and *Murdannia keisak*

Detailed scoring information that outlines how and why each species' Priority Ranking was determined is included in Appendix H to this MWP. A broader discussion of the four Priority Rankings is below.

A. Priority Species

The presence of the se invasive species creates significant obstacles to successfully establishing and maintaining a native hardwood forest. Examples include:

i. Aggressive and/or resilient trees and shrubs:
- Tree-of-heaven (Ailanthus altissima)
- Autumn Olive (*Elaeagnus umbellate*)
- Privet (*Ligustrum* spp.)
- Bush honeysuckle species (*Lonicera* spp.)
- Callery ('Bradford') pear (*Pyrus calleryana*)

ii. Aggressive vine species:
- Kudzu (*Pueraria* spp.)
- Oriental bittersweet (*Celastrus orbiculatus*)
- Japanese hops (*Humulus japonicus*)
- Porcelain-berry (*Ampelopsis glandulosa*)
- English ivy (*Hedera helix*)
- Japanese honeysuckle (*Lonicera japonica*)

iii. Tall-growing, aggressive, persistent herbaceous species that form dense colonies and/or are difficult to control once established:
- Japanese knotweed (*Reynoutria japonica*)
- Phragmites (*Phragmites* spp.)
- Bamboo (*Bambusoideae* subfamily)

- Purple loosestrife (*Lythrum salicaria*)
- Canada thistle (*Cirsium arvense*)
- Chinese lespedeza (*Lespedeza cuneata*)

iv. Certain "Early Detection" species:
- Wavyleaf basketgrass (*Oplismenus undulatifolius*)
- Giant hogweed (*Heracleum mantegazzianum*)

B. Secondary Species

Species of less concern due to smaller growth habit, shade intolerance, reproductive strategies, and/or relative ease of control.

i. Japanese barberry (*Berberis thunbergii*)
ii. Multiflora rose (*Rosa multiflora*)
iii. Wineberry (*Rubus phoenicolasius*)
iv. Mile-a-minute (*Persicaria perfoliata*)
v. Wintercreeper (*Euonymus fortunei*)
vi. Cattail (*Typha* spp.) (NOTE: this native plant is not listed in the *DCR Invasive Plant List*)

C. Deprioritized Species:

These species, while non-native, do not present significant threat to the successful establishment of diverse native shrub and tree strata, and best management practices are ineffective and/or destructive to the local ecosystem. The deprioritization of these species is an attempt to implement a holistic ecosystem management perspective by minimizing unnecessary and ineffective herbicide applications provided that the overall project goals of establishing a native-dominated forested buffer is not being significantly impacted by the presence of these species.

The presence of the below species shall be qualitatively assessed when evaluating relative to cover-related Performance Standards. The specific qualitative assessment protocol to be employed to assess the presence of these species is outlined in Section II.B.6., Monitoring and Reporting. In addition, meeting the woody stem density and stem area requirements associated with the buffers will provide further evidence that the desiredvegetative community has been established. The below species will be controlled on an as-needed basis in order to achieve the desired forested condition of the restoration and preservation buffers and meet other buffer Performance Standards. The decision to control for these Deprioritized species and the management methods employed will be guided by the best scientific information available and coordinated with the IRT.

i. Less aggressive, low-growing species—e.g., Timothy (*Phleum pretense*), gill-over-the-ground (*Glechoma hederacea*), European stinging nettle (*Urtica dioica*), chickweed (*Stellaria media*), curly dock (*Rumex crispus*), and sheep sorrel (*Rumex acetosella*)—pose little ecological threat to successfully establishing a native hardwood forest. These species will be managed on an as-needed basis to achieve woody stem Performance Standards.White mulberry (*Morus alba*) – this species readily hybridizes with the native red mulberry *(Morus rubra*), making definitive species-level identification based on morphological traits difficult. The white and/or hybrid mulberry is not known to formmonocultures and it presents high wildlife value in a high-protein leaf and prolific calorie and antioxidant dense

berries. As such, white mulberry is designated as adeprioritized species.

ii. Tall fescue (*Festuca arundinacea*) – this widespread and intentionally planted species is not listed on the DCR Invasive Plant List. Furthermore, it is shade-intolerant. Therefore, it does not present a long-term threat to the targeted vegetative communities if native trees and shrubs are successfully established in currently fescue-dominated fields. All portions of the site with established tall fescue are currently planned to receive an initial herbicide treatment prior to woody stem planting in order to facilitate tree and shrub establishment. Beyond this initial control effort, no specific management protocols are proposed. This species will be managed on an as-needed basis to achieve woody stem Performance Standards.

D. Pervasive Problematic Species

Microstegium vimineum, *Arthraxon hispidus*, and *Murdannia keisak*—These low-growing, naturalized, invasive species may be present within the PRM site, but shall not be allowedto become the sole dominant species in any area greater than 0.25-acre in size. Presenceand co-dominance with native species are acceptable if species richness in the assessed area contains at least 5 native species, including at least one dominant native species. Additionally, the species shall not be over-topping native trees or shrubs. The specific qualitative assessment protocol to be employed to assess the presence of thesespecies is outlined in Section II.B.6., *Monitoring and Reporting*.

These self-sowing annual species are extremely difficult to control without frequent and repeated broadcast applications of high rates of herbicide. Even with this approach, complete control within a PRM site context is very unlikely, due to the extensive seed bankthat is usually present immediately outside of the project area and within the upstream watershed.

A broadcast herbicide control regimen for these species within the PRM site would compromise the environmental integrity of the ecosystem, destroy soil organism biology, negatively impact macro- and micro-fauna, and generally degrade the landscape for an extended period of time. Comparing the overall costs and benefits to controlling these widely naturalized and practically uncontrollable species, RES proposes a more strategic management approach to these species, only treating large monoculture areas that are negatively impacting the species diversity of the buffer or precluding the development of the targeted vegetative community.

4. INU Plan Priority Rankings vs. DCR's Invasiveness Rankings

The priority ranking system developed as part of the INU Plan was tailored to invasive species management when establishing and/or maintaining a hardwood forest community in Buckingham County. For brevity, the list excludes true aquatic species and species not documented in Buckingham County or any adjacent county, as they were deemed not applicable to this INU Plan.

When this INU Plan's Priority Rankings are compared to the Invasiveness Rankings outlined in the Virginia Invasive Plant Species List (DCR, 2014), the majority of species fall within the same invasive ranking tier. The INU Plan is less stringent for 27 species, and more stringent than the DCR List for 18 species.

An extensive list of invasive species that occur in Virginia, their proposed Priority Rankings, and their corresponding DCR Invasiveness Rankings is included in Appendix H to this MWP. The list

also includes several commonly occurring nuisance and undesirable species that do not appear on the DCR Invasive Plant List.

5. Management Approach

A. Treatment Schedule

Invasive species control efforts will be implemented annually during the active monitoring period for the first 10 years of the project, regardless of project year. This will include between one and four treatment events per year, depending on the extents of the target species and the most effective timing for treatment of those species with respect to the growing season.

An initial invasive species treatment of the site may occur prior to construction completion. All Priority species and Pervasive Problematic Species will be treated beginning in Project Year 1, if not already controlled in an initial treatment. Secondary species may also be controlled during Project Year 1. Follow-up treatments for Priority Species and initial treatment of Secondary Species (and any Deprioritized Species, as deemed necessary) will begin during the Project Year 2. Annual treatments will continue, focusing on the strategic goals outlined in Section 1 and the Performance Standards outlined in Section II.B.6.

B. Canopy Tree Control

Invasive canopy trees will be prioritized for control and treated prior to or during Project Year 1. Mature invasive trees will be controlled primarily by basal bark treatment. This will involve applying a 20% to 25% solution of triclopyr (ester) in an oil carrier to the base of each woody stem.

Control may also include cut-stump or hand-and-squirt methods, which involve cutting the trees down or girdling the trees, respectively, and applying an aquatic-safe glyphosate, triclopyr (amine), or imazapyr solution at 25% to 50% v/v to the cambium layer immediately after cutting.

Dead plant material associated with all control methods will be left on-site to act as snags or windrows for wildlife and allowed to decompose naturally. Any subsequent re-sprouting from trees will be controlled via foliar treatment and treated as an herbaceous species.

C. Shrub-Sapling Control

For large shrubs, control may be achieved via cut-stump treatment or basal bark treatment, as described above. Less resilient species such as bush honeysuckle or multiflora rose may simply be cut at the base with the intention of spot-treating the foliage of any regrowth, as needed.

Smaller shrubs may be controlled primarily by foliar herbicide application. Foliar applications will consist of aquatic-safe glyphosate or triclopyr (amine) at 2% to 5% v/v with an appropriate surfactant (as needed) and blue dye, applied via backpack and/or UTV-mounted tank sprayer.

Dead plant material associated with all control methods will be left on-site to decompose naturally. Any subsequent regrowth will be controlled via foliar treatment and treated as an herbaceous species.

D. Climbing Woody Vine Control

Mature climbing vines of species such as Oriental bittersweet will be initially controlled via cut-stump herbicide treatment using aquatic-safe glyphosate or triclopyr solution at 50% v/v, applied to the cut stem immediately after cutting.

Vines that are accessible from the ground, as well as any regrowth in subsequent treatment years, will be treated via foliar herbicide treatment with aquatic-safe glyphosate or triclopyr at 2% to 5% v/v with an appropriate surfactant (as needed) and blue dye, applied via backpack and/or UTV-mounted tank sprayer.

Japanese honeysuckle may also be controlled via dormant season treatments. Because this species is semi-evergreen, treatment in November/December will allow for more selective control of this invasive species while significantly reducing the amount of collateral damage to established native plants in the treatment area. Control will be achieved by foliar herbicide treatment with aquatic-safe glyphosate at 2% to 5% v/v with an appropriate surfactant (as needed) and blue dye, applied via backpack and/or UTV- mounted tank sprayer.

E. Herbaceous Control

Target invasive species within this stratum (forbs and grasses, as well as young trees, shrubs, briars, and vines) will be controlled primarily by foliar herbicide application using an aquatic-safe glyphosate or triclopyr at 2% to 5% v/v with an appropriate surfactant (as needed) and blue dye, applied via backpack and/or UTV-mounted tank sprayer.

When advantageous, a selective herbicide such as triclopyr, which only affects dicots— will be utilized which will minimize damage to non-target native grass and sedge species on site.

In addition, existing pasture and hayfields being converted into forest riparian buffer will receive an initial broadcasted foliar herbicide treatment in order to suppress the dense perennial vegetation, thereby facilitating the successful establishment of native trees and shrubs.

6. Monitoring & Reporting

Collection of invasive species extents in project areas that do not have herbaceous cover Performance Standards (e.g. Reestablished, Replanted, Enhanced and Preserved forested riparian buffers) shall be monitored with an overall assessment of approximate percent cover of all invasive species present within a given portion of the PRM site. In order to accurately reflect the vegetation on site, the areal extents of these sampling areas/plots will be dictated by existing vegetative community structure (e.g., forested or field/cleared), as well as significant changes in invasive species composition. The approximate extents and acreage will be digitally collected to facilitate field confirmation and accurate comparison of year-to- year invasive vegetation data. These sampling areas will be finalized in Project Year 1 (post- construction). Invasive species monitoring shall be conducted during all monitoring/reporting years (1, 2, 3, 5, 7, and 10), and data shall be presented as part of the annual mitigation monitoring report. Monitoring results and field observations shall dictate any changes in management strategy.

The entirety of the project area will be quantitatively assessed for the presence of invasive species. At a minimum, the density of sampling areas will be one sampling area/plot per stream reach, or one plot for every five acres of riparian buffer. Boundaries of the sampling areas will be established such that they delineate all significant changes in invasive species extents within on-site vegetation communities. Due to the significant differences in existing vegetation communities

and future management efforts, Preservation and Enhancement buffer areas shall be assessed separately from Reestablishment and Replanted buffer areas.

To provide baseline invasive species data that can be compared against future monitoring results, all species included on the list in Appendix H, which includes all species on the DCR Invasive Plant List, will be quantitatively assessed during the baseline assessment during Project Year 1.

The following monitoring and reporting methodology will be employed in all subsequent monitoring years:

- Priority and Secondary species shall be quantitatively assessed. These data will be reported in tabular and graphical format.
- Pervasive Problematic species will be assessed using the following Qualitative Invasive Species Presence categories outlined below. These data will be presented in tabular and graphical format:

  Absent: Not present (generally, less than 2% cover)

  Low: Present, but non-dominant (according to the 50/20 rule)

  Moderate: Dominant (according to the 50/20 rule), but sampling area contains 5 or more native species, including at least one dominant native species

  High: Sole dominant species (according to the 50/20 rule), -OR- sampling area contains fewer than 5 native species
- Deprioritized species will also be assessed using the above Qualitative Invasive Species Presence categories but will only be reported if an area greater than 0.25- acre in size falls within the High presence category. The presence and extent of any such areas will be discussed in narrative format.

Invasive species extents shall be synthesized and clearly portrayed in a data table, identifying the percent cover of each invasive species present within each sampling area. This data shall be parsed out by Functional Role and Priority Ranking. Invasive species mapping that identifies the locations of each sampling area shall also be provided. In addition, any dense colonies of an individual Priority invasive species shall also be specifically identified on the invasive species coverage map. An invasive species coverage summary table (full list of species present, qualitative abundance, and quantitative abundance) for all buffers will appear on the map. Baseline data for the PRM site has been collected and summary tables are presented in Section II.B.8.

7. Buffer Classification

The riparian buffers on the PRM site will be divided into four primary categories, namely Reestablishment, Replanted, Enhancement and Preservation. A description of each primary buffer category is provided in Table 3.

Table 2: Description of Riparian Buffer Categories

Buffer Type	Description
Reestablishment	Woody stem planting and ongoing INU species control in an area that was a crop/hay field, pasture, or otherwise non-forested land prior to the start of any restoration activities.
Replanted	Woody stem planting and ongoing INU species control in an area that was forested land prior to the start of any restoration activities, but that was cleared during stream restoration construction for either project.
Enhancement	Significant INU species control within areas that are existing forest at the time of the baseline assessment conducted after the completion of stream restoration construction activities. Enhancement areas fail to meet one or more of the parameters specified in the Forested Areas Baseline Assessment Criteria for INU species cover, as outlined in Table 4.
Preservation	Minor INU species control within areas that are existing forest at the time of the baseline assessment conducted after the completion of stream restoration construction activities. Preservationareas must meet all of the parameters specified in the Forested Areas Baseline Assessment Criteria for INU species cover, as outlined in Table 4.

As further discussed in Section II.B.10., *Baseline Invasive Species Data*, an updated set of baseline data will be collected following the completion of all stream restoration construction activities for the project to establish the limits of the various riparian buffer types across the site. At that time, existing forested areas will be evaluated using the Forested Areas Baseline Assessment Criteria presented in Table 4. Existing forested areas that meet all of the parameters in Table 4 will be classified as Preservation and will be subjectto the Performance Standards outlined in Table 9. Existing forested areas that fail to meet one or more of the parameters in Table 4 will be classified as Enhancement and will be subjectto the Performance Standards outlined in Tables 6 through 8.

Table 3: Forested Areas Baseline Assessment Criteria

Functional Role	Priority Species	Secondary Species	Deprioritized Species	Pervasive Problematic Species
Canopy Trees	≤ 2 per acre	≤ 4 per acre	N/A	N/A
Sapling-Shrubs	≤ 10%	≤ 15%	N/A	N/A
Climbing Woody Vines	≤ 4%	≤ 10%	N/A	N/A
Herbaceous	≤ 20%	≤ 40%	Not *High**	≤ *Moderate**

* *High* and *Moderate* ratings refer to the Qualitative Invasive Species Presence categories described in Section II.B.6., *Monitoring and Reporting*

8. Performance Standards

The Performance Standards outlined in Tables 5 through 9 below have been structured to effectively allocate time and energy to focus on the most important invasive species determined by Functional Role and Priority Ranking. Greater importance and therefore morestringent metrics for achieving success are associated with those species that present the greatest immediate and long-term threat to the strategic goal of establishing a native functional forested ecosystem.

Table 4: Performance Standards for Buffer Restoration and Re-Establishment Areas

Functional Role	Priority Species	Secondary Species	Deprioritized Species	Pervasive Problematic Species
Canopy Trees	≤ 1 per acre	≤ 2 per acre	N/A	N/A
Sapling-Shrubs	≤ 5%	≤ 7.5%	N/A	N/A
Climbing Woody Vines	≤ 2%	≤ 5%	N/A	N/A
Herbaceous	≤ 10%	≤ 20%	Not *High* *	≤ *Moderate**

* *High* and *Moderate* ratings refer to the Qualitative Invasive Species Presence categoriesdescribed in Section II.B.6., *Monitoring and Reporting*

Table 5: Year 1 and 2 Performance Standards for Buffer Enhancement Areas

Functional Role	Priority Species	Secondary Species	Deprioritized Species	Pervasive Problematic Species
Canopy Trees	No Greater than Baseline Density		N/A	N/A
Sapling-Shrubs			N/A	N/A
Climbing Woody Vines			N/A	N/A
Herbaceous			Not *High**	≤ *Moderate**

* *High* and *Moderate* ratings refer to the Qualitative Invasive Species Presence categoriesdescribed in Section II.B.6., *Monitoring and Reporting*

Table 6: Year 3 Performance Standards for Buffer Enhancement Areas

Functional Role	Priority Species	Secondary Species	Deprioritized Species	Pervasive Problematic Species
Canopy Trees	≤ 3 per acre	≤ 6 per acre	N/A	N/A
Sapling-Shrubs	≤ 15%	≤ 22.5%	N/A	N/A
Climbing Woody Vines	≤ 6%	≤ 15%	N/A	N/A
Herbaceous	≤ 30%	≤ 60%	Not *High**	≤ *Moderate**

* *High* and *Moderate* ratings refer to the Qualitative Invasive Species Presence categoriesdescribed in Section II.B.6., *Monitoring and Reporting*

Table 7: Year 5 – 10 Performance Standards for Buffer Enhancement Areas

Functional Role	Priority Species	Secondary Species	Deprioritized Species	Pervasive Problematic Species
Canopy Trees	≤ 2 per acre	≤ 4 per acre	N/A	N/A
Sapling-Shrubs	≤ 10%	≤ 15%	N/A	N/A
Climbing Woody Vines	≤ 4%	≤ 10%	N/A	N/A
Herbaceous	≤ 20%	≤ 40%	Not *High**	≤ *Moderate**

* *High* and *Moderate* ratings refer to the Qualitative Invasive Species Presence categoriesdescribed in Section II.B.6., *Monitoring and Reporting*

Table 8: Performance Standards for Buffer Preservation Areas

Functional Role	Priority Species	Secondary Species	Deprioritized Species	Pervasive Problematic Species
Canopy Trees	No Greater than Baseline Density		N/A	N/A
Sapling-Shrubs			N/A	N/A
Climbing Woody Vines			N/A	N/A
Herbaceous			Not *High**	≤ *Moderate**

* *High* and *Moderate* ratings refer to the Qualitative Invasive Species Presence categories described in Section II.B.6., *Monitoring and Reporting*

Success of the PRM site relative to the proposed INU Performance Standards shall be evaluated by assessing whether the invasive cover present in the various strata represented in each sampling area falls within the acceptable ranges, quantified by either stem density or percent cover, for the Priority and Secondary species, and using the Qualitative Invasive Species Presence categories for Deprioritized and Pervasive Problematic species. Because the entire areal extent of the PRM site will be quantitatively assessed using the sampling area polygon approach discussed above, as opposed to randomized 1m2 plots, it is possible to accurately calculate the overall percentage of the PRM site meeting Performance Standards. Accordingly, success relative to compliance with the INU Management Plan will be evaluated and reported on a sampling area basis, as well as a weighted percentage of each buffer category and the overall PRM site.

As shown in Tables 6 – 8, the Performance Standards for Enhancement buffers are graduated by monitoring year to ensure incremental success over time, with the eventual goal of having these areas be comparable to Preservation buffer areas, in terms of INU species density. Thus, the Performance Standards in Year 5 and beyond for Enhancement Areas are the same as the Forested Areas Baseline Assessment Criteria, which will be used post-construction to determine which buffer areas are designated as Enhancement versus Preservation. The Performance Standards for Enhancement Buffers in Year 1 and Year 2 are to demonstrate no increase in INU species density from the baseline assessment levels for each individual area, while the Performance Standards in Year 3 are set at levels that will require marked improvement in terms of reduction in INU species density.

This graduated approach reflects the reality that—even with intensive control—it will take at least one or two growing seasons to curb an on-going, significant invasion of INU species. In this transition process, it will be difficult to provide data that accurately represent reductions in INU species density. Many of these Priority and Secondary INU Species are resilient and an observed initial die-back may be followed by a re-emergence in the growing seasons immediately following the beginning of a treatment regimen. Furthermore, INU management efforts in Enhancement buffers must be mindful of preserving as much existing native vegetation as possible, therefore reductions will likely take longer to realize than control efforts in already cleared areas associated with the Reestablishment and Replanted buffers.

9. Credit Release

The Sponsor proposes that the release of Credits associated with demonstrating compliancewh the INU Management Plan be tied to the level of ecological lift being provided, as well asthe relative weight of each Performance Standard with respect to achieving the target vegetative community. For example, the removal of a canopy-sized tree-of-heaven would bevalued more than removing five square meters of chickweed, given the stratum in which eachoccurs and Priority

Ranking of each species, even though they may constitute the same percent cover within the overall buffer. Therefore, the Sponsor is proposing that the evaluation of compliance with the INU Management Plan be weighted according to the Performance Standards within each Functional Role category and for each species' Priority assignment aspresented in Table 11 below.

Table 9: Weighting of INU Performance Standards

Functional Role	Priority Species	Secondary Species	Deprioritized Species	Pervasive Problematic Species
Canopy Trees	25%	10%	N/A	N/A
Sapling-Shrubs	20%	7.5%	N/A	N/A
Climbing Woody Vines	12.5%	5%	N/A	N/A
Herbaceous	10%	5%	1.5%	3.5%

It should be noted that the proposed INU monitoring methodology and resulting data will more accurately reflect invasive species extents across the entire PRM site and allow exact calculations of the acreage that meets the various performance standards. This crediting approach will enable credit releases that are more closely in line with actual site conditions. This is substantially more accurate than extrapolating data from a small number of arbitrary monitoring plots and prorating the credits based on the sampling plot density. This proposed approach further incentivizes site-wide invasive treatments rather than focusing on small areas of the site. It also incentivizes the PRM to be managed in a way that provides the greatest ecological lift.

The above methodology will result in a percentage of total buffer credits (per buffer type) that are eligible for release through the lens of the INU Plan Performance Standards. These INU performance results will then be compared with the percentage of total buffer credits that are eligible for release through the lens of native vegetation performance criteria, for those buffertypes that have a native stem density or stem area at ground height (SAG) Performance Standard (i.e., Reestablishment and Replanted buffers). The percentage of credits eligible for release for Reestablishment and Replanted buffers will then be determined by applying the lower percentage of success for the two buffer performance metrics (INU performance versusnative vegetation performance) for each of the two buffer types. This approach is preferred from an accuracy standpoint, since invasive species sampling areas will not be directly correlated with the acreage represented by each randomly located woody vegetation sampling point within the Reestablishment and Replanted buffers. The percentage of credits eligible for release for Preservation and Enhancement buffers will be determined based on the percentage of each buffer type that is meeting INU Plan Performance Standards only, as these buffer types do not have a native stem density or SAG Performance Standard.

10. Baseline Invasive Species Data

Baseline invasive species cover data was collected on the entire PRM site in May 2021. The extent of each sampling area was determined according to the monitoring approach outlinedin Section II.B.5. above. Due to the significant differences between overall vegetative community, as well as invasive species composition, a distinction was made between existingforest versus hay fields/pasture when determining the extents of sampling areas and in analyzing the collected data. Detailed invasive vegetation data in a plot-by-plot format has been compiled and is included as an attachment. This site-wise summary data is depicted in Table 10 below.

Graphical representations of the baseline invasive species data are also presented in a set ofmaps provided as an attachment. These maps depict the overall density of invasive species across the

PRM site, as well as densities within each monitored stratum.

Site-wide data analysis was performed using the weighted averages from the acreage of each sampling polygon and densities of the various invasive species, the results of which represent the cumulative quantitative extents of invasive species for the entire PRM site. Canopy tree data are presented as the total number of invasive stems per acre. Sapling-Shrub, Climbing Woody Vines and Herbaceous data are presented as the cumulative percentage cover of invasive species within that stratum.

Table 10. Baseline Invasive Species Extent (Site-Wide, Combined)

Functional Role	Priority Species	Secondary Species	Deprioritized Species	Pervasive Problematic Species	Subtotals
Canopy Trees	0.157 per acre	0.016 per acre	N/A	N/A	0.173 per acre
Sapling-Shrubs	0.5 %	1.7 %	N/A	N/A	2.2 %
Herbaceous	6.3 %	1.4 %	0.4 %	2.6 %	8.2 %
Climbing Woody Vines	2.1 %	0.00 %	N/A	N/A	2.1 %

Total % invasive cover: 12.1%

INU Management Plan
Attachment A

INU Invasiveness & Priority Rankings

Invasive Plant Species Invasiveness & Priority Rankings

Scientific Name	Common Name	VA DCR Invasive Plant List		Greenridge INU Plan		Greenridge INU Plan vs. VA DCR List
		Invasiveness Rank	Numerical Rank	Priority Ranking	Numerical Rank	
Ailanthus altissima	Tree-of-heaven	High	1	Priority	1	N/A
Alliaria petiolata	Garlic Mustard	High	1	Deprioritized	3	Less Stringent
Alternanthera philoxeroides	Alligator-weed	High	1	Deprioritized	3	Less Stringent
Ampelopsis brevipedunculata	Porcelain-berry	High	1	Priority	1	N/A
Celastrus orbiculatus	Oriental Bittersweet	High	1	Priority	1	N/A
Centaurea stoebe ssp. micranthos	Spotted Knapweed	High	1	Secondary	2	Less Stringent
Cirsium arvense	Canada Thistle	High	1	Priority	1	N/A
Dioscorea polystachya	Cinnamon Vine	High	1	Secondary	2	Less Stringent
Elaeagnus umbellata	Autumn Olive	High	1	Priority	1	N/A
Euonymus alatus	Winged Euonymus	High	1	Secondary	2	Less Stringent
Ficaria verna	Lesser Celandine	High	1	Secondary	2	Less Stringent
Iris pseudacorus	Yellow Flag	High	1	Deprioritized	3	Less Stringent
Lespedeza cuneata	Sericea Lespedeza	High	1	Priority	1	N/A
Ligustrum sinense	Chinese Privet	High	1	Priority	1	N/A
Lonicera japonica	Japanese Honeysuckle	High	1	Priority	1	N/A
Lonicera maackii	Amur Honeysuckle	High	1	Priority	1	N/A
Lonicera morrowii	Morrow's Honeysuckle	High	1	Secondary	2	Less Stringent
*Ludwigia grandiflora ssp. hexapetala**	Large flower primrose willow	High	1	Secondary	2	Less Stringent
Lythrum salicaria	Purple Loosestrife	High	1	Priority	1	N/A
Microstegium vimineum	Japanese Stiltgrass	High	1	Pervasive Problematic	4	Less Stringent
Murdannia keisak	Marsh dewflower	High	1	Pervasive Problematic	4	Less Stringent
*Oplismenus hirtellus ssp. undulatifolius**	Wavyleaf Grass	High	1	Priority	1	N/A
Persicaria perfoliata	Mile-a-minute	High	1	Secondary	2	Less Stringent
Phragmites australis ssp. australis	Common Reed	High	1	Priority	1	N/A
Pueraria montana var. lobata	Kudzu	High	1	Priority	1	N/A
Reynoutria japonica	Japanese knotweed	High	1	Priority	1	N/A
Rosa multiflora	Multiflora Rose	High	1	Secondary	2	Less Stringent
Rubus phoenicolasius	Wineberry	High	1	Secondary	2	Less Stringent
Sorghum halepense	Johnson Grass	High	1	Priority	1	N/A
Urtica dioica	European Stinging Nettle	High	1	Deprioritized	3	Less Stringent
Acer platanoides	Norway Maple	Medium	2	Secondary	2	N/A
Agrostis capillaris	Colonial bent-grass	Medium	2	Deprioritized	3	Less Stringent
Akebia quinata	Five-leaf Akebia	Medium	2	Secondary	2	N/A
Albizia julibrissin	Mimosa	Medium	2	Secondary	2	N/A
Arthraxon hispidus var. hispidus	Joint Head Grass	Medium	2	Pervasive Problematic	4	Less Stringent
Berberis thunbergii	Japanese Barberry	Medium	2	Secondary	2	N/A
Cirsium vulgare	Bull Thistle	Medium	2	Secondary	2	N/A
Dipsacus fullonum	Wild Teasel	Medium	2	Secondary	2	N/A
Euonymus fortunei	Winter Creeper	Medium	2	Secondary	2	N/A
Glechoma hederacea	Gill-over-the-ground	Medium	2	Deprioritized	3	Less Stringent
Hedera helix	English ivy	Medium	2	Priority	1	More Stringent
*Heracleum mantegazzianum**	Giant Hogweed	Medium	2	Priority	1	More Stringent
Holcus lanatus	Common Velvet Grass	Medium	2	Deprioritized	3	Less Stringent
Humulus japonicus	Japanese Hops	Medium	2	Priority	1	More Stringent
Ligustrum obtusifolium var.	Border privet	Medium	2	Priority	1	More Stringent
Lonicera tatarica	Tartarian Honeysuckle	Medium	2	Secondary	2	N/A
Lysimachia nummularia	Moneywort	Medium	2	Deprioritized	3	Less Stringent
Miscanthus sinensis	Chinese Silvergrass	Medium	2	Deprioritized	3	Less Stringent
Paulownia tomentosa	Royal Paulowina	Medium	2	Secondary	2	N/A
Persicaria longiseta	Long-bristled Smartweed	Medium	2	Deprioritized	3	Less Stringent
Phyllostachys aurea	Golden Bamboo	Medium	2	Priority	1	More Stringent
Poa compressa	Flat-stemmed Bluegrass	Medium	2	Deprioritized	3	Less Stringent
Poa trivialis	Rough Bluegrass	Medium	2	Deprioritized	3	Less Stringent
Pyrus calleryana	Callery Pear	Medium	2	Priority	1	More Stringent
Rhodotypos scandens	Jetbead	Medium	2	Priority	1	More Stringent
Rumex acetosella	Sheep sorrel	Medium	2	Deprioritized	3	Less Stringent
Spiraea japonica	Japanese Spiraea	Medium	2	Secondary	2	N/A
Stellaria media	Common Chickweed	Medium	2	Deprioritized	3	Less Stringent
Veronica hederifolia	Ivy-leaved Speedwell	Medium	2	Deprioritized	3	Less Stringent
Viburnum dilatatum	Linden arrow-wood	Medium	2	Priority	1	More Stringent
Wisteria sinensis	Chinese Wisteria	Medium	2	Priority	1	More Stringent
Commelina communis	Asiatic Dayflower	Low	3	Deprioritized	3	N/A
Elaeagnus pungens	Thorny Olive	Low	3	Secondary	2	More Stringent
Lespedeza bicolor	Shrubby Bushclover	Low	3	Deprioritized	3	N/A
Lonicera fragrantissima	Winter Honeysuckle	Low	3	Secondary	2	More Stringent
Morus alba	White Mulberry	Low	3	Deprioritized	3	N/A
Perilla frutescens	Beefsteak Plant	Low	3	Deprioritized	3	N/A
Phleum pratense	Timothy	Low	3	Deprioritized	3	N/A
Populus alba	Silver Poplar	Low	3	Secondary	2	More Stringent
Rumex crispus ssp. crispus	Curly dock	Low	3	Deprioritized	3	N/A
Securigera varia	Crown-vetch	Low	3	Secondary	2	More Stringent
Ulmus pumila	Siberian Elm	Low	3	Secondary	2	More Stringent
Vinca major	Greater Periwinkle	Low	3	Secondary	2	More Stringent
Vinca minor	Periwinkle	Low	3	Secondary	2	More Stringent
Wisteria floribunda	Japanese Wisteria	Low	3	Priority	1	More Stringent
Typha spp.	Cattail	N/A**	N/A**	Secondary	2	More Stringent

** Early detection species not yet established in Virginia*

*** Native species, therefore not listed in the VA DCR Invasive Plant List*

Please note that fifteen (15) species listed on the VA DCR Invasive Plant List--true aquatic species and/or species with no recorded presence in counties adjacent to Loudoun County--were excluded from this ranking list for brevity. These species have exceptionally low likelihood to impact riparian buffers the Greenridge Landfill PRM

Citation: Heffernan, K., E. Engle, C. Richardson. 2014. Virginia Invasive Plant Species List. Virginia Department of Conservation and Recreation, Division of Natural Heritage. Natural Heritage Techincal Document 14-XX. Richmond.

INU Management Plan
Attachment A

Priority Rankings: Scoring & Calculation Table

Green Ridge Landfill PRM INU Plan: Priority Ranking of Invasive Species, Scoring & Calculation Table

				Species Attributes & Value in Scoring System										
				Tree	Canopy Vine	Shrub	Tall Herb	Monoculture	Early Detection*	Proliferates Rapidly	Easy to Kill	Cost-Ineffective	Shade Intolerant	Miscellanous **
Scientific Name	**Common Name**	**Priority Ranking**	**Total Score**	***6***	***4***	***5***	***3***	***2***	***3***	***2***	***-1***	***-2***	***-2***	***-2***
Ailanthus altissima	Tree-of-heaven	Priority	10	6	0	0	0	2	0	2	0	0	0	0
Acer platanoides	Norway Maple	Secondary	3	6	0	0	0	0	0	0	-1	0	-2	0
Agrostis capillaris	Colonial bent-grass	Deprioritized	-3	0	0	0	0	0	0	0	-1	0	-2	0
Akebia quinata	Five-leaf Akebia	Secondary	3	0	4	0	0	0	0	0	-1	0	0	0
Albizia julibrissin	Mimosa	Secondary	3	6	0	0	0	0	0	0	-1	0	-2	0
Alliaria petiolata	Garlic Mustard	Deprioritized	1	0	0	0	0	2	0	2	-1	-2	0	0
Alternanthera philoxeroides	Alligator-weed	Deprioritized	-3	0	0	0	0	0	0	0	-1	0	-2	0
Ampelopsis brevipedunculata	Porcelain-berry	Priority	8	0	4	0	0	2	0	2	0	0	0	0
Arthraxon hispidus var. hispidus	Joint Head Grass	Pervasive Problematic	-1	0	0	0	0	2	0	2	-1	-2	-2	0
Berberis thunbergii	Japanese Barberry	Secondary	4	0	0	5	0	0	0	0	-1	0	0	0
Celastrus orbiculatus	Oriental Bittersweet	Priority	8	0	4	0	0	2	0	2	0	0	0	0
Centaurea stoebe ssp. micranthos	Spotted Knapweed	Secondary	3	0	0	0	3	2	0	0	0	0	-2	0
Cirsium arvense	Canada Thistle	Priority	5	0	0	0	3	2	0	2	0	0	-2	0
Cirsium vulgare	Bull Thistle	Deprioritized	1	0	0	0	3	2	0	0	0	-2	-2	0
Commelina communis	Asiatic Dayflower	Deprioritized	-3	0	0	0	0	0	0	0	-1	0	-2	0
Dioscorea polystachya	Cinnamon Vine	Secondary	3	0	4	0	0	0	0	0	-1	0	0	0
Dipsacus fullonum	Wild Teasel	Deprioritized	1	0	0	0	3	2	0	0	0	-2	-2	0
Elaeagnus pungens	Thorny Olive	Secondary	2	0	0	5	0	0	0	0	-1	0	-2	0
Elaeagnus umbellata	Autumn Olive	Priority	6	6	0	0	0	2	0	2	0	0	-2	-2
Euonymus alatus	Winged Euonymus	Secondary	4	0	0	5	0	0	0	0	-1	0	0	0
Euonymus fortunei	Winter Creeper	Secondary	3	0	4	0	0	0	0	0	-1	0	0	0
Ficaria verna	Lesser Celandine	Secondary	4	0	0	0	0	2	0	2	0	0	0	0
Glechoma hederacea	Gill-over-the-ground	Deprioritized	-1	0	0	0	0	0	0	0	-1	0	0	0
Hedera helix	English ivy	Priority	8	0	4	0	0	2	0	2	0	0	0	0
*Heracleum mantegazzianum**	Giant Hogweed	Priority	6	0	0	5	0	0	3	0	0	0	-2	0
Holcus lanatus	Common Velvet Grass	Deprioritized	-2	0	0	0	0	0	0	0	0	0	-2	0
Humulus japonicus	Japanese Hops	Priority	8	0	4	0	0	2	0	2	0	0	0	0
Iris pseudacorus	Yellow Flag	Deprioritized	-2	0	0	0	0	0	0	0	0	0	-2	0
Lespedeza bicolor	Shrubby Bushclover	Deprioritized	0	0	0	0	3	0	0	0	-1	0	-2	0
Lespedeza cuneata	Sericea Lespedeza	Priority	5	0	0	0	3	2	0	2	0	0	-2	0
Ligustrum obtusifolium var. obtusifolium	Border privet	Priority	7	6	0	0	0	2	0	0	-1	0	0	0
Ligustrum sinense	Chinese Privet	Priority	8	6	0	0	0	2	0	0	0	0	0	0
Lonicera fragrantissima	Winter Honeysuckle	Secondary	3	0	0	5	0	0	0	0	0	0	-2	0
Lonicera japonica	Japanese Honeysuckle	Priority	6	0	4	0	0	2	0	2	0	-2	0	0
Lonicera maackii	Amur Honeysuckle	Priority	6	0	0	5	0	2	0	0	-1	0	0	0
Lonicera morrowii	Morrow's Honeysuckle	Secondary	2	0	0	5	0	0	0	0	-1	0	-2	0
Lonicera tatarica	Tartarian Honeysuckle	Secondary	2	0	0	5	0	0	0	0	-1	0	-2	0
*Ludwigia grandiflora ssp. hexapetala**	Large flower primrose willow	Secondary	4	0	0	0	0	2	3	2	-1	0	-2	0
Lysimachia nummularia	Moneywort	Deprioritized	1	0	0	0	0	2	0	0	-1	0	0	0
Lythrum salicaria	Purple Loosestrife	Priority	5	0	0	0	3	2	0	2	0	0	-2	0
Microstegium vimineum	Japanese Stiltgrass	Pervasive Problematic	1	0	0	0	0	2	0	2	-1	-2	0	0
Miscanthus sinensis	Chinese Silvergrass	Deprioritized	0	0	0	0	3	0	0	0	-1	0	-2	0
Morus alba	White Mulberry	Deprioritized	1	6	0	0	0	0	0	0	-1	0	-2	-2
Murdannia keisak	Marsh dewflower	Pervasive Problematic	-1	0	0	0	0	2	0	2	-1	-2	-2	0
*Oplismenus hirtellus ssp. undulatifolius**	Wavyleaf Grass	Priority	6	0	0	0	0	2	3	2	-1	0	0	0
Paulownia tomentosa	Royal Paulowina	Secondary	3	6	0	0	0	0	0	0	-1	0	-2	0
Perilla frutescens	Beefsteak Plant	Deprioritized	1	0	0	0	0	0	0	2	-1	0	0	0
Persicaria longiseta	Long-bristled Smartweed	Deprioritized	0	0	0	0	0	0	0	0	0	0	0	0
Persicaria perfoliata	Mile-a-minute	Secondary	4	0	4	0	0	0	0	2	0	-2	0	0
Phleum pratense	Timothy	Deprioritized	-3	0	0	0	0	0	0	0	-1	0	-2	0
Phragmites australis ssp. australis	Common Reed	Priority	5	0	0	0	3	2	0	2	0	0	-2	0
Phyllostachys aurea	Golden Bamboo	Priority	8	6	0	0	0	2	0	2	0	0	-2	0
Poa compressa	Flat-stemmed Bluegrass	Deprioritized	-1	0	0	0	0	0	0	0	-1	0	0	0
Poa trivialis	Rough Bluegrass	Deprioritized	-1	0	0	0	0	0	0	0	-1	0	0	0
Populus alba	Silver Poplar	Secondary	4	6	0	0	0	0	0	0	0	0	-2	0
Pueraria montana var. lobata	Kudzu	Priority	8	0	4	0	0	2	0	2	0	0	0	0
Pyrus calleryana	Callery Pear	Priority	7	6	0	0	0	2	0	2	-1	0	-2	0
Reynoutria japonica	Japanese knotweed	Priority	5	0	0	0	3	2	0	2	0	0	-2	0
Rhodotypos scandens	Jetbead	Priority	6	0	0	5	0	0	0	2	-1	0	0	0
Rosa multiflora	Multiflora Rose	Secondary	2	0	0	0	3	2	0	0	-1	0	-2	0
Rubus phoenicolasius	Wineberry	Secondary	2	0	0	0	3	0	0	0	-1	0	0	0
Rumex acetosella	Sheep sorrel	Deprioritized	-3	0	0	0	0	0	0	0	-1	0	-2	0
Rumex crispus ssp. crispus	Curly dock	Deprioritized	-3	0	0	0	0	0	0	0	-1	0	-2	0
Securigera varia	Crown-vetch	Secondary	2	0	0	0	0	2	0	2	0	0	-2	0
Sorghum halepense	Johnson Grass	Priority	5	0	0	0	3	2	0	2	0	0	-2	0
Spiraea japonica	Japanese Spiraea	Secondary	4	0	0	5	0	0	0	0	-1	0	0	0
Stellaria media	Common Chickweed	Deprioritized	1	0	0	0	0	0	0	2	-1	0	0	0
Typha spp.	Cattail	Secondary	4	0	0	0	3	2	0	2	-1	0	-2	0
Ulmus pumila	Siberian Elm	Secondary	3	6	0	0	0	0	0	0	-1	0	-2	0
Urtica dioica	European Stinging Nettle	Deprioritized	1	0	0	0	0	2	0	0	-1	0	0	0
Veronica hederifolia	Ivy-leaved Speedwell	Deprioritized	-3	0	0	0	0	0	0	0	-1	0	-2	0
Viburnum dilatatum	Linden arrow-wood	Priority	8	0	0	5	3	0	0	2	0	0	-2	0
Vinca major	Greater Periwinkle	Secondary	4	0	0	0	0	2	0	2	0	0	0	0
Vinca minor	Periwinkle	Secondary	4	0	0	0	0	2	0	2	0	0	0	0
Wisteria floribunda	Japanese Wisteria	Priority	6	0	4	0	0	0	0	2	0	0	0	0
Wisteria sinensis	Chinese Wisteria	Priority	6	0	4	0	0	0	0	2	0	0	0	0

** Early detection species not yet established in Virginia*

*** M. alba and E. umbellata provide exceptional wildlife value via berries. M. alba has widely hybridized with the native Morus rubra, making morphology-based identification unreliable.*

Please note that fifteen (15) species listed on the VA DCR Invasive Plant List--true aquatic species and/or species with no recorded presence in counties adjacent to Loudoun County--were excluded from this ranking list for brevity. These species have exceptionally low likelihood to impact riparian buffers the Greenridge Landfill PRM

INU Management Plan
Attachment C

Green Ridge Landfill PRM Site Baseline INU Data & Mapping

Green Ridge Landfill PRM INU Species Baseline Data			Polygon ID	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023
Data Collected: May-21			Existing Condition Type	Field	Forest	Field	Field	Field	Field	Field	Forest	Field	Field	Forest	Forest	Forest	Forest	Field	Forest	Field	Field	Field	Field	Field	Field	Forest	Forest
Total Acreage 317.75			Acreage	0.27	0.21	0.74	0.15	4.04	0.12	3.49	0.39	1.95	2.62	0.71	0.88	0.46	1.94	1.24	0.12	2.97	0.05	0.62	0.14	0.61	1.07	1.00	0.50
CANOPY (15+ ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Total # of Stems**																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	48	0	0	0	18	0	0	6	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0
	Elaeagnus umbellata	Autumn Olive	1 (P)	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Paulownia tomentosa	Princess Tree	2 (S)	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF PRIORITY CANOPY SPECIES		**50**	0	0	0	18	0	0	6	0	0	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0
		TOTAL # OF SECONDARY CANOPY SPECIES		**5**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF CANOPY SPECIES		**55**	0	0	0	18	0	0	6	0	0	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0
SAPLING-SHRUB (3-15 ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Overall % Cover**																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Albizia julibrissin	Mimosa Tree	2 (S)	0.01	0	0	0	0	0	0	0	0	0	5	0	2	0	5	0	0	0	0	0	0	0	0	5	0
	Berberis thunbergii	Japanese Barberry	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	2	0	0	0	0	0
	Elaeagnus umbellata	Autumn Olive	1 (P)	0.04	0	0	2	0	0	0	0	0	0	2	0	2	0	5	0	0	0	0	0	0	2	0	0	2	0
	Ligustrum sinense	Chinese Privet	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Paulownia tomentosa	Princess Tree	2 (S)	0.0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
	Pyrus calleryana	Callery Pear	1 (P)	0.1	0	7.5	20	20	2	20	15	15	2	25	0	5	0	10	2	7.5	2	0	5	2	2	7.5	15	5
	Rosa multiflora	Multiflora Rose	2 (S)	1.6	0	0	7	7.5	0	5	7.5	0	0	2	5	2	0	5	0	2	0	0	2	12	0	2	2	0
		TOTAL % PRIORITY SAPLING-SHRUB SPECIES		**0.5**	0	7.5	22	20	2	20	15	15	2	27	0	7	0	15	2	7.5	2	0	5	4	2	7.5	17	5
		TOTAL % SECONDARY SAPLING-SHRUB SPECIES		**1.7**	0	0	7	7.5	0	5	7.5	0	0	7	10	4	0	10	0	2	0	0	4	12	0	4	7	0
		TOTAL % SAPLING-SHRUB COVER		**2.2**	0	7.5	29	27.5	2	25	22.5	15	2	34	10	11	0	25	2	9.5	2	0	9	16	2	11.5	24	5
HERBACEOUS (0-3 ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Overall % Cover**																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	0.1	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0
	Berberis thunbergii	Japanese Barberry	2 (S)	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Dipsacus fullonum	Wild Teasel	2 (S)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lespedeza cuneata	Sericea Lespedeza	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Ligustrum sinense	Chinese Privet	1 (P)	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lonicera fragrantissima	Winter Honeysuckle	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lonicera japonica	Japanese Honeysuckle	1 (P)	5.8	0	2	10	0	0	5	0	7.5	0	15	7.5	10	60	15	0	5	0	0	10	0	0	10	15	15
	Microstegium vimineum	Japanese Stiltgrass	4 (PP)	2.6	0	0	15	0	0	10	0	0	0	15	10	5	0	10	0	0	0	0	0	0	0	0	10	7.5
	Morus alba	Mulberry	3 (D)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Perilla frutescens	Beefsteak Plant	3 (D)	0.1	5	0	2	5	0	2	5	2	0	2	0	0	0	0	0	0	0	5	0	0.5	0	0	0	0	0
	Pyrus calleryana	Callery Pear	1 (P)	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rosa multiflora	Multiflora Rose	2 (S)	0.7	0	0	7.5	0	0	15	0	5	0	15	20	5	0	0	0	7.5	0	5	5	0	0	5	15	7.5
	Rubus phoenicolasius	Wineberry	2 (S)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rumex crispus ssp. crispus	Curly dock	3 (D)	0.1	0	0	0	0	2	0	0	0	2	0	0	0	0	0	2	0.5	2	0	0	0	2	0	0	0	0
	Securigera varia	Crown-vetch	2 (S)	0.1	0	2	2	0	2	0	2	2	2	2	0	0	0	0	2	2	2	0	2	2	2	2	0	0	0
	Sorghum halepense	Johnson grass	1 (P)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Stellaria media	Common Chickweed	3 (D)	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Vinca minor	Myrtle/Periwinkle	2 (S)	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % PRIORITY HERBACEOUS SPECIES		**6.3**	0	2	10	0	0	5	5	7.5	0	15	7.5	10	60	15	0	5	0	0	10	5	0	10	15	15
		TOTAL % SECONDARY HERBACEOUS SPECIES		**1.4**	0	2	9.5	0	2	15	2	7	2	17	20	5	0	0	2	9.5	2	5	7	2	2	7	15	7.5
		TOTAL % DEPRIORITIZED HERBACEOUS SPECIES		**0.4**	5	0	2	5	2	2	5	2	2	2	0	0	0	0	2	0.5	2	5	0	0.5	2	0	0	0
		TOTAL % PROBLEMATIC/PERVASIVE HERBACEOUS SPECIES		**2.6**	0	0	15	0	0	10	0	0	0	15	10	5	0	10	0	0	0	0	0	0	0	0	0	10	7.5
		TOTAL % HERBACEOUS COVER		**8.2**	5	4	21.5	5	4	22	12	16.5	4	34	27.5	15	60	15	4	15	4	10	17	7.5	4	17	30	22.5
VINE (3+ ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Overall % Cover**																							
	Lonicera japonica	Japanese Honeysuckle	1 (P)	2.1	0	2	2	0	0	2	0	2	0	5	7.5	2	30	5	0	5	0	0	2	0	0	2	2	2
		TOTAL % PRIORITY WOODY VINE SPECIES		**2.1**	0	2	2	0	0	2	0	2	0	5	7.5	2	30	5	0	5	0	0	2	0	0	2	2	2
		TOTAL % WOODY VINE COVER		**2.1**	0	2	2	0	0	2	0	2	0	5	7.5	2	30	5	0	5	0	0	2	0	0	2	2	2
	TOTAL % INVASIVE COVER (Sapling/Shrub,Vine,Herbaceous)			**12.1**	5	13.5	52.5	32.5	6	49	34.5	33.5	6	73	45	28	90	45	6	29.5	6	10	28	23.5	6	30.5	56	29.5

Green Ridge Landfill PRM INU Species Baseline Data

Data Collected: May-21

Total Acreage 317.75

			Polygon ID	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047
			Existing Condition Type	Forest	Forest	imbere	Forest	Forest	imbere	imbere	imbere	imbere	imbere	Forest	Forest	imbere	imbere	imbere	imbere	imbere	imbere	imbere	imbere	imbere	imbere	imbere	imbere	imbere
			Acreage	0.07	1.77	0.12	1.97	0.69	1.11	2.11	0.54	1.38	0.03	0.13	0.80	3.35	2.85	0.41	2.19	0.32	1.33	1.10	0.37	0.16	1.41	0.32	3.72
CANOPY (15+ ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Total # of Stems**																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Elaeagnus umbellata	Autumn Olive	1 (P)	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Paulownia tomentosa	Princess Tree	2 (S)	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF PRIORITY CANOPY SPECIES		**50**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF SECONDARY CANOPY SPECIES		**5**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF CANOPY SPECIES		**55**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAPLING-SHRUB (3-15 ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Overall % Cover**																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Albizia julibrissin	Mimosa Tree	2 (S)	0.01	0	2	0	2	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0
	Berberis thunbergii	Japanese Barberry	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	2	0	0	0	0
	Elaeagnus umbellata	Autumn Olive	1 (P)	0.04	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Ligustrum sinense	Chinese Privet	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Paulownia tomentosa	Princess Tree	2 (S)	0.0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pyrus calleryana	Callery Pear	1 (P)	0.1	15	0	0	5	5	5	2	7.5	5	5	5	5	7.5	0	2	0	2	0	2	2	0	0	0	10
	Rosa multiflora	Multiflora Rose	2 (S)	1.6	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	2	0	0	0	0
		TOTAL % PRIORITY SAPLING-SHRUB SPECIES		**0.5**	15	0	0	7	5	5	2	7.5	5	5	5	5	7.5	0	2	0	2	0	2	2	0	0	0	10
		TOTAL % SECONDARY SAPLING-SHRUB SPECIES		**1.7**	0	2	0	4	0	0	0	0	0	0	0	5	0	0	4	4	0	0	0	4	0	0	0	0
		TOTAL % SAPLING-SHRUB COVER		**2.2**	15	2	0	11	5	5	2	7.5	5	5	5	10	7.5	0	6	4	2	0	2	6	0	0	0	10
HERBACEOUS (0-3 ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Overall % Cover**																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	0.1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Berberis thunbergii	Japanese Barberry	2 (S)	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Dipsacus fullonum	Wild Teasel	2 (S)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lespedeza cuneata	Sericea Lespedeza	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Ligustrum sinense	Chinese Privet	1 (P)	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lonicera fragrantissima	Winter Honeysuckle	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lonicera japonica	Japanese Honeysuckle	1 (P)	5.8	7.5	10	0	15	7.5	70	25	10	70	20	70	20	10	10	70	20	15	0	15	25	10	10	7.5	60
	Microstegium vimineum	Japanese Stiltgrass	4 (PP)	2.6	5	5	0	7.5	15	0	0	0	0	0	0	0	15	20	0	0	0	0	0	0	0	0	0	5
	Morus alba	Mulberry	3 (D)	0.002	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Perilla frutescens	Beefsteak Plant	3 (D)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
	Pyrus calleryana	Callery Pear	1 (P)	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rosa multiflora	Multiflora Rose	2 (S)	0.7	5	2	0	5	0	0	0	2	0	0	0	0	5	0	2	0	2	0	2	5	0	0	0	5
	Rubus phoenicolasius	Wineberry	2 (S)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rumex crispus ssp. crispus	Curly dock	3 (D)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
	Securigera varia	Crown-vetch	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sorghum halepense	Johnson grass	1 (P)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Stellaria media	Common Chickweed	3 (D)	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Vinca minor	Myrtle/Periwinkle	2 (S)	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % PRIORITY HERBACEOUS SPECIES		**6.3**	7.5	10	0	17	7.5	70	25	10	70	20	70	20	10	10	70	20	15	0	15	25	10	10	7.5	60
		TOTAL % SECONDARY HERBACEOUS SPECIES		**1.4**	5	2	0	5	0	0	0	2	0	0	0	0	5	0	2	0	2	0	2	5	0	0	0	5
		TOTAL % DEPRIORITIZED HERBACEOUS SPECIES		**0.4**	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
		TOTAL % PROBLEMATIC/PERVASIVE HERBACEOUS SPECIES		**2.6**	5	5	0	7.5	15	0	0	0	0	0	0	15	20	0	0	0	0	0	0	0	0	0	0	5
		TOTAL % HERBACEOUS COVER		**8.2**	12.5	12.5	0	22	7.5	70	25	12	70	20	70	20	15	10	72	20	17	0	17	30	10	10	11.5	65
VINE (3+ ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Overall % Cover**																							
	Lonicera japonica	Japanese Honeysuckle	1 (P)	2.1	5	5	0	2	2	5	5	5	5	5	5	0	5	2	5	5	0	0	0	5	0	2	2	5
		TOTAL % PRIORITY WOODY VINE SPECIES		**2.1**	5	5	0	2	2	5	5	5	5	5	5	0	5	2	5	5	0	0	0	5	0	2	2	5
		TOTAL % WOODY VINE COVER		**2.1**	5	5	0	2	2	5	5	5	5	5	5	0	5	2	5	5	0	0	0	5	0	2	2	5
	TOTAL % INVASIVE COVER (Sapling/Shrub,Vine,Herbaceous)			**12.1**	32.5	19.5	0	35	14.5	80	32	24.5	80	30	80	30	27.5	12	83	29	19	0	19	41	10	12	13.5	80

Green Ridge Landfill PRM INU Species Baseline Data			Polygon ID	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	2001	2002	2003	2004	2005	2006	2007	2008
Data Collected: May-21			Existing Condition Type	imbere	imbere	imbere	imbere	Forest	Forest	Forest	Forest	imbere	imbere	imbere	imbere	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Field
Total Acreage 317.75			Acreage	0.13	0.13	0.79	0.48	1.02	0.72	0.30	0.50	1.51	0.70	2.10	1.77	9.38	2.17	6.71	1.72	5.32	0.69	4.88	2.22	0.72	1.18	0.33	1.13
CANOPY (15+ ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Total # of Stems**																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
	Elaeagnus umbellata	Autumn Olive	1 (P)	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Paulownia tomentosa	Princess Tree	2 (S)	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL # OF PRIORITY CANOPY SPECIES			**50**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
	TOTAL # OF SECONDARY CANOPY SPECIES			**5**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL # OF CANOPY SPECIES			**55**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
SAPLING-SHRUB (3-15 ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Overall % Cover**																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Albizia julibrissin	Mimosa Tree	2 (S)	0.01	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Berberis thunbergii	Japanese Barberry	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Elaeagnus umbellata	Autumn Olive	1 (P)	0.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
	Ligustrum sinense	Chinese Privet	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Paulownia tomentosa	Princess Tree	2 (S)	0.0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pyrus calleryana	Callery Pear	1 (P)	0.1	7.5	40	60	5	5	5	2	5	2	5	5	5	0	0	0	0	2	0.5	0	0	0	0	0	2
	Rosa multiflora	Multiflora Rose	2 (S)	1.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	2	0	0	0	0	0	0	2
	TOTAL % PRIORITY SAPLING-SHRUB SPECIES			**0.5**	7.5	40	60	5	5	5	2	5	2	5	5	5	0	0	0	0	4	0.5	0	0	0	0	0	4
	TOTAL % SECONDARY SAPLING-SHRUB SPECIES			**1.7**	2	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	2	0	0	0	0	0	0	2
	TOTAL % SAPLING-SHRUB COVER			**2.2**	9.5	40	60	5	5	5	2	5	2	5	5	5	0	0	15	0	6	0.5	0	0	0	0	0	6
HERBACEOUS (0-3 ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Overall % Cover**																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
	Berberis thunbergii	Japanese Barberry	2 (S)	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0.5
	Dipsacus fullonum	Wild Teasel	2 (S)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lespedeza cuneata	Sericea Lespedeza	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Ligustrum sinense	Chinese Privet	1 (P)	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0
	Lonicera fragrantissima	Winter Honeysuckle	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lonicera japonica	Japanese Honeysuckle	1 (P)	5.8	20	40	5	40	70	30	7.5	7.5	7.5	15	25	40	10	5	25	5	5	5	2	5	0.5	0.5	0.5	5
	Microstegium vimineum	Japanese Stiltgrass	4 (PP)	2.6	0	0	0	0	0	7.5	55	2	55	0	5	0	0	2	2	2	0.5	0	0	0	0	0	0	0.5
	Morus alba	Mulberry	3 (D)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Perilla frutescens	Beefsteak Plant	3 (D)	0.1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pyrus calleryana	Callery Pear	1 (P)	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rosa multiflora	Multiflora Rose	2 (S)	0.7	0	7.5	10	0	0	0	5	2	5	5	5	0	2	0	2	0	2	0.5	0	0.5	0	0	0	2
	Rubus phoenicolasius	Wineberry	2 (S)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0
	Rumex crispus ssp. crispus	Curly dock	3 (D)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Securigera varia	Crown-vetch	2 (S)	0.1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sorghum halepense	Johnson grass	1 (P)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Stellaria media	Common Chickweed	3 (D)	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
	Vinca minor	Myrtle/Periwinkle	2 (S)	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL % PRIORITY HERBACEOUS SPECIES			**6.3**	20	40	5	40	70	30	7.5	7.5	7.5	15	25	40	10	5	27	5	5	5.5	2	5	0.5	0.5	0.5	5
	TOTAL % SECONDARY HERBACEOUS SPECIES			**1.4**	2	7.5	10	0	0	0	5	2	5	5	5	0	2	0	2	0	2.5	0.5	0	1	0	0	0	2.5
	TOTAL % DEPRIORITIZED HERBACEOUS SPECIES			**0.4**	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
	TOTAL % PROBLEMATIC/PERVASIVE HERBACEOUS SPECIES			**2.6**	0	0	0	0	0	7.5	55	2	55	0	5	0	0	2	2	2	0.5	0	0	0	0	0	0	0.5
	TOTAL % HERBACEOUS COVER			**8.2**	24	47.5	15	40	70	30	12.5	9.5	12.5	20	30	40	12	5	29	5	9.5	6	4	6	0.5	0.5	0.5	9.5
VINE (3+ ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Overall % Cover**																							
	Lonicera japonica	Japanese Honeysuckle	1 (P)	2.1	5	5	0	5	10	2	0	2	0	5	2	5	2	0	5	0	0.5	2	0	2	0	5	0	0.5
	TOTAL % PRIORITY WOODY VINE SPECIES			**2.1**	5	5	0	5	10	2	0	2	0	5	2	5	2	0	5	0	0.5	2	0	2	0	5	0	0.5
	TOTAL % WOODY VINE COVER			**2.1**	5	5	0	5	10	2	0	2	0	5	2	5	2	0	5	0	0.5	2	0	2	0	5	0	0.5
TOTAL % INVASIVE COVER (Sapling/Shrub,Vine,Herbaceous)				**12.1**	38.5	92.5	75	50	85	37	14.5	16.5	14.5	30	37	50	14	5	49	5	16	8.5	4	8	0.5	5.5	0.5	16

Green Ridge Landfill PRM INU Species Baseline Data

Data Collected: May-21

Total Acreage 317.75

			Polygon ID	2009	2010	2011	2012	2013	2014	2015	2016	2017	3001	3002	3002A	3003	3004	3005	3006	3007	3008	3009	3010	3011	3012	3013	3014
			Existing Condition Type	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Field	Forest	Field	Forest	Field	Field	Forest	Field
			Acreage	0.45	0.37	5.71	5.70	1.98	1.70	1.24	2.92	2.74	5.21	1.05	7.58	3.51	0.19	0.29	0.47	2.33	2.39	1.71	3.57	0.72	0.21	1.99	1.85
CANOPY (15+ ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Total # of Stems**																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Elaeagnus umbellata	Autumn Olive	1 (P)	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Paulownia tomentosa	Princess Tree	2 (S)	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF PRIORITY CANOPY SPECIES		**50**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF SECONDARY CANOPY SPECIES		**5**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF CANOPY SPECIES		**55**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAPLING-SHRUB (3-15 ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Overall % Cover**																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	0.2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Albizia julibrissin	Mimosa Tree	2 (S)	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Berberis thunbergii	Japanese Barberry	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Elaeagnus umbellata	Autumn Olive	1 (P)	0.04	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Ligustrum sinense	Chinese Privet	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Paulownia tomentosa	Princess Tree	2 (S)	0.0000	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	0
	Pyrus calleryana	Callery Pear	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	5	0	0	5
	Rosa multiflora	Multiflora Rose	2 (S)	1.6	0	4	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0	5	0	5	0	0	0
		TOTAL % PRIORITY SAPLING-SHRUB SPECIES		**0.5**	0	2	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0.5	0	5	0	0	5
		TOTAL % SECONDARY SAPLING-SHRUB SPECIES		**1.7**	0	6	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	10	0	10	0	0	0	0
		TOTAL % SAPLING-SHRUB COVER		**2.2**	0	8	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	10	0.5	10	5	0	0	5
HERBACEOUS (0-3 ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Overall % Cover**																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Berberis thunbergii	Japanese Barberry	2 (S)	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Dipsacus fullonum	Wild Teasel	2 (S)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lespedeza cuneata	Sericea Lespedeza	1 (P)	0.1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Ligustrum sinense	Chinese Privet	1 (P)	0.3	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lonicera fragrantissima	Winter Honeysuckle	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lonicera japonica	Japanese Honeysuckle	1 (P)	5.8	0	15	5	0.5	2	5	2	0	30	15	5	20	0.5	0.5	0	10	2	2	10	5	10	20	0	15
	Microstegium vimineum	Japanese Stiltgrass	4 (PP)	2.6	0	0	20	0	0	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0	0	0	5	5
	Morus alba	Mulberry	3 (D)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Perilla frutescens	Beefsteak Plant	3 (D)	0.1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pyrus calleryana	Callery Pear	1 (P)	0.02	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rosa multiflora	Multiflora Rose	2 (S)	0.7	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rubus phoenicolasius	Wineberry	2 (S)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rumex crispus ssp. crispus	Curly dock	3 (D)	0.1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Securigera varia	Crown-vetch	2 (S)	0.1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sorghum halepense	Johnson grass	1 (P)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Stellaria media	Common Chickweed	3 (D)	0.2	0	0.5	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5
	Vinca minor	Myrtle/Periwinkle	2 (S)	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % PRIORITY HERBACEOUS SPECIES		**6.3**	5	17	7	0.5	2	5	2	0	30	15	5	20	0.5	0.5	0	10	2	2	10	5	10	20	0	15
		TOTAL % SECONDARY HERBACEOUS SPECIES		**1.4**	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % DEPRIORITIZED HERBACEOUS SPECIES		**0.4**	0	10.5	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5
		TOTAL % PROBLEMATIC/PERVASIVE HERBACEOUS SPECIES		**2.6**	0	0	20	0	0	0	0	0	0	10	0	0	0	0	10	0	0	0	0	0	0	0	0	5	5
		TOTAL % HERBACEOUS COVER		**8.2**	7	29.5	7	0.5	2.5	5	2	0	30	15	5	20	0.5	0.5	0	10	2	2	10	5	15	20	0	20
VINE (3+ ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Overall % Cover**																							
	Lonicera japonica	Japanese Honeysuckle	1 (P)	2.1	0	0	0	0	0	0	0.5	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % PRIORITY WOODY VINE SPECIES		**2.1**	0	0	0	0	0	0	0.5	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % WOODY VINE COVER		**2.1**	0	0	0	0	0	0	0.5	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL % INVASIVE COVER (Sapling/Shrub,Vine,Herbaceous)			**12.1**	7	37.5	7	0.5	2.5	5	2.5	0	32	16	5	20	0.5	0.5	0	10	2	12	10.5	15	20	20	0	25

Green Ridge Landfill PRM INU Species Baseline Data
Data Collected: May-21
Total Acreage 317.75

			Polygon ID	3015	3016	3017	3018	3019	3020	3021	3022	3023	3024	3025	3026	3027	3028	3029	3030	3031	3032	3033	3034	3035	3036	3037	3038
			Existing Condition Type	Forest	Field	Field	Field	Field	Forest	imbere	imbere	imbere	imbere	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Field	imbere	imbere	imbere	imbere	Forest
			Acreage	1.18	0.06	7.79	0.49	3.18	3.52	0.71	0.31	0.11	0.79	2.77	1.60	0.35	0.92	0.83	1.31	2.97	2.10	2.77	1.52	0.19	1.56	4.96	0.39
CANOPY (15+ ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Total # of Stems**																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Elaeagnus umbellata	Autumn Olive	1 (P)	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Paulownia tomentosa	Princess Tree	2 (S)	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF PRIORITY CANOPY SPECIES		**50**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF SECONDARY CANOPY SPECIES		**5**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF CANOPY SPECIES		**55**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAPLING-SHRUB (3-15 ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Overall % Cover**																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Albizia julibrissin	Mimosa Tree	2 (S)	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Berberis thunbergii	Japanese Barberry	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Elaeagnus umbellata	Autumn Olive	1 (P)	0.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0
	Ligustrum sinense	Chinese Privet	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Paulownia tomentosa	Princess Tree	2 (S)	0.0000	0	0	5	0	0	10	0	0	5	0	5	0	0	0	0	0	0	0.5	0	0	0	0	0	0
	Pyrus calleryana	Callery Pear	1 (P)	0.1	0	5	10	0	5	0	5	10	0	0	0	5	0	5	0	5	2	0	2	0	0	2	0	0
	Rosa multiflora	Multiflora Rose	2 (S)	1.6	0	0	5	0	0	10	0	0	5	5	5	0	0	0	0	0	0	0.5	0.5	0	0	0	0	0
		TOTAL % PRIORITY SAPLING-SHRUB SPECIES		**0.5**	0	5	10	0	5	0	5	10	0	0	0	5	0	5	0	5	2	0	2.5	0	0	2	0	0
		TOTAL % SECONDARY SAPLING-SHRUB SPECIES		**1.7**	0	0	10	0	0	20	0	0	10	5	10	0	0	0	0	0	0	1	0.5	0	0	0	0	0
		TOTAL % SAPLING-SHRUB COVER		**2.2**	0	5	20	0	5	20	5	10	10	5	10	5	0	5	0	5	2	1	3	0	0	2	0	0
HERBACEOUS (0-3 ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Overall % Cover**																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
	Berberis thunbergii	Japanese Barberry	2 (S)	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Dipsacus fullonum	Wild Teasel	2 (S)	0.002	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lespedeza cuneata	Sericea Lespedeza	1 (P)	0.1	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Ligustrum sinense	Chinese Privet	1 (P)	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lonicera fragrantissima	Winter Honeysuckle	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lonicera japonica	Japanese Honeysuckle	1 (P)	5.8	20	0	0	0.5	15	0	20	20	0	0	10	5	0	5	10	5	10	10	5	0	15	0	15	20
	Microstegium vimineum	Japanese Stiltgrass	4 (PP)	2.6	0	0	0	0	0	0	40	0	0	0	0	30	0	0	0	30	5	40	20	0	0	0	0	0
	Morus alba	Mulberry	3 (D)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Perilla frutescens	Beefsteak Plant	3 (D)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
	Pyrus calleryana	Callery Pear	1 (P)	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rosa multiflora	Multiflora Rose	2 (S)	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rubus phoenicolasius	Wineberry	2 (S)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rumex crispus ssp. crispus	Curly dock	3 (D)	0.1	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0
	Securigera varia	Crown-vetch	2 (S)	0.1	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0
	Sorghum halepense	Johnson grass	1 (P)	0.002	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Stellaria media	Common Chickweed	3 (D)	0.2	0	20	0	0	0	0	0	0	0	0	0	0	0	30	0	0	0	0	2	0	0	0	0	0
	Vinca minor	Myrtle/Periwinkle	2 (S)	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % PRIORITY HERBACEOUS SPECIES		**6.3**	20	0	0	1	15	0	20	20	15	0	10	5	0	5	10	5	10	10	5	0	17	0	17	22
		TOTAL % SECONDARY HERBACEOUS SPECIES		**1.4**	0	0	0	0.5	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0.5	0	0	0	0	0
		TOTAL % DEPRIORITIZED HERBACEOUS SPECIES		**0.4**	0	20	0	0.5	0	0	0	0	0	0	0	0	0	0	30	0	0	0	0	4.5	0	0	0	0	0
		TOTAL % PROBLEMATIC/PERVASIVE HERBACEOUS SPECIES		**2.6**	0	0	0	0	0	0	40	0	0	0	0	30	0	0	0	30	5	40	20	0	0	0	0	0
		TOTAL % HERBACEOUS COVER		**8.2**	20	20	0	2	15	0	20	20	15	0.5	10	5	0	35	10	5	10	10	10	0	17	0	17	22
VINE (3+ ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Overall % Cover**																							
	Lonicera japonica	Japanese Honeysuckle	1 (P)	2.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % PRIORITY WOODY VINE SPECIES		**2.1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % WOODY VINE COVER		**2.1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL % INVASIVE COVER (Sapling/Shrub,Vine,Herbaceous)			**12.1**	20	25	20	2	20	20	25	30	25	5.5	20	10	0	40	10	10	12	11	13	0	17	2	17	22

Green Ridge Landfill PRM INU Species Baseline Data
Data Collected: May-21
Total Acreage 317.75

			Polygon ID	3039	3040	3041	3042	3043	3044	3045	3046	3047	3048	3049	3050	3051	3052	3053	3054	3055	3056	3057	3058	3059	3060	3061	3062
			Existing Condition Type	Timbere	Forest	Forest	Forest	Timbere	Timbere	Timbere	Timbere	Timbere	Timbere	Timbere	Timbere	Timbere	Timbere	Timbere	Timbere	Timbere	Timbere	Timbere	Timbere	Timbere	Timbere	Timbere	Timbere
			Acreage	1.89	0.37	0.25	0.96	1.74	0.94	0.26	2.32	0.36	0.04	0.30	2.76	0.04	3.18	1.19	1.07	0.55	2.89	0.64	0.82	0.46	1.41	1.41	0.36
CANOPY (15+ ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Total # of Stems**																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Elaeagnus umbellata	Autumn Olive	1 (P)	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Paulownia tomentosa	Princess Tree	2 (S)	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF PRIORITY CANOPY SPECIES		**50**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF SECONDARY CANOPY SPECIES		**5**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF CANOPY SPECIES		**55**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAPLING-SHRUB (3-15 ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Overall % Cover**																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Albizia julibrissin	Mimosa Tree	2 (S)	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Berberis thunbergii	Japanese Barberry	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Elaeagnus umbellata	Autumn Olive	1 (P)	0.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Ligustrum sinense	Chinese Privet	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Paulownia tomentosa	Princess Tree	2 (S)	0.0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pyrus calleryana	Callery Pear	1 (P)	0.1	2	0	0	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
	Rosa multiflora	Multiflora Rose	2 (S)	1.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % PRIORITY SAPLING-SHRUB SPECIES		**0.5**	2	0	0	0	5	0	0	0	0	5	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
		TOTAL % SECONDARY SAPLING-SHRUB SPECIES		**1.7**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % SAPLING-SHRUB COVER		**2.2**	2	0	0	0	5	0	0	0	0	5	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
HERBACEOUS (0-3 ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Overall % Cover**																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	0.1	0	0	0	0	0	0	0.5	0	0	0	2	5	0	0	0	0	0	2	0	0	0	2	0	0	0
	Berberis thunbergii	Japanese Barberry	2 (S)	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Dipsacus fullonum	Wild Teasel	2 (S)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lespedeza cuneata	Sericea Lespedeza	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Ligustrum sinense	Chinese Privet	1 (P)	0.3	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lonicera fragrantissima	Winter Honeysuckle	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0
	Lonicera japonica	Japanese Honeysuckle	1 (P)	5.8	0	15	15	2	5	30	15	0	30	10	25	0	15	20	5	5	20	0	15	5	20	5	30	5
	Microstegium vimineum	Japanese Stiltgrass	4 (PP)	2.6	5	0	15	20	30	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Morus alba	Mulberry	3 (D)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Perilla frutescens	Beefsteak Plant	3 (D)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pyrus calleryana	Callery Pear	1 (P)	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0.5	0.5	0	0
	Rosa multiflora	Multiflora Rose	2 (S)	0.7	0	2	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rubus phoenicolasius	Wineberry	2 (S)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rumex crispus ssp. crispus	Curly dock	3 (D)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Securigera varia	Crown-vetch	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sorghum halepense	Johnson grass	1 (P)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Stellaria media	Common Chickweed	3 (D)	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Vinca minor	Myrtle/Periwinkle	2 (S)	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % PRIORITY HERBACEOUS SPECIES		**6.3**	0	15.5	15	2	5	30	15.5	0	30	10	27	5	15	20	5	5	20	2	15	5.5	20.5	7.5	30	5
		TOTAL % SECONDARY HERBACEOUS SPECIES		**1.4**	0	2	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0
		TOTAL % DEPRIORITIZED HERBACEOUS SPECIES		**0.4**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % PROBLEMATIC/PERVASIVE HERBACEOUS SPECIES		**2.6**	5	0	15	20	30	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % HERBACEOUS COVER		**8.2**	0	17.5	15	2.5	5	30	15.5	0	30	10	27	5	15	20	5	5	20	27	15	5.5	20.5	7.5	30	5
VINE (3+ ft)	**Botanical Name**	**Common Name**	**Species Priority Ranking**	**Overall % Cover**																							
	Lonicera japonica	Japanese Honeysuckle	1 (P)	2.1	0	0	0	0	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % PRIORITY WOODY VINE SPECIES		**2.1**	0	0	0	0	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % WOODY VINE COVER		**2.1**	0	0	0	0	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL % INVASIVE COVER (Sapling/Shrub,Vine,Herbaceous)			**12.1**	2	17.5	15	2.5	10	30	15.5	30	30	15	27	5	15	20	5	5	20	29	15	5.5	20.5	7.5	30	5

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Total Acreage 317.75

			Polygon ID	4000	4001	4002	4003	4004	4005	4006	4007	4008	4009	4010	5001	5002	5003	5004	5005	5006	5007	5008	5009	5010	5011	5012	5013
			Existing Condition Type	Forest	Forest	imbere	Forest	Forest	Forest	imbere	imbere	imbere	Forest	Forest	Forest	Forest	Forest	imbere	imbere	imbere	imbere	Forest	Forest	imbere	Forest	Forest	Forest
			Acreage	2.34	0.48	7.91	0.40	1.41	0.53	2.42	0.01	1.28	4.16	3.21	2.11	2.60	1.47	1.10	0.20	0.02	1.03	0.93	0.01	1.59	4.11	0.20	0.00
CANOPY (15+ ft)	Botanical Name	Common Name	Species Priority Ranking	Total # of Stems																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
	Elaeagnus umbellata	Autumn Olive	1 (P)	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Paulownia tomentosa	Princess Tree	2 (S)	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF PRIORITY CANOPY SPECIES		**50**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
		TOTAL # OF SECONDARY CANOPY SPECIES		**5**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF CANOPY SPECIES		**55**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
SAPLING-SHRUB (3-15 ft)	Botanical Name	Common Name	Species Priority Ranking	Overall % Cover																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Albizia julibrissin	Mimosa Tree	2 (S)	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Berberis thunbergii	Japanese Barberry	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Elaeagnus umbellata	Autumn Olive	1 (P)	0.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Ligustrum sinense	Chinese Privet	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Paulownia tomentosa	Princess Tree	2 (S)	0.0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pyrus calleryana	Callery Pear	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0
	Rosa multiflora	Multiflora Rose	2 (S)	1.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % PRIORITY SAPLING-SHRUB SPECIES		**0.5**	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0
		TOTAL % SECONDARY SAPLING-SHRUB SPECIES		**1.7**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % SAPLING-SHRUB COVER		**2.2**	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0
HERBACEOUS (0-3 ft)	Botanical Name	Common Name	Species Priority Ranking	Overall % Cover																							
	Ailanthus altissima	Tree-of-heaven	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	2	0	0	0	2
	Berberis thunbergii	Japanese Barberry	2 (S)	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Dipsacus fullonum	Wild Teasel	2 (S)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lespedeza cuneata	Sericea Lespedeza	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Ligustrum sinense	Chinese Privet	1 (P)	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lonicera fragrantissima	Winter Honeysuckle	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lonicera japonica	Japanese Honeysuckle	1 (P)	5.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Microstegium vimineum	Japanese Stiltgrass	4 (PP)	2.6	0	0	0	0	0	15	0	0	0	2	0	0	2	0	0	0	0	0	60	0	0	0	85	0
	Morus alba	Mulberry	3 (D)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Perilla frutescens	Beefsteak Plant	3 (D)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pyrus calleryana	Callery Pear	1 (P)	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rosa multiflora	Multiflora Rose	2 (S)	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rubus phoenicolasius	Wineberry	2 (S)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rumex crispus ssp. crispus	Curly dock	3 (D)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Securigera varia	Crown-vetch	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sorghum halepense	Johnson grass	1 (P)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Stellaria media	Common Chickweed	3 (D)	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Vinca minor	Myrtle/Periwinkle	2 (S)	0.5	0	0	0	0	0	0	0	0	0	75	0	0	0	0	0	0	0	0	0	0	0	0	90	0
		TOTAL % PRIORITY HERBACEOUS SPECIES		**6.3**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	0	2	0	0	0	2
		TOTAL % SECONDARY HERBACEOUS SPECIES		**1.4**	0	0	0	0	0	0	0	0	0	75	0	0	0	0	0	0	0	0	0	0	0	0	90	0
		TOTAL % DEPRIORITIZED HERBACEOUS SPECIES		**0.4**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % PROBLEMATIC/PERVASIVE HERBACEOUS SPECIES		**2.6**	0	0	0	0	0	15	0	0	0	2	0	0	2	0	0	0	0	0	60	0	0	0	85	0
		TOTAL % HERBACEOUS COVER		**8.2**	0	0	0	0	0	0	0	0	0	75	0	0	0	0	0.5	0	0	0	0	2	0	0	90	2
VINE (3+ ft)	Botanical Name	Common Name	Species Priority Ranking	Overall % Cover																							
	Lonicera japonica	Japanese Honeysuckle	1 (P)	2.1	0	25	0	0	0	20	0	0	2	0	2	2	10	2	0	2	30	0	15	0	20	2	90	0
		TOTAL % PRIORITY WOODY VINE SPECIES		**2.1**	0	25	0	0	0	20	0	0	2	0	2	2	10	2	0	2	30	0	15	0	20	2	90	0
		TOTAL % WOODY VINE COVER		**2.1**	0	25	0	0	0	20	0	0	2	0	2	2	10	2	0	2	30	0	15	0	20	2	90	0
		TOTAL % INVASIVE COVER (Sapling/Shrub,Vine,Herbaceous)		**12.1**	0	25	0	0	0	20	0	0	2	75	2	2	10	4	0.5	2	30	0	17	2	20	2	180	2

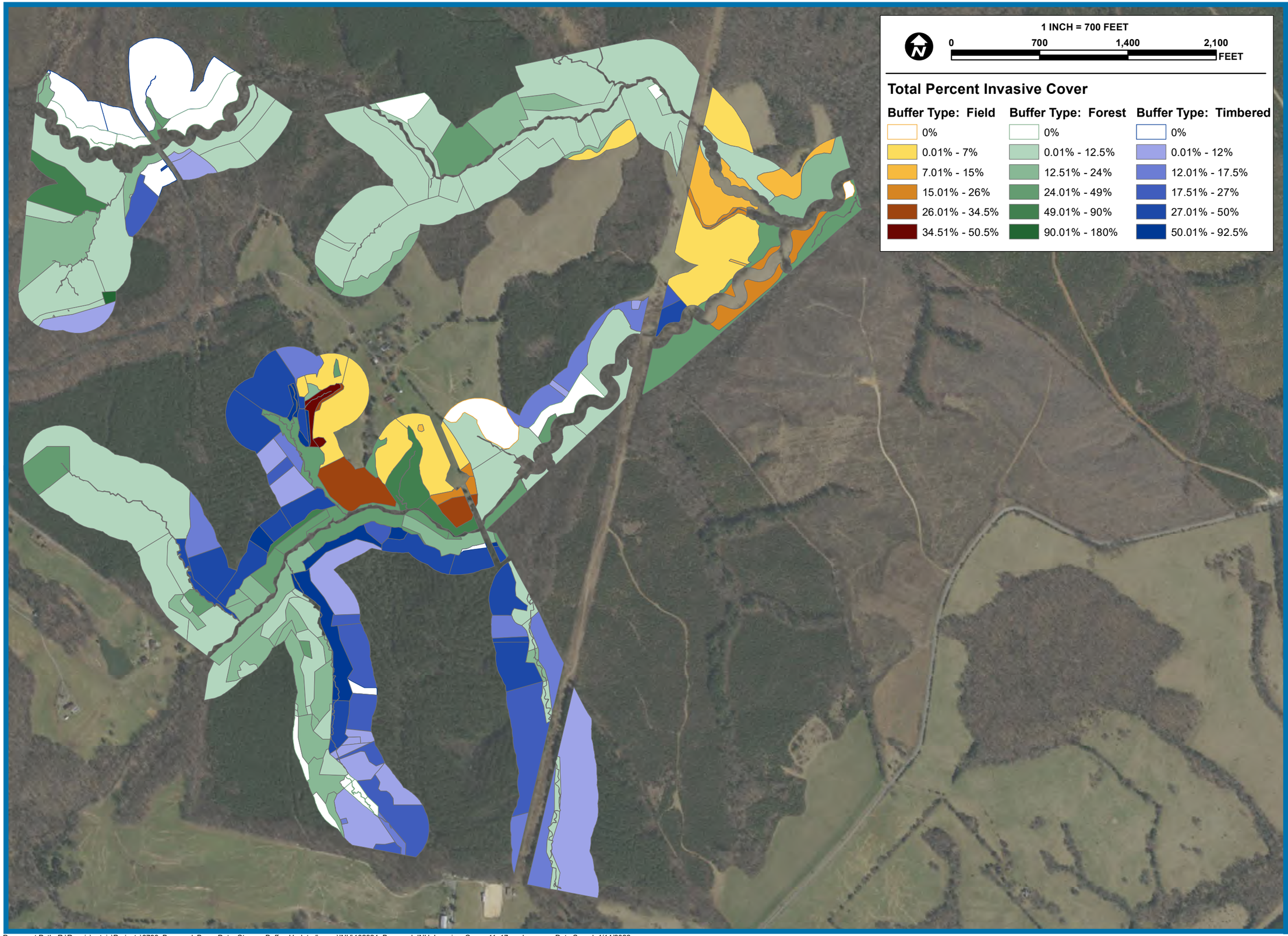
Green Ridge Landfill PRM INU Species Baseline Data

Data Collected: May-21

Total Acreage 317.75

				Polygon ID	5014	5015	5016	5017	5018	5019	5020	6001	6002	6003	6004	6005	6006	6007	6008	6009	6010	6011	6012	6013	6014	6015	6016	6018
				Existing Condition Type	Forest	Forest	Forest	imbere	Forest	imbere	imbere	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest
				Acreage	0.62	4.77	6.06	1.77	1.04	2.73	9.78	0.16	0.41	0.14	0.39	0.42	1.24	0.11	1.31	0.48	0.50	0.03	0.03	1.21	0.06	1.37	0.28	1.47
CANOPY (15+ ft)	Botanical Name	Common Name	Species Priority Ranking	Total # of Stems																								
	Ailanthus altissima	Tree-of-heaven	1 (P)	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	10	0	0
	Elaeagnus umbellata	Autumn Olive	1 (P)	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Paulownia tomentosa	Princess Tree	2 (S)	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF PRIORITY CANOPY SPECIES		**50**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	10	0	0
		TOTAL # OF SECONDARY CANOPY SPECIES		**5**	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF CANOPY SPECIES		**55**	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	10	0	0
SAPLING-SHRUB (3-15 ft)	Botanical Name	Common Name	Species Priority Ranking	Overall % Cover																								
	Ailanthus altissima	Tree-of-heaven	1 (P)	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Albizia julibrissin	Mimosa Tree	2 (S)	0.01	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Berberis thunbergii	Japanese Barberry	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Elaeagnus umbellata	Autumn Olive	1 (P)	0.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Ligustrum sinense	Chinese Privet	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Paulownia tomentosa	Princess Tree	2 (S)	0.0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pyrus calleryana	Callery Pear	1 (P)	0.1	0	0	0	0	5	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rosa multiflora	Multiflora Rose	2 (S)	1.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0
		TOTAL % PRIORITY SAPLING-SHRUB SPECIES		**0.5**	0	0	0	0	5	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % SECONDARY SAPLING-SHRUB SPECIES		**1.7**	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0
		TOTAL % SAPLING-SHRUB COVER		**2.2**	0	0	0	0	10	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0
HERBACEOUS (0-3 ft)	Botanical Name	Common Name	Species Priority Ranking	Overall % Cover																								
	Ailanthus altissima	Tree-of-heaven	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Berberis thunbergii	Japanese Barberry	2 (S)	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Dipsacus fullonum	Wild Teasel	2 (S)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lespedeza cuneata	Sericea Lespedeza	1 (P)	0.1	0	0	0	10	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Ligustrum sinense	Chinese Privet	1 (P)	0.3	0	0	0	0	0	0	0	0	0	0	2	0	0.5	7.5	7.5	0	0	0	0	2	0	10	0	2
	Lonicera fragrantissima	Winter Honeysuckle	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lonicera japonica	Japanese Honeysuckle	1 (P)	5.8	0	0	0	0	0	0	0	0	0	0	10	0	7.5	7.5	5	0	0	0	0	0	0	0	0	0
	Microstegium vimineum	Japanese Stiltgrass	4 (PP)	2.6	0	0	10	10	2	0	0	0	0	0	2	0	2	0	0.5	0	0	0	0	0	0	2	0	5
	Morus alba	Mulberry	3 (D)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Perilla frutescens	Beefsteak Plant	3 (D)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pyrus calleryana	Callery Pear	1 (P)	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rosa multiflora	Multiflora Rose	2 (S)	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	2	0	0
	Rubus phoenicolasius	Wineberry	2 (S)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rumex crispus ssp. crispus	Curly dock	3 (D)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Securigera varia	Crown-vetch	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sorghum halepense	Johnson grass	1 (P)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Stellaria media	Common Chickweed	3 (D)	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Vinca minor	Myrtle/Periwinkle	2 (S)	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % PRIORITY HERBACEOUS SPECIES		**6.3**	0	0	0	10	0	0.5	0	0	0	0	12	0	8	15	12.5	0	0	0	0	2	0	10	0	2
		TOTAL % SECONDARY HERBACEOUS SPECIES		**1.4**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	2	0	0
		TOTAL % DEPRIORITIZED HERBACEOUS SPECIES		**0.4**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % PROBLEMATIC/PERVASIVE HERBACEOUS SPECIES		**2.6**	0	0	10	10	2	0	0	0	0	0	2	0	2	0	0.5	0	0	0	0	0	0	2	0	5
		TOTAL % HERBACEOUS COVER		**8.2**	0	0	0	10	0	0.5	0	0	0	0	12	0	8	15	14.5	0	0	0	0	4	0	12	0	2
VINE (3+ ft)	Botanical Name	Common Name	Species Priority Ranking	Overall % Cover																								
	Lonicera japonica	Japanese Honeysuckle	1 (P)	2.1	7.5	2	15	0	0	15	5	0	0	0	2	0	7.5	0	0	10	0	2	2	10	2	10	15	5
		TOTAL % PRIORITY WOODY VINE SPECIES		**2.1**	7.5	2	15	0	0	15	5	0	0	0	2	0	7.5	0	0	10	0	2	2	10	2	10	15	5
		TOTAL % WOODY VINE COVER		**2.1**	7.5	2	15	0	0	15	5	0	0	0	2	0	7.5	0	0	10	0	2	2	10	2	10	15	5
		TOTAL % INVASIVE COVER (Sapling/Shrub,Vine,Herbaceous)		**12.1**	7.5	2	15	10	10	15.5	7	0	0	0	14	0	15.5	15	14.5	10	0	2	2	16	2	24	15	7

Green Ridge Landfill PRM INU Species Baseline Data Data Collected: May-21 Total Acreage 317.75			Polygon ID	6020	6021	6022	6030	6031	6032	6033	6034	6036	6037	6039	6040	6041	6045	6046	6048	7001
			Existing Condition Type	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest	Forest
			Acreage	0.20	0.60	0.59	0.15	0.99	0.57	2.07	2.22	0.28	1.15	1.61	0.69	0.28	0.92	0.78	0.11	3.01
CANOPY (15+ ft)	Botanical Name	Common Name	Species Priority Ranking	Total # of Stems																
	Ailanthus altissima	Tree-of-heaven	1 (P)	48	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0
	Elaeagnus umbellata	Autumn Olive	1 (P)	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Paulownia tomentosa	Princess Tree	2 (S)	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF PRIORITY CANOPY SPECIES		**50**	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0
		TOTAL # OF SECONDARY CANOPY SPECIES		**5**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL # OF CANOPY SPECIES		**55**	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0
SAPLING-SHRUB (3-15 ft)	Botanical Name	Common Name	Species Priority Ranking	Overall % Cover																
	Ailanthus altissima	Tree-of-heaven	1 (P)	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Albizia julibrissin	Mimosa Tree	2 (S)	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Berberis thunbergii	Japanese Barberry	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Elaeagnus umbellata	Autumn Olive	1 (P)	0.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Ligustrum sinense	Chinese Privet	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Paulownia tomentosa	Princess Tree	2 (S)	0.0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pyrus calleryana	Callery Pear	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rosa multiflora	Multiflora Rose	2 (S)	1.6	0	0	0	0	0	5	0	0	0	0	0	0	2	0	0	0	2
		TOTAL % PRIORITY SAPLING-SHRUB SPECIES		**0.5**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % SECONDARY SAPLING-SHRUB SPECIES		**1.7**	0	0	0	0	0	5	0	0	0	0	0	0	2	0	0	0	2
		TOTAL % SAPLING-SHRUB COVER		**2.2**	0	0	0	0	0	5	0	0	0	0	0	0	2	0	0	0	2
HERBACEOUS (0-3 ft)	Botanical Name	Common Name	Species Priority Ranking	Overall % Cover																
	Ailanthus altissima	Tree-of-heaven	1 (P)	0.1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Berberis thunbergii	Japanese Barberry	2 (S)	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Dipsacus fullonum	Wild Teasel	2 (S)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lespedeza cuneata	Sericea Lespedeza	1 (P)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Ligustrum sinense	Chinese Privet	1 (P)	0.3	15	0	0.5	0	0	0	0.5	2	0	5	5	10	2	2	2	5	5
	Lonicera fragrantissima	Winter Honeysuckle	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lonicera japonica	Japanese Honeysuckle	1 (P)	5.8	0	20	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Microstegium vimineum	Japanese Stiltgrass	4 (PP)	2.6	0	0	2	0	0	5	5	10	0	0	0	0	0	5	5	20	0
	Morus alba	Mulberry	3 (D)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Perilla frutescens	Beefsteak Plant	3 (D)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pyrus calleryana	Callery Pear	1 (P)	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rosa multiflora	Multiflora Rose	2 (S)	0.7	0	0	0	0	0	7.5	2	2	0.5	0.5	5	0	2	0	0	2	0
	Rubus phoenicolasius	Wineberry	2 (S)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rumex crispus ssp. crispus	Curly dock	3 (D)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Securigera varia	Crown-vetch	2 (S)	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sorghum halepense	Johnson grass	1 (P)	0.002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Stellaria media	Common Chickweed	3 (D)	0.2	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0
	Vinca minor	Myrtle/Periwinkle	2 (S)	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % PRIORITY HERBACEOUS SPECIES		**6.3**	20	20	2.5	0	0	0	0.5	2	0	5	5	10	2	2	2	5	5
		TOTAL % SECONDARY HERBACEOUS SPECIES		**1.4**	0	0	0	0	0	7.5	2	2	0.5	0.5	5	0	2	0	0	2	0
		TOTAL % DEPRIORITIZED HERBACEOUS SPECIES		**0.4**	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0
		TOTAL % PROBLEMATIC/PERVASIVE HERBACEOUS SPECIES		**2.6**	0	0	2	0	0	5	5	10	0	0	0	0	0	5	5	20	0
		TOTAL % HERBACEOUS COVER		**8.2**	20	20	2.5	2	0	9.5	2.5	4	0.5	5.5	10	10	4	2	2	7	5
VINE (3+ ft)	Botanical Name	Common Name	Species Priority Ranking	Overall % Cover																
	Lonicera japonica	Japanese Honeysuckle	1 (P)	2.1	7.5	0	0	5	2	10	10	15	0.5	0	5	10	10	5	5	0	5
		TOTAL % PRIORITY WOODY VINE SPECIES		**2.1**	7.5	0	0	5	2	10	10	15	0.5	0	5	10	10	5	5	0	5
		TOTAL % WOODY VINE COVER		**2.1**	7.5	0	0	5	2	10	10	15	0.5	0	5	10	10	5	5	0	5
TOTAL % INVASIVE COVER (Sapling/Shrub,Vine,Herbaceous)				**12.1**	27.5	20	2.5	7	2	24.5	12.5	19	1	5.5	15	20	16	7	7	7	12



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www.res.us

BOXWOOD PRM

TOTAL PERCENT INVASIVE COVER

BUCKINGHAM COUNTY, VIRGINIA

PROJECT MANAGER: RA

DRAWN: TD

JOB NUMBER: 102924

DATE: 06/08/2021

REVISIONS: TD – 08/17/2021

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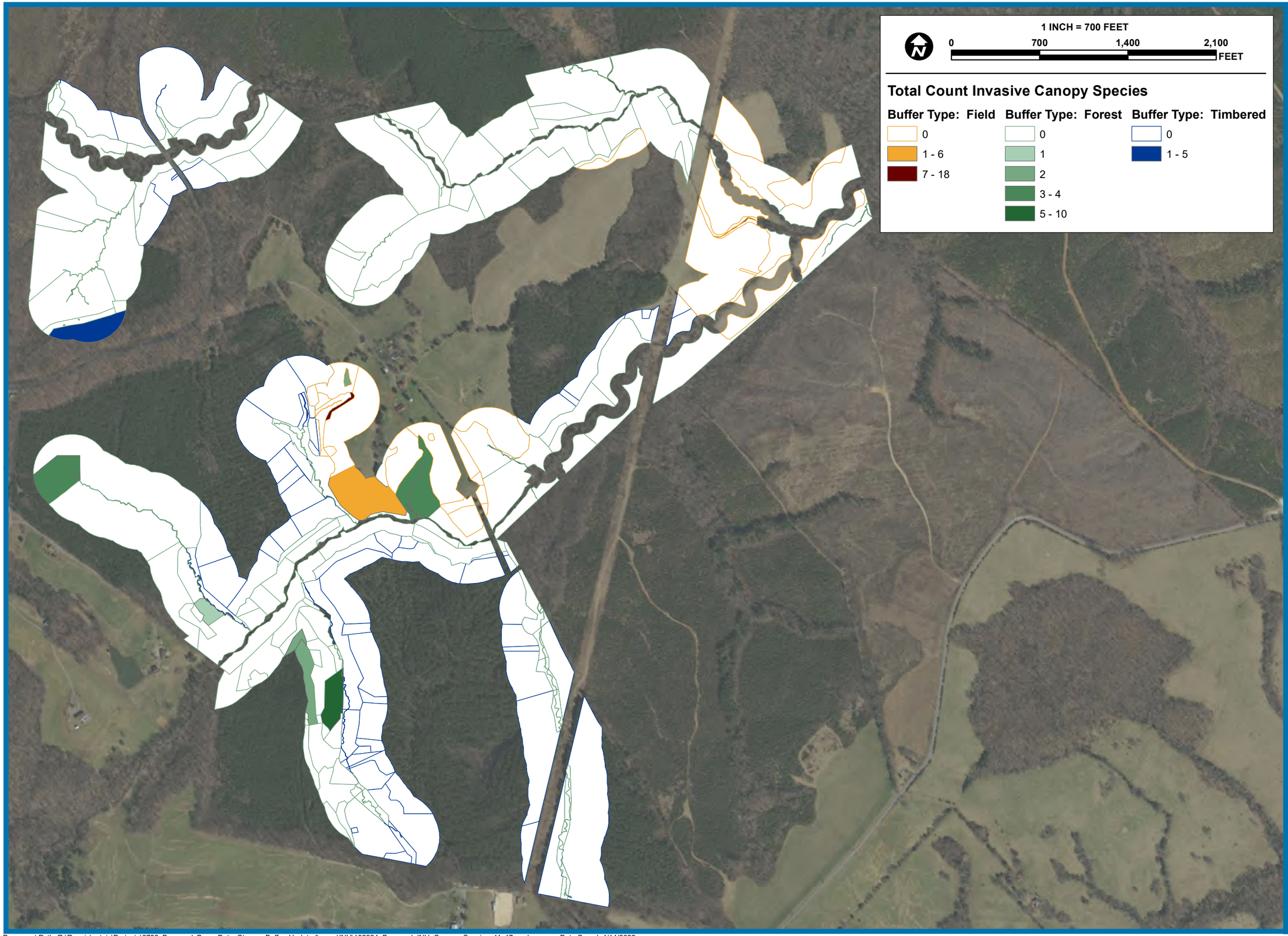

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BOXWOOD PRM

TOTAL COUNT INVASIVE CANOPY SPECIES

BUCKINGHAM COUNTY, VIRGINIA

PROJECT MANAGER: RA

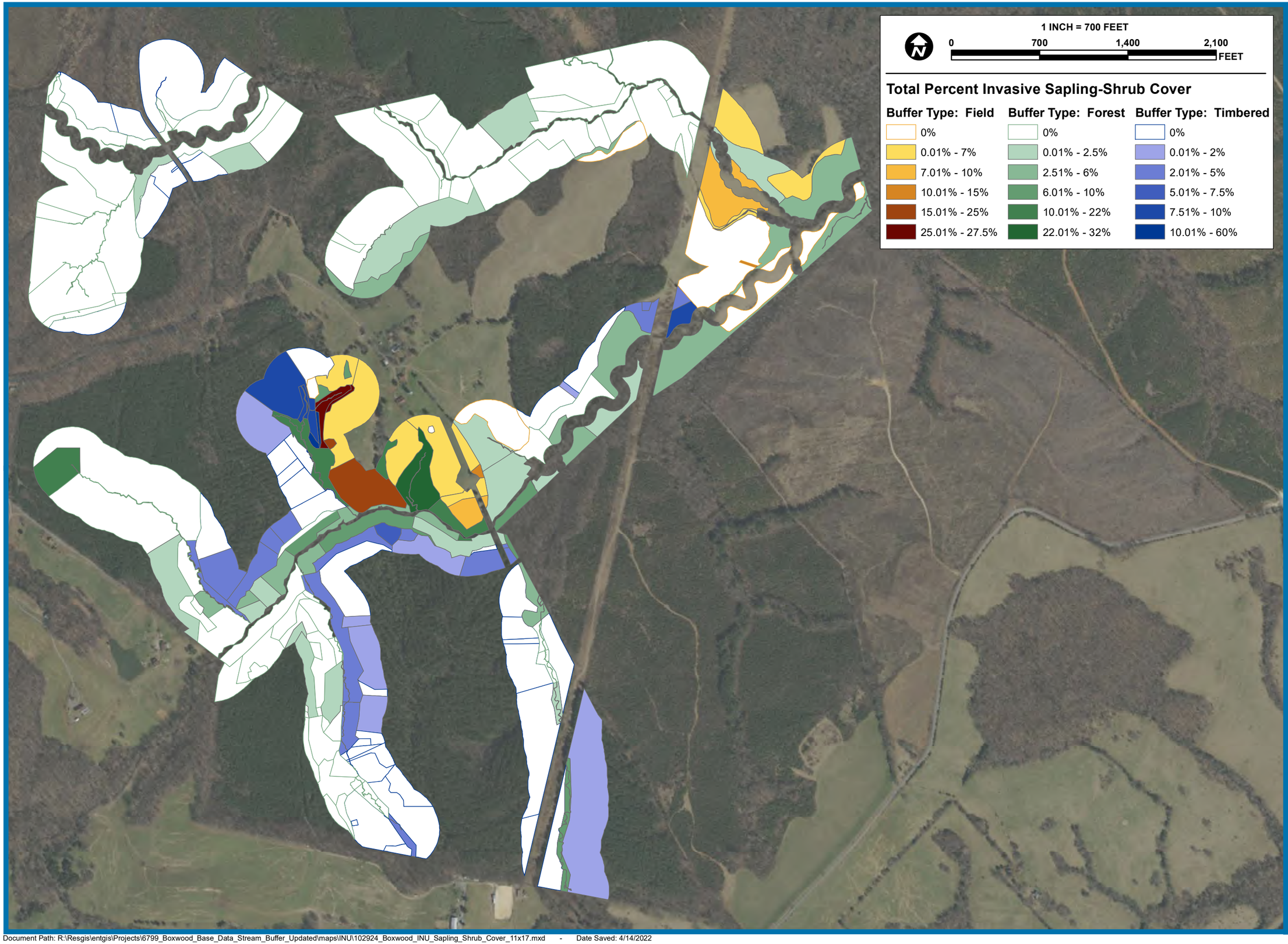
DRAWN: TD

JOB NUMBER: 102924

DATE: 06/08/2021

REVISIONS: TD – 08/17/2021

Document Path: R:\Resgis\entgis\Projects\6799_Boxwood_Base_Data_Stream_Buffer_Updated\maps\INU\102924_Boxwood_INU_Canopy_Species_11x17.mxd - Date Saved: 4/14/2022



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www.res.us

BOXWOOD PRM

TOTAL PERCENT INVASIVE SAPLING-SHRUB COVER

BUCKINGHAM COUNTY, VIRGINIA

PROJECT MANAGER: RA

DRAWN: TD

JOB NUMBER: 102924

DATE: 06/08/2021

REVISIONS:

TD – 08/17/2021

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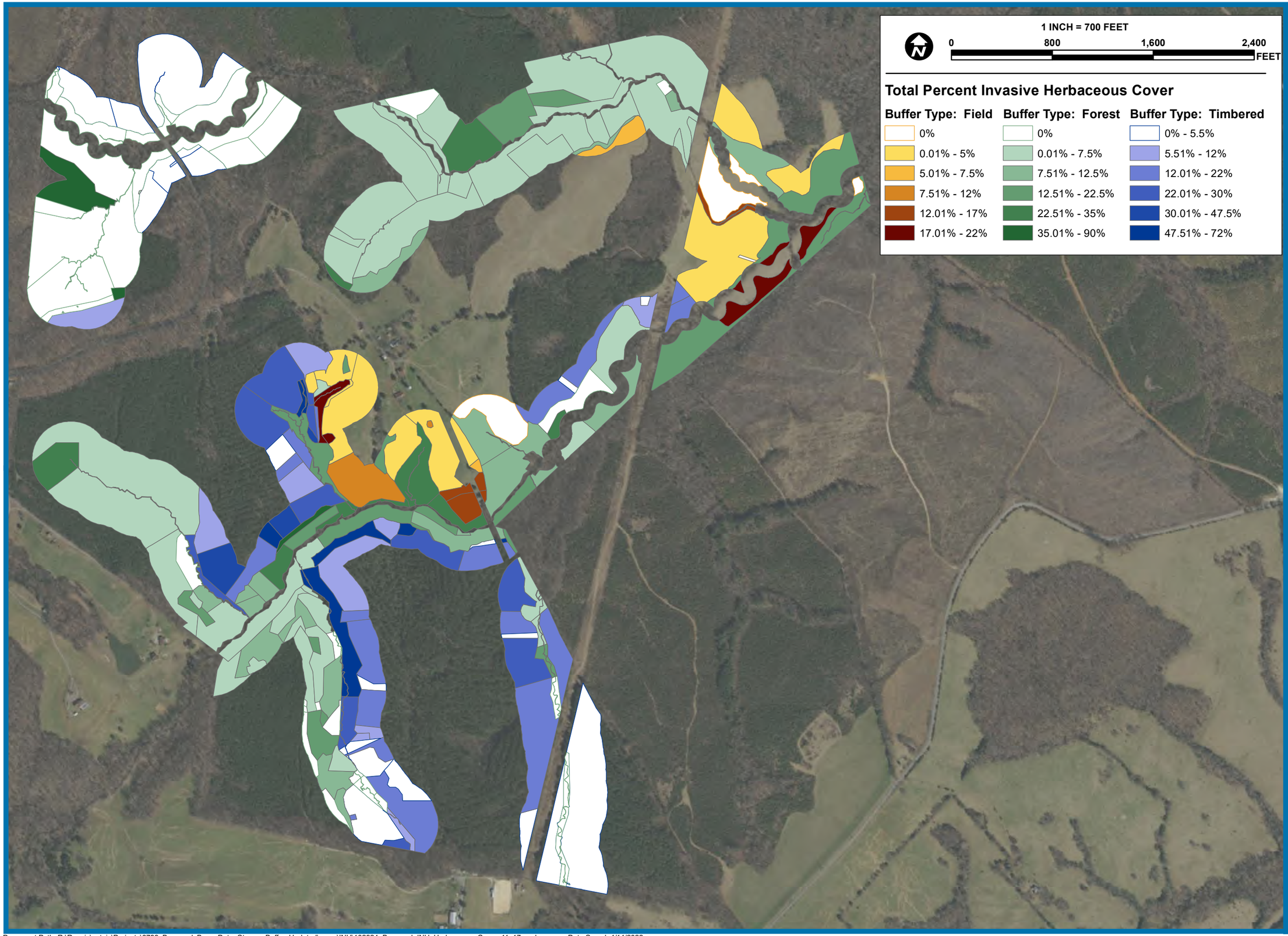

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BOXWOOD PRM

TOTAL PERCENT INVASIVE HERBACEOUS COVER

BUCKINGHAM COUNTY, VIRGINIA

PROJECT MANAGER: RA

DRAWN: TD

JOB NUMBER: 102924

DATE: 06/08/2021

REVISIONS: TD – 08/17/2021

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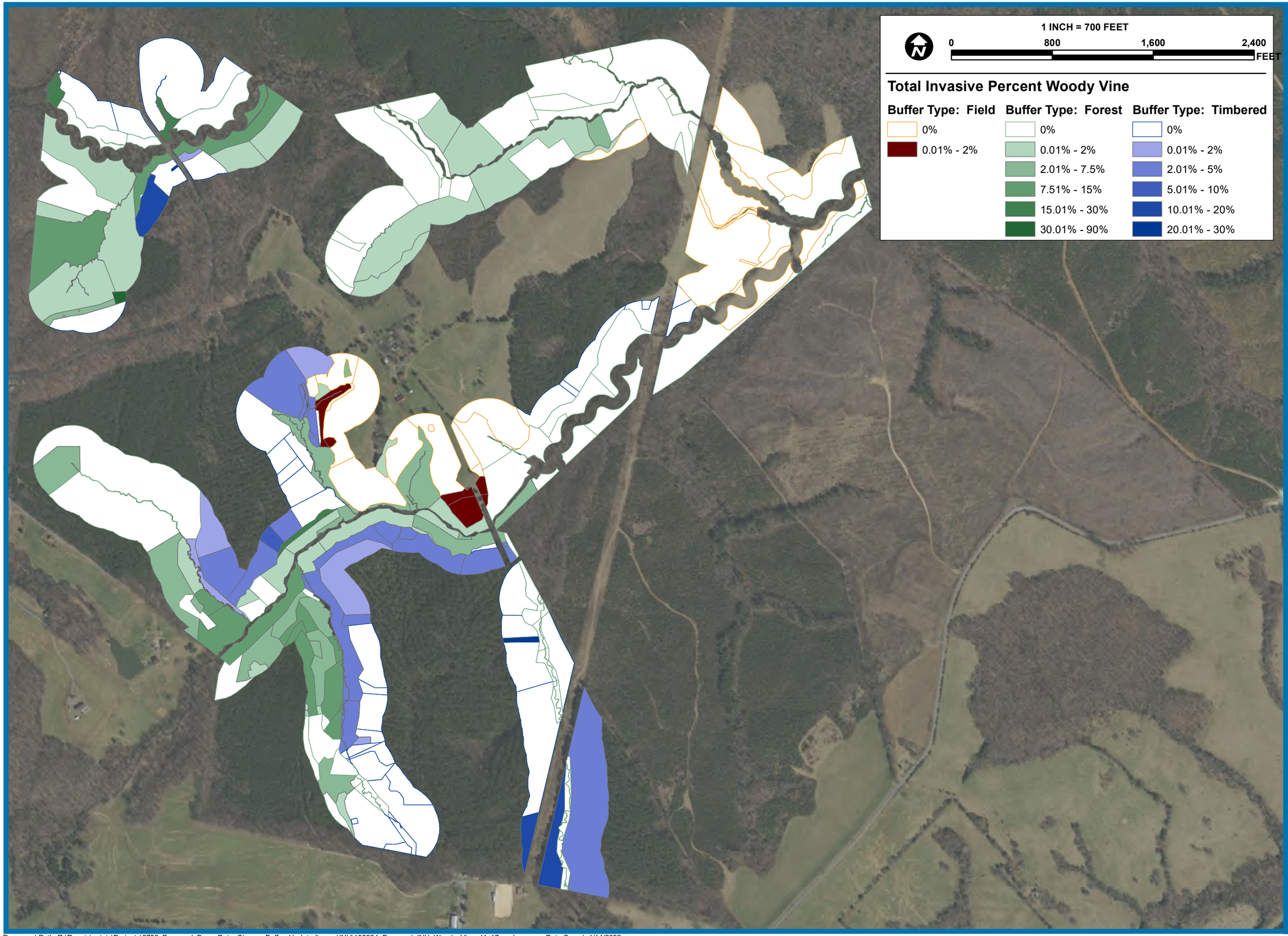

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BOXWOOD PRM

TOTAL INVASIVE PERCENT WOODY VINE

BUCKINGHAM COUNTY, VIRGINIA

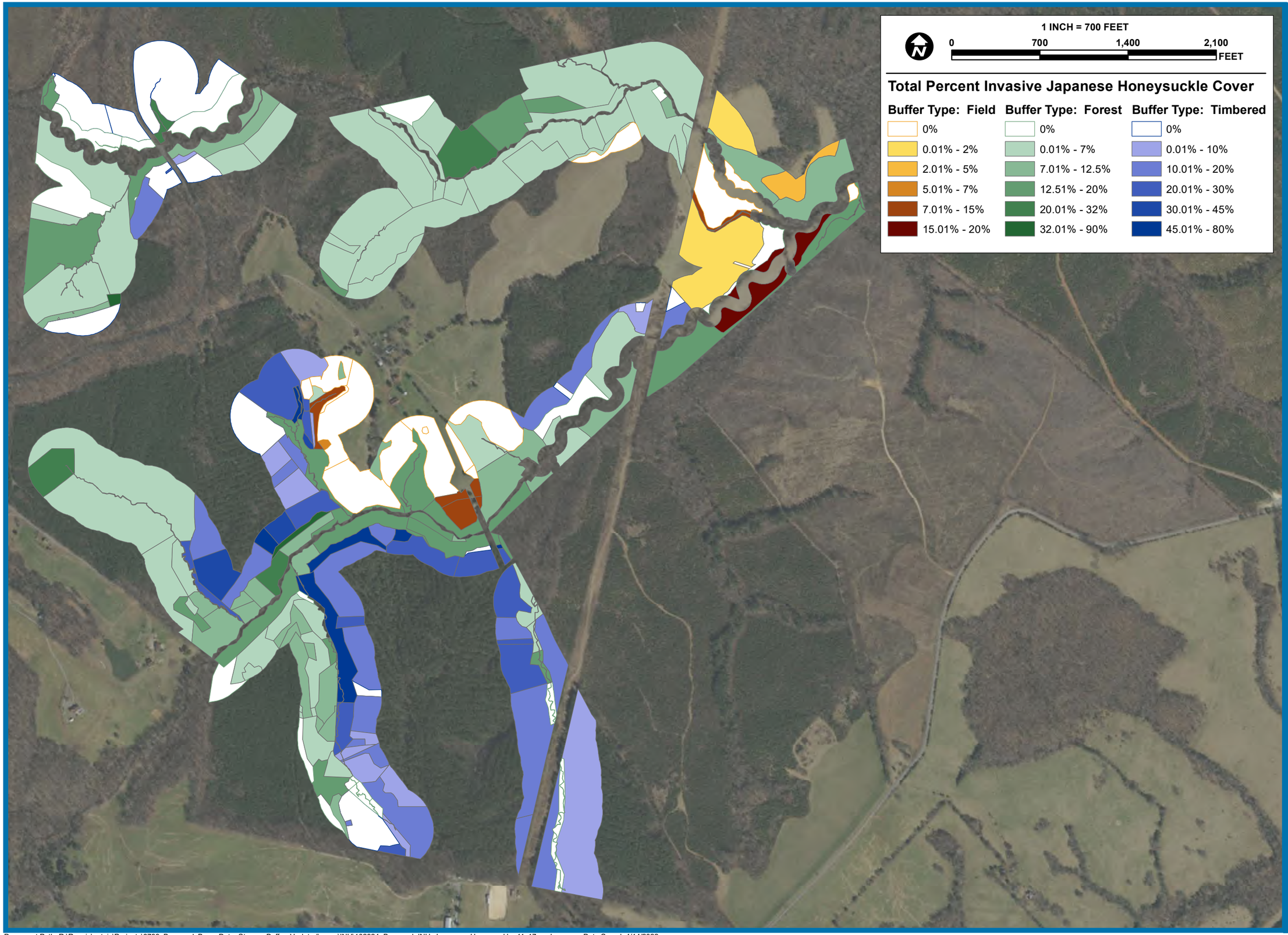
PROJECT MANAGER: RA

DRAWN: TD

JOB NUMBER: 102924

DATE: 06/08/2021

REVISIONS: TD – 08/17/2021



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BOXWOOD PRM

TOTAL PERCENT INVASIVE JAPANESE HONEYSUCKLE COVER

BUCKINGHAM COUNTY, VIRGINIA

PROJECT MANAGER: RA

DRAWN: TD

JOB NUMBER: 102924

DATE: 06/08/2021

REVISIONS: TD – 08/17/2021

Attachment H

Draft Monitoring and Maintenance Plan

1408 B Roseneath Rd
Richmond, VA 23112

Corporate Headquarters
6575 West Loop South, Suite 300
Bellaire, TX 77401
Main: 713.520.5400

DRAFT

Monitoring and Maintenance Plan (MMP)

For

BOXWOOD FARM AND GREEN RIDGE DISPOSAL & RECYCLING FACILITY
STREAM PERMITTEE RESPONSIBLE MITIGATION PROJECT

CUMBERLAND AND BUCKINGHAM COUNTIES, VIRGINIA

Permittee
Green Ridge Recycling and Disposal Facility, LLC
12230 Deerhill Road
Midlothian, VA 23112

Authorized Agent
RES, LLC
1408 B Roseneath Road
Richmond, VA 23230

April 2021

Revised December 2021

Revised April 2022

I MONITORING PLAN

A. **As-built Survey:** The as-built report will contain a survey showing finished grades and will describe in detail any substantial deviations from the approved construction plans. The survey will be certified by a licensed land surveyor or a licensed professional engineer. The as-built survey will be submitted within 90 days of the completion of construction, including planting. At least an 11x17 presentation will be provided, along with an electronic version. The as-built reports will include adequate data to show that all components have been constructed, installed, and/or planted according to final design plans.

1. As-Built report will include the following:

   a. Plan view maps of the constructed streams, and adjacent buffers that depict the Project boundaries, as-built topography, all mitigation activities (including buffer activities), and the locations of all monitoring stations (photo stations, anticipated vegetation sampling plots, stream gages, cross-sections, longitudinal profiles, pattern and bank vegetation monitoring stations, chemical and biological monitoring stations, etc.).

   b. As-built longitudinal profiles of stream reaches taken from permanent locations and overlaid with and compared to design longitudinal profiles.

   c. As-built cross-sections of stream reaches taken at locations and overlaid with and compared to design cross-sections.

   d. Photographs of the completed construction taken at permanent photo stations.

   e. Summary stream geomorphologic data presented in a side-by-side comparison of the design, reference, and as-built channels.

   f. Planting composition, locations, and densities.

B. **Performance Standards:** The stream Performance Standards should demonstrate that the stream channels that were preserved and restored meet the intended objectives and functions of the Project and attain dynamic equilibrium. The Permittee and the U.S. Army Corps of Engineers (USACE) and the Virginia Department of Environmental Quality (DEQ), (the USACE and the DEQ together referred to as the “Agencies”) will use monitoring reports, visual observations, and best professional judgment to evaluate attainment of Performance Standards and in determining whether the Project has met its goals and objectives, or whether corrective action or Adaptive Management are warranted. The following criteria will be used to assess project success:

1. Submittal of required documentation, including monitoring reports, as-built drawings, and the approved mitigation plan.

2. <u>RIPARIAN BUFFER PRESERVATION PERFORMANCE STANDARDS</u>

   a. For Preservation riparian buffers, document compliance with the INU Management Plan.

3. RIPARIAN BUFFER REPLANTING PERFORMANCE STANDARDS

a. In all Replanting Riparian Buffer areas:

1) A minimum of 400 woody stems of native tree species per acre (including volunteers) shall be achieved by the end of the first growing season following planting and maintained each monitoring year until shrub and/or canopy/crown coverage is at least 30%. Canopy coverage shall be at least 30% each monitoring year thereafter. The number of woody stems of native tree species per acre may vary under certain circumstances. Such deviations must be approved by the Agencies.

2) In the Piedmont physiographic region, the total stem area at groundline (SAG) for all woody vegetation must be greater than or equal to:

(a)	1^{st} growing season	0.6 ft^2/acre
(b)	2^{nd} growing season	1.0 ft^2/acre
(c)	3^{rd} growing season	1.5 ft^2/acre
(d)	5^{th} growing season	3.8 ft^2/acre
(e)	7^{th} growing season	8.9 ft^2/acre
(f)	10^{th} growing season	29.1 ft^2/acre

3) Document compliance with the INU Management Plan.

4. STREAM PERFORMANCE STANDARDS

a. STREAM PRESERVATION AREAS (Applies to all linear footage of credit generating preserved stream channel where stream restoration is occurring upstream and within the Project area).

1) The Bank Height Ratio shall not increase by an amount greater than 0.2 of the Year 1 Bank Height Ratio.

2) The Bankfull stream Cross-Sectional Area shall not increase or decrease by an amount greater than 25% of the as-built stream cross-sectional area.

b. STREAM RESTORATION AREAS

1) FLOODPLAIN CONNECTIVITY

(a) The reach-averaged Bank Height Ratio (average of the calculated Bank Height Ratios for all riffle cross-sections within a given reach) shall not increase by an amount greater than 0.2 of the as-built Bank Height Ratio.

2) LATERAL STABILITY/BANK MIGRATION

(a) The Total Score of Bank Erodibility Hazard Index (BEHI) for a reach shall be equal to or less than the previous year's Total Score and shall have a Total Score of "Moderate" by monitoring Year 3. For C or E stream types, a Total Score of "Low" or better shall be achieved by monitoring Year 5. For B stream type channels, a Total Score of "Moderate" or better shall be maintained throughout the remainder

of the monitoring period.

(b) The reach-averaged Width / Depth Ratio Stability Rating (average of the calculated Width / Depth Ratio Stability Ratings for all riffle cross-sections within a given reach = Width / Depth Ratio divided by the as-built Width / Depth Ratio) shall not be less than 0.7 or greater than 1.3, or each measured Width / Depth Ratio shall remain within the design conditions.

(c) The Bankfull stream Cross-Sectional Area shall not increase or decrease by an amount greater than 25% of the as-built stream cross-sectional area.

(d) The numbers of live stakes and woody stems of native tree and shrub species providing bank stabilization from the top of bank to the toe of slope shall be at least 1 living stem per 50 square feet per stream edge along the bank by the end of the first growing season following planting and maintained each monitoring year until canopy coverage is 30% for any identified reach. Canopy coverage shall be at least 30% each monitoring year thereafter.

3) VERTICAL STABILITY/BED FORM DIVERSITY

(a) The average bankfull slope of the reach shall not increase or decrease by an amount greater than 0.1 of the approved as-built slope, or the slope of the reach shall remain within the range represented in the design conditions.

(b) (Constructed riffles only) The D50 size particle remains within its approved as-built size class (silt, sand, gravel, cobble, or boulder), or the D50 size particle remains within its design size class (silt, sand, gravel, cobble, or boulder).

4) STRUCTURE STABILITY

(a) Absence of collapsed structure or repositioned header rocks.

(b) Absence of under cutting, washing around, or erosion of the bank or streambed associated with any instream structure that could lead to a collapsed structure or repositioned head rock.

(c) Maintenance of pool depth immediately downstream of the structure (where appropriate), including absence of excessive scour or deposition in pool immediately downstream of the structure.

(d) All structures are exposed, unless they are specified as buried rock or log sill structures.

5) AQUATIC HABITAT

(a) (For perennial streams only) Habitat Assessment – The Total Score of the Habitat Assessment for each reach shall be 100 or greater at Year 1, and each monitoring year thereafter the Total Score shall be equal to or greater than the previous Year's Total Score.

C. **Monitoring Provisions:** All necessary work will be conducted to monitor the project to demonstrate compliance with the success criteria established in this mitigation plan.

1. GENERAL CONDITIONS

a. Monitoring activities will occur during the 1st, 2nd, 3rd and 5th years following completion of grading. In addition, monitoring will adhere to the following schedules:

1) Monitoring of vegetation will be conducted during the growing season.

2) After Year 1, physical monitoring of stream condition (e.g. Longitudinal profiles, cross- sections, pattern monitoring) may be conducted outside of the growing season.

3) If all performance criteria have not been met in the 5th year, then a monitoring report will be required for each consecutive year until two sequential annual reports indicate that all criteria have been successfully satisfied.

4) A final monitoring report (typically prepared the 5th growing season following completion of grading) will be completed to determine final success and allow the Project to be released from monitoring requirements.

b. Monitoring may be terminated or the extent of monitoring may be reduced over part or all of the Project site at the discretion of the Agencies.

c. For any year in which planting was conducted, monitoring of vegetation will take place at least 6 months following planting.

2. MONITORING REPORTS

All monitoring reports, other than the as-built report, will include the following general items:

a. Title page, including, where applicable, the site name, monitoring year(s), Permittee identification (name, address, phone number, and email address), Agent/Report preparer identification (name, address, phone number, and email address).

b. Vicinity Map of the Project, including latitude and longitude at the entrance of the site.

c. A Section with all Performance Standards and monitoring requirements for the Project.

d. Complete maintenance summary for the Project since construction, including any adaptive management or corrective action (e.g. supplemental planting, structure repair, invasive treatment, etc.).

e. A map or drawing, based on the as-built drawings of the Project, that depicts topography, all mitigation activities, and the locations of all monitoring stations (permanent photo stations, vegetation sampling plots, stream gauges, cross-sections, longitudinal profiles, pattern monitoring stations, etc.).

f. Overall Performance Standard table for the Project, showing each plot, cell, or area and whether that area met Performance Standards during the current monitoring year and each previous monitoring year.

g. Corrective action plan, if necessary, including the current deficiencies or issues within the Project, proposed adaptive management, corrective actions, or maintenance activities, and an estimated schedule for completion.

h. The following certification statement: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

3. RIPARIAN BUFFER PRESERVATION MONITORING AND REPORTING
In Riparian Buffer Preservation Areas monitoring and reporting will be driven by the Performance Standards, and shall include the following:

a. VEGETATION

1) Monitoring: Methodology necessary to demonstrate compliance with the approved INU treatment plan.

2) Reporting: Reporting necessary to demonstrate compliance with the approved INU treatment plan. At a minimum, preservation areas should be included on an updated INU species Inventory Map for the Project that shows the current location and extent of INU species onsite and takes into account any changes in INU species populations, such as treatment that was performed in the past year.

b. VISUAL OBSERVATIONS

1) Monitoring: Visual observations of the preservation areas shall include any changes in the buffer condition and photographic documentation of the preservation areas, if they have changed.

2) Reporting: Visual observations shall be provided with each monitoring report through written discussion of the condition of preservation areas, any changes to the buffer, and photographic documentation, as necessary to further describe the buffer condition.

4. RIPARIAN BUFFER REPLANTING MONITORING AND REPORTING
In Riparian Buffer Replanting areas, monitoring and reporting will be driven by the Performance Standards, and shall include the following:

a. VEGETATION

1) Monitoring

(a) Forested or scrub/shrub (i.e. woody) monitoring plots – Riparian buffers shall be stratified into relatively homogeneous sample areas. These sample areas may correspond to planting zones, Phases, proposed habitat, cover/community type, or other characterizations. These sample areas do not have to be contiguous. Appropriate methods shall be used to randomly locate woody plots within sample areas (transects with random number generators, GIS randomization methods, etc.). Plots shall be re-established in new random locations each year.

Woody plots shall be circular in dimension and measure 1076 ft2 (100 m2), which is equivalent to a circle with a radius of 18.5 ft (5.6 m). This plot size equates to 0.025 or 1/40th of an acre, which provides a multiplier of 40x for stem density conversion to per acre values.

At a minimum, the total area covered by woody plots shall be at least 2% of the sample area. However, additional plots will be required if the number of plots is determined to not be adequate. Sampling adequacy can be determined using a variety of methods (e.g. Species-area curves leveling off, variance stabilization, etc.) and shall be included in all monitoring reports. Conversely, after 2 years of sampling, if sampling adequacy analysis indicates oversampling, the number of plots may be reduced.

The woody vegetation data collected shall include identification of all live woody stems found in the sampling plot by scientific and common name with corresponding wetland indicator status, native status, stem count, dominant species, stem diameter at groundline (see below), overall canopy coverage, or others, as required by the Performance Standards.

The stem diameter at groundline (SDG) of all individual woody vegetation (any height or diameter) including trees and shrubs should be measured to the nearest 0.1 inch. If significant swelling or malformation is present, the SDG should be measured directly above where the stem returns to normal taper. For multi-stemmed vegetation, the SDG for each individual stem should be measured and combined following conversion to stem area at groundline (SAG). This effectively forms a single stem for each individual. Total SAG shall be presented as ft^2/acre for each plot and average SAG with measures of variance (e.g. standard deviation) shall be presented for each sample area.

2) Reporting

The monitoring report shall include raw and summary vegetation data. The raw data can be submitted as a supplementary Excel file and should include all vegetation data from all plots. The summary data shall present the vegetation data summarized (e.g. averages, variance, totals, etc.) for each strata (homogenous sample area described above) preferably in table form. These summary tables shall include comparisons of summarized data to all applicable Performance Standards. For Riparian Buffer Replanting areas these summary tables may include the following data; woody stem density (stems/acre), canopy coverage (percentage), SAG (ft^2/acre), and location and cover of INU species.

b. PHOTOGRAPHS

Visual observations shall be documented and provided with each monitoring report with the following:

1) Monitoring

Either ground level photographs will be taken facing north, south, east, and west, from stations located adjacent to each vegetation plot or one color aerial photograph (8" x 10" or larger) depicting the entire site will be taken. An aerial photograph should be taken after site construction (including planting) and again in the 5th monitoring year. Existing aerial images (if current) may be substituted (i.e. Google Earth images or state aerial images). One aerial photograph may be used for the whole project site, including any riparian mitigation areas.

2) Reporting

For the current monitoring year, either the ground level photographs or the color aerial photograph (if applicable) will be provided with the report.

5. STREAM RESTORATION MONITORING AND REPORTING

a. BANKFULL EVENT DOCUMENTATION

For stream Restoration activities, stream gauge data and documentation of any bankfull events will be provided, as recorded by onsite stream gauge(s) and/or onsite or nearby precipitation data.

b. CROSS-SECTIONS

Where Performance Standards indicate that channel dimension will be measured and analyzed (Width/Depth Ratio, Bank Height Ratio, Entrenchment Ratio, Cross-Sectional Area, or others), the following shall occur:

1) Monitoring

Permanent cross-sections shall be established to ensure that the same locations are used each monitoring year. A minimum of one cross-section in appropriate credit generating stream preservation reaches (see Performance Standards), and one cross-section per 500 linear feet in restoration reaches will be required. In restoration reaches, cross- sections should include at least 1 riffle and 1 pool cross-section on each reach, and a proportionate amount of riffle and pool cross-sections on each reach. Total number required will vary depending on project length and complexity. Additional cross- sections may be required to show areas where aggradation, degradation, erosion, and mid-channel bars have developed. Cross-sectional measurements shall include streambanks, streambed, water surface, bankfull, and adjacent floodplain. The bankfull elevation in the channel shall be measured at the as-built monitoring, and the as-built bankfull shall be used as the bankfull elevation in each subsequent monitoring event. When calculating the Entrenchment Ratio, the floodplain may be measured separate from the cross-section during field data collection. Ground level photographs will be taken annually during leaf-off conditions of the current monitoring year at all cross-sections. These photographs will be taken facing upstream at the cross-section, downstream at the cross-section, and left bank and right bank, showing the riparian buffer area and stream bank.

2) Reporting
Cross-section reporting shall include a graph of the current monitoring year's cross-section, with the cross sections for all previous monitoring years overlain. Callouts on the graph shall be appropriate for the Performance Standards, and may include bankfull elevation, bankfull width, bankfull depth, flood prone elevation, flood prone depth, top of bank location and elevation, or others, as appropriate. A table of the appropriate Performance Standard parameters will be provided, showing all individual cross-section calculations and a reach-averaged calculation, and comparing the as-built to the current year's monitoring data. Ground level photographs shall be provided with each monitoring report, according to the monitoring requirements.

c. LONGITUDINAL PROFILE
Where Performance Standards indicate that channel bed form or vertical stability parameters will be measured and analyzed (Pool-to-pool spacing, max pool depth, slope, riffle slope, or others), the following shall occur:

1) Monitoring
A surveyed longitudinal profile will be conducted of the reach in the thalweg of the channel, from 20 feet upstream of the start of the reach to 20 feet downstream of the end of the reach (unless property boundaries, stream confluences, or other constraints are present). Longitudinal profile measurements should include the locations, depths, and slopes of riffles, runs, pools, and glides, and representative water surface elevation and bankfull surface elevation lines.

2) Reporting
Longitudinal profile reporting shall include a graph of the current monitoring year's profile, with the profiles for all previous monitoring years overlain. Callouts on the graph shall be appropriate for the Performance Standards, and may include bankfull elevation, water surface elevation, locations of facets, or others, as appropriate. Pool-to-pool spacing is measured from the top of pool to top of pool. Max pool depth is the pool depth measured from the reach bankfull elevation to the thalweg in the deepest part of the pool. Channel bed slope shall be measured from the top of a riffle to the top of another riffle over a channel length of at least 10 bankfull widths. Riffle slope is measured from the top of riffle to the bottom of the same riffle (top of run). A table of the appropriate Performance Standard parameters will be provided in each monitoring report, showing all individual profile calculations and a reach-averaged calculation, and comparing the as-built to the current year's monitoring data for each parameter.

d. PATTERN
Where Performance Standards indicate that lateral stability or bank migration parameters will be measured and analyzed (Meander Width Ratio, Sinuosity, Radius of Curvature, Bank Erodibility Hazard Index (BEHI), or others), the following shall occur:

1) Monitoring
Permanent pattern monitoring stations shall be established to ensure that the same locations are used each monitoring year. A minimum of three pattern monitoring stations shall be established to measure Meander Width Ratio, Radius of Curvature, or BEHI. A minimum of one pattern monitoring station shall be established to measure sinuosity. Total number of monitoring stations required will vary depending on project length and complexity. Sinuosity shall be assessed along a stream reach that is a minimum of 10 bankfull widths in length. When BEHI is conducted, all individual BEHI

metrics shall be measured at each permanent station in the field during each monitoring event.

2) Reporting
Pattern reporting shall include a table of the appropriate Performance Standard parameters, showing all individual pattern measurements and a reach-averaged calculation or ratio (if applicable), and comparing the as-built to the current year's monitoring data for each parameter. BEHI reporting shall include providing the current monitoring year's BEHI worksheet, and a table of the total BEHI score for each monitoring year from as-built to the current year.

e. STREAM BANK VEGETATION
Where Performance Standards indicate that stream bank vegetation will be measured and analyzed (Livestakes, Herbaceous Coverage, Bare Ground Coverage, or others), the following shall occur:

1) Monitoring
Stream bank vegetation plots (10 square feet in size or larger) shall be located on each bank representative permanent cross-section or pattern monitoring stations.

2) Reporting
Stream vegetation reporting may include a table of the results of the vegetation surveys, including per plot reporting of the species and number of livestakes or woody stems, extrapolated number livestakes per 50 square feet, estimated herbaceous coverage, and/or estimated bare ground coverage.

f. MATERIALS
Where Performance Standards indicate that stream bed materials will be measured and analyzed (D50 particle size, or others), the following shall occur:

1) Monitoring
Conduct the Wolman pebble count technique within a representative amount of constructed riffles within a reach. Pebble counts may be associated with representative permanent cross-section or pattern monitoring stations, or set up within the longitudinal profile at independent monitoring stations.

2) Reporting
Materials reporting shall include a table of the representative D50 of the constructed riffle pebble count for each reach during each monitoring year, and the size class represented by the as-built and current monitoring year D50.

g. STRUCTURES
Where Performance Standards indicate that structure stability will be evaluated and analyzed, the following shall occur:

1) Monitoring
Ground level photographs, documenting the structural integrity and function of each instream structure, will be taken looking upstream at the structure, showing at a minimum the instream structure at the thalweg (or location of buried sill), the upstream and downstream channel, and the immediately adjacent stream banks to bankfull elevation, where possible.

2) Reporting
Ground level photographs shall be provided with each monitoring report, documenting structure conditions during the current monitoring year. The report shall note any structural failures or issues, as listed in the Performance Standards.

h. AQUATIC HABITAT
Where Performance Standards indicate that aquatic habitat will be evaluated and analyzed, the following shall occur:

1) Monitoring
A habitat assessment shall be conducted at either each benthic macroinvertebrate monitoring station (as outlined below), or at a minimum one representative monitoring station per reach. Procedures and forms for habitat assessment can be located in the DEQ's Biological Monitoring Program Quality Assurance Project Plan for Wadable Streams and Rivers (DEQ, 2008) Appendix B (iii) or EPA's Rapid Bioassessment Protocol for Use in Streams and Wadable Rivers (Barbour et. al, 1999) Chapter 5.

2) Reporting
Habitat reporting shall include providing the current monitoring year's Habitat Assessment worksheet for each reach. A table shall be provided in the monitoring report that shows the habitat assessment total score for all monitoring years for each reach.

i. CHEMICAL AND BIOLOGICAL MONITORING
The objective of benthic macroinvertebrate sampling is to allow for comparison between projects involving stream channel restoration activities; to identify issues that may need to be addressed in restoration design; to determine realistic expectations for the post-restoration aquatic community; and to inform future stream restoration designs and efforts. The following monitoring and reporting shall occur during every monitoring year within stream restoration reaches onsite:

1) Monitoring

(a) Monitoring events shall occur consistently in either spring or fall of each monitoring year. Spring sampling shall be conducted between March 1 and May 31. Fall sampling shall be conducted between September 1 and November 30. Water chemistry and benthic samples shall be collected simultaneously at each of the monitoring locations. The number and location of monitoring stations shall remain consistent throughout the monitoring period.

(b) Scientific Collection permits for conducting benthic sampling shall be obtained from Virginia Department of Game and Inland Fisheries (information available at http://www.dgif.virginia.gov/permits/guide.asp). All field sampling as well as laboratory sample processing shall be performed by or under supervision of an aquatic biologist. As required by the collection permit, all sampling data shall be submitted to VDGIF using their annual reporting protocol.

(c) Chemistry – Temperature, total dissolved oxygen, pH, and conductivity shall be collected at each designated monitoring location site using a multi-probe meter. Detailed information on testing, inspection, and maintenance requirements of all multi- probe meters for measurement of stream physicochemical parameters can

be found in Section IV of the Standard Operating Procedures Manual for the Department of Environmental Quality Office of Water Quality Monitoring and Assessment Program (DEQ, 2010).

(d) Biological – A quantitative survey for benthic macroinvertebrates shall be conducted at permanent monitoring locations. Benthic macroinvertebrates shall be identified at least to the genus level. Detailed procedures and methods for biological monitoring, field methods, laboratory methods, and quality assurance can be found in Biological Monitoring Program Quality Assurance Project Plan for Wadable Streams and Rivers (DEQ, 2008). This document shall serve as the basis for the field monitoring and laboratory data collection methods. Two sampling procedures are presented:

i. Single Habitat is used for streams in which riffles or riffle/pool complexes with appropriate substrate (cobble) are available for sampling and are large enough so that at least 1m² of the substrate can be sampled.

ii. Multiple Habitat is used in cases where no or few riffles are present, the riffles in the reach are too small and/or too few to sample 1m² of substrate. Multi-habitat sampling is most commonly performed in, but not limited to, low gradient or coastal plain streams.

2) Reporting

(a) Benthic Macroinvertebrate reporting shall include a table showing the VSCI or CPMI total score for all monitoring years for each reach.

j. For non-coastal streams, use the resulting benthic macroinvertebrate data to calculate the Stream Condition Index for Virginia Non-Coastal Streams (VSCI). This Stream Condition Index for Virginia Non-Coastal Streams (September 2003) is found at: http://www.deq.virginia.gov/Portals/0/DEQ/Water/WaterQualityMonitoring/BiologicalMonitoring/vsci.pdf. An Access database used to calculate VSCI and CPMI can be provided upon request.

ii. For coastal streams, use the resulting data to generate a Coastal Plain Macroinvertebrate Index (December 2013) found at http://www.deq.virginia.gov/Portals/0/DEQ/Water/WaterQualityMonitoring/Probab ilisticMonitoring/vcpmi.pdf. An Access database used to calculate VSCI and CPMI can be provided upon request.

6. <u>NON-CREDIT GENERATING STREAM PRESERVATION MONITORING AND REPORTING</u>

a. VISUAL OBSERVATIONS

1) Monitoring: Visual observations of the preservation areas shall include any changes in the stream and buffer condition and photographic documentation of the preservation areas, if they have changed.

2) Reporting: Visual observations shall be provided with each monitoring report through written discussion of the condition of preservation areas, any changes to the stream and buffer, and photographic documentation, as necessary to further describe the stream and buffer condition.

II MAINTENANCE PLAN

The project will be maintained consistent with this plan, in addition to construction, monitoring, and adaptive management. Maintenance activities will be continued until the Project-related permit is closed and the Long-Term Steward assumes their responsibilities. Deviation from the maintenance provisions in the approved plan requires review and written approval from the Agencies.

The following regular maintenance and bookkeeping will be conducted for the Project, at a minimum:

- Maintain a Project activities ledger, which describes the date, purpose, description of activities performed, and outcome of each maintenance visit. This ledger is not required to be submitted on a regular basis, but may be requested by the Agencies at any time;
- Conduct annual inspections of all mitigation areas, including preservation areas, particularly during non-reporting years of Project operation;
- Maintain and repair all mitigation areas to meet or exceed the objectives and functions of the Project, including all mitigation-related structures;
- Proactively manage INU species on the Project site in accordance with the approved INU Management Plan and Adaptive Management Plan;
- Ensure that no trespass, illegal dumping, or trash accumulation occurs on the Project site;
- Other maintenance responsibilities to Project operation and adaptive management.

III INVASIVE, NUISANCE AND UNDESIRABLE (INU) SPECIES MANAGEMENT PLAN

1. See the Boxwood PRM INU Management Plan (Appendix G in the Concept Mitigation Plan).

IV ADAPTIVE MANAGEMENT PLAN

The Project will be maintained consistent with this plan during the monitoring and maintenance period. The Adaptive Management Plan (AMP) is a strategy to address changes in site conditions or other components of the Project, including the party or parties responsible for implementing any necessary adaptive management measures. The AMP shall be implemented using the outlined strategies until the Project -related permit is closed and the Long-Term Steward assumes their responsibilities. Deviation from the AMP requires review and written approval from the Agencies.

A. Changes During Various Project Phases

1. Pre-Construction
   Aquatic and riparian areas are dynamic ecological systems, particularly those that are impaired and/or located within actively managed landscapes, such as a farm. As a result, some Project site conditions may change between the time of initial design and construction/implementation. Therefore, prior to the start of stream restoration construction, buffer planting or INU treatment activities, the Project will be walked to evaluate the current existing conditions, as compared to the conditions present during the initial data collection efforts.

   Any changes in existing conditions that would affect the proposed design or implementation strategy will be documented and incorporated into the Final Mitigation Work Plan (FMWP) and/or the post-construction as-built. Significant changes that would substantially alter the mitigation design or credit yield will be submitted to the Agencies through a revision to the FMWP for review and approval prior to incorporating the proposed change. Relatively minor changes will be documented and reflected on the post-construction as-built, along with a discussion of the site conditions that had changed, and any resulting changes in mitigation design or credit yield.

2. During Construction
   Any changes in Project site conditions encountered during stream restoration construction or initial buffer planting or INU treatment implementation that necessitates a change in mitigation design or affects credit yield will be documented and reflected on the post-construction as-built, along with a discussion of the site conditions that had changed, and any resulting changes in mitigation design or credit yield.

3. Post-Construction
   Upon completion of the planned site work, the post-construction monitoring and reporting protocols will be implemented. During monitoring, adaptive management protocols will be employed if conditions on the Project site are identified that would result in failure, or could, if left unaddressed, result in failure of one or more Performance Standards.

   The planning, coordination, and implementation of a prescribed remedial action will depend on the nature and scale of the issue meant to be addressed. Relatively minor repairs and maintenance to mitigation elements and other structures associated with the Bank site will be implemented on an as-needed basis and reported in the maintenance section of the annual report. Addressing more significant issues that have the potential to substantially affect the number of credits generated or threaten the long-term viability of the mitigation will require timely coordination with the Agencies. If issues of this nature arise, the Permittee will contact the Agencies as soon as is reasonably possible after

becoming aware of the issue and will work with the Agencies to develop a specific remediation plan for the particular issue.

In the event any adaptive management of the Site occurs during a given monitoring year, the practices employed will be detailed in the annual monitoring report. Should portions of the Project site not meet Performance Standards an area-specific corrective action plan will be submitted in the annual monitoring report detailing the likely reasons for failure and all remedial actions taken and/or proposed to be taken in the following year(s). Remedial actions will be designed with a goal of meeting any failing Performance Standards as soon as practical, while also ensuring the long-term sustainability of the Project site. The remedial action plan will include identification of the likely causes of failure, remedial design approach, work schedule, and monitoring criteria that will consider physical and climatic conditions.

B. Changes to Performance Standards

Changes to the selected metrics may be permitted as outlined below, in consultation with the Agencies, if it is determined during the monitoring period that one or more of these metrics is not accurately reflecting the conditions that are being observed on the Project site.

If it is determined that the Project site will not meet one or more Performance Standards during a given monitoring year because the chosen metrics are not accurately reflecting site conditions, additional data may be collected and submitted in the annual monitoring report to support the determination that the given element of the Project is successful. In this instance, the data associated with the failed performance standard must be submitted along with the supplementary data and a justification as to why the supplementary data more accurately reflects the site conditions. Acceptance of the supplementary data and all decisions regarding achievement of performance standards at the discretion of the Agencies

Subsequent to the approval of this plan, a permanent change to one or more of the metrics chosen to evaluate project success may be requested. In this instance, a written request shall be submitted to the Agencies seeking formal approval for the change. The request should provide justification as to why the initially selected standard is not able to accurately reflect site conditions and reasons why the proposed standard is better suited. If accepted by the Agencies, the change will be incorporated into the future monitoring reports.

C. Changes to Monitoring and Reporting Requirements

Changes to the monitoring and reporting requirements may be permitted as outlined below, in consultation with the Agencies, if unforeseen circumstances prohibit the safe and timely collection of data, or if it is determined that a monitoring procedure or reporting element is not accurately reflecting the conditions that are being observed on the Project site.

If, during the active site monitoring period, certain aspects of the required Project site monitoring are not able to be completed in a safe and timely manner due to unforeseen circumstances, a request for relief from the associated monitoring requirement may be submitted to the Agencies. The request should be submitted as soon as is practical, once the issue that would prohibit the completion of the required monitoring becomes known. Any requests for relief will be considered on a case-by-case basis, based on the merits of the situation. Relief from, or any other accommodations granted with regards to monitoring and reporting requirements, is at the discretion of the Agencies.

Subsequent to the approval of this plan, a permanent change to one or more of the monitoring and reporting requirements may be requested. In this instance, a written request should be submitted to the Agencies seeking formal approval for the change. The request should provide justification as to why the monitoring or reporting requirement is not able to accurately reflect site conditions or is otherwise unnecessary or adverse to the ecological goals of the Project. Any alternative or replacement monitoring and reporting requirements should be provided, with justification as to why the proposed approach is better suited for the Project site. If accepted, the change will be incorporated into the future monitoring reports.

D. Changes To Various Mitigation Elements

1. Stream Restoration Areas
   Remedial actions will be implemented throughout the monitoring period if conditions are identified within any of the stream restoration areas that would result in failure, or could, if left unaddressed, result in failure of one or more Performance Standards. This assessment could be based on visual assessment or evaluation of other monitoring data. The prescribed remedial action will depend on the nature and scale of the issue. For example, if minor and localized bank erosion or channel aggradation or scouring is identified, repairs to stabilization measures, supplemental livestake plantings, minor bank grading and/or adjustments to in-stream structures may be implemented, as appropriate. Remedial actions of this nature will be implemented on an as-needed basis and reported in the maintenance section of the annual report. If significant stream bank or channel stability issues are identified and/or if particular reaches exhibit re-occurring issues in terms of meeting Performance Standards, then an area-specific restoration plan will be devised in coordination with the Agencies and submitted for approval before implementation.

2. Riparian Buffer Areas
   Remedial actions will be implemented throughout the monitoring period if conditions are identified within any of the riparian buffer areas that would result in failure, or could, if left unaddressed, result in failure of one or more Performance Standards. This assessment could be based on visual assessment, or an evaluation of woody stem or INU vegetation data, or other monitoring data. The prescribed remedial action will depend on the nature and scale of the issue. For example, if stem densities are below the success threshold, supplemental planting may occur at a seasonally appropriate time. If ground cover is sparse, a reseeding could occur in conjunction with soil testing and soil amendments, if needed. Relatively minor issues will be addressed with remedial actions on an as-needed basis and reported in the maintenance section of the annual report. If significant issues are identified in terms of stem density or development, or control of INU species, that would substantially affect the number of credits generated at the Project site or threaten the long-term viability of the mitigation, then an area-specific restoration plan will be devised in coordination with the Agencies and submitted for approval before implementation.

V FINANCIAL ASSURANCES

A. Performance Bond - A performance bond in the amount of $526,090 will be secured for the initial construction of the PRM site. The bond amount is sufficient to secure replacement compensatory mitigation through the in-lieu fee program. The full amount of the bond will be released upon submittal and approval of the as-built survey and report.

B. Maintenance/Operation Bond – A maintenance and operation bond in the amount of $91,500 will be secured to cover full cost of monitoring and maintain the PRM site from time of construction until approval of final monitoring report. The following is a proposed schedule for release of the bond: 25% release upon approval of each monitoring report during years 1, 2, 3 and 5.

C. Long-Term Management Fund (LTMF) – An endowment will be established upon as-built survey and report approval for the long-term management of the PRM site. The endowment amount will be $101,885 and is based on an annual funding amount of $3,566 with an assumed capitalization rate of 3.50% to cover annual inspections and reporting, administrative costs, and replacement of items noted in the Long-Term Management Plan.

Attachment I

Draft Long-Term Management Plan

1408 B Roseneath Road
Richmond, VA 23230

Corporate Headquarters
5020 Montrose Blvd. Suite 650
Houston, TX 77006
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DRAFT

Long-Term Management Plan (LTMP)

For

BOXWOOD FARM
PERMITTE RESPONSIBLE MITIGATION
BUCKINGHAM COUNTY, VIRGINIA

Permittee
Green Ridge Recycling and Disposal Facility, LLC
12230 Deerhill Road
Midlothian, VA 23112

Authorized Agent
RES
1408 B Roseneath Rd.
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December 2021

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I Introduction

A Purpose of Establishment

The Boxwood Farm site will be established as a Permittee Responsible Mitigation (PRM) site to compensate for unavoidable impacts to streams, and to preserve, restore, and enhance streams and their associated buffers. This project has the ability to provide up to 15,396 stream credits using the Unified Stream Methodology. The Boxwood Farm stream mitigation site is being established as a PRM site to compensate for proposed stream impacts associated with the construction of Green Ridge Recycling and Disposal Facility in Cumberland County, Virginia.

B Purpose

The purpose of this LTMP is to ensure the mitigation site is managed, monitored, and maintained in perpetuity. This management plan establishes objectives, priorities and tasks to monitor, manage, maintain and report on the waters of the U.S. and/or State Waters and their associated protected buffers, covered species and covered habitat on the mitigation. This LTMP will be implemented in accordance with the requirements for the obtained Corps Individual Permit and Virginia DEQ Individual Permit, Final Mitigation Plan, and the site protection instrument (declaration of restrictions) covering the mitigation site.

C Long Term Steward and Responsibilities

At this time, HGS, LLC has been designated the temporary Long-Term Steward for the mitigation site. The Long-Term Steward, and subsequent Long-Term Stewards upon transfer, shall implement this LTMP, managing and monitoring the mitigation site in perpetuity to preserve its habitat and conservation values in accordance with the IP and Final Mitigation Plan, conservation easement and/or declaration of restrictions, and the LTMP. Long-term management tasks shall be funded through the Long-Term Management Fund. The Long-Term Steward must maintain a copy of the IP, Final Mitigation Plan, and all addendums associated with the mitigation site including all deed restrictions and easements. The Long-Term Steward shall be responsible for providing an annual report to the Norfolk District U.S. Army Corps of Engineers ("Norfolk District Corps") and the Virginia DEQ detailing the time period covered, an itemized account of the management tasks and total amount expended. Any subsequent grading, or alteration of the mitigation site's hydrology and/or topography by the Long-Term Steward or its representatives must be approved by the Norfolk District Corps with Virginia DEQ to be notified and the necessary permits, such as a Section 404 permit and/or Virginia Water Protection Permit, must be obtained if required.

D Eminent Domain

If the mitigation site is taken in whole or in part through eminent domain, the Long-Term Steward shall use all monies it receives as compensation for lands and all associated services and values taken to provide replacement compensation within the same Geographic Service Area subject to Norfolk District Corps approval with Virginia DEQ to be notified. The Norfolk District Corps and the Virginia DEQ will have the right to participate in any proceeding associated with the determination of the amount of such

compensation. Replacement compensation may be determined in consultation with the Norfolk District Corps and the Virginia DEQ.

II Property Description A Setting and Location

The mitigation site is located in Buckingham County, in the Commonwealth of Virginia, and is located on Tax Parcel ID No. 84-34 consisting of 682.94 acres. The mitigation site is shown on the general Vicinity Map and the Aerial Photography-Project Overview Map on the Green Ridge Recycling & Disposal Stream Mitigation plan set. The general Vicinity Map shows the mitigation site location in relation to cities, towns, or major roads, and other distinguishable landmarks.

B Cultural Resources

An architectural resource is located on the Boxwood Farm property. However, the stream mitigation work will not take place immediately near the resource and will not adversely affect the historical resource.

C Existing Easements

Please see the Existing Conditions Map found in the Final Mitigation Plan.

D Existing Man-Made Structures

There are a few man-made structures located on the same parcel as the mitigation area and they are mostly housing and domestic structures. The actual mitigation areas are not located near these structures, and they will not be affected by this project. The actual mitigation area is located within cleared fields and forested areas. Similarly, while roads, fences or gates may exist across the property, they are not located within the immediate mitigation area and will not be affected by the proposed mitigation work.

III Habitat and Species Descriptions

A Baseline Description of Biological Resources on Mitigation Site

Habitat within the PRM site is made up of mostly of forested habitat with smaller portion of cleared areas maintained as fields. Evidence of recent timbering was noted in portions of the project area. The streams located on site have been impacted by the historic land clearing and agricultural practices that have occurred on site and in the vicinity on adjacent properties. These streams have seen increased runoff resulting in increased incision of the stream bed and widening and erosion of the stream banks. Baseline conditions are outlined in the Final Mitigation Plan. There are existing pockets of wetlands within the proposed PRM site.

B Final Map

Please see the Final Mitigation Plan.

IV Management and Monitoring

The overall objective of long-term management is to foster the long-term viability of the mitigation site's streams and their associated buffers, and any listed species/habitat. Routine monitoring and minor maintenance tasks are intended to assure the viability of the mitigation site in perpetuity.

A Biological Resources

The approach to the long-term management of the mitigation site's biological resources is to conduct annual mitigation site examinations and monitoring of selected characteristics to determine stability and ongoing trends of the preserved, restored, and enhanced streams and their associated buffers. Annual monitoring will assess the mitigation site's condition, degree of erosion, establishment of Invasive, Nuisance, and Undesirable (INU) or non-native species, water quality, fire hazard, and/or other aspects that may warrant management actions. While it is not anticipated that major management actions will be needed, an objective of this LTMP is to conduct monitoring to identify any issues that arise; and use adaptive management to determine what actions might be appropriate. Those chosen to accomplish monitoring responsibilities will have the knowledge, training, and experience to accomplish monitoring responsibilities.

Adaptive management means an approach to natural resource management which incorporates changes to management practices, including corrective actions as determined to be appropriate by the Norfolk District Corps and the Virginia DEQ in discussion with the Long-Term Steward. Adaptive management includes those activities necessary to address the effects of climate change, fire, flood, or other natural events. Before considering any adaptive management changes to the LTMP, the Norfolk District Corps and the Virginia DEQ will consider whether such actions will help ensure the continued viability of the mitigation site's biological resources.

The Long-Term Steward for the mitigation site shall implement the following as appropriate:

Element A.1 Streams and their associated buffers

Objective: Monitor, conserve and maintain the mitigation site's streams and associated buffers. Limit any impacts to the streams and their associated buffers from vehicular travel or other adverse impacts.

Task: At least one annual walk-through survey will be conducted to qualitatively monitor the general condition of these habitats. General topographic conditions, hydrology, general vegetation cover and composition, INU species, erosion, will be noted, evaluated and mapped during a site examination. Notes to be made will include observations of species encountered, general extent of wetlands, and any occurrences of erosion, structure failure, or INU species establishment.

Task: Establish reference sites for photographs and prepare a site map showing the reference sites for the mitigation site file. Alternatively, utilize photographic reference sites, if any, developed during the interim mitigation site management period. Reference photographs will be taken of the overall mitigation site at least every five years from the

beginning of long-term management, with selected reference photos taken on the ground more frequently ***(****if applicable****)***.

Special attention should be paid to any area adjacent to or draining from non- mitigation site lands. Streams and wetlands, and their associated buffers, should be observed near mitigation site boundaries to observe if increased sediment deposition has occurred. The report should provide a discussion of any recent changes in the watershed (i.e., subdivision being developed upstream of stream mitigation site).

Element A.2 Threatened/Endangered Plant Species Monitoring

Not applicable.

Element A.3 Threatened/Endangered Animal Species Monitoring

Not applicable.

Element A.4 Invasive, Nuisance, and Undesirable (INU) Species

INU species threaten the diversity or abundance of native species through competition for resources, predation, parasitism, interbreeding with native populations, transmitting diseases, or causing physical or chemical changes to the invaded habitat.

Objective: Monitor and maintain control over INU species that diminish mitigation site quality for which the mitigation site was established. The Long-Term Steward shall consult the *Virginia Department of Conservation and Recreation's Invasive Alien Plant list* at http://www.dcr.virginia.gov/natural_heritage/documents/invlist.pdf as well as the definition of INU species in the INU Management Plan for the mitigation site for guidance on what species may threaten the site and on management of those species.

Task: Monitor any new introduction or expansion of INU species compared to the Invasive Vegetation Map provided at mitigation site closure.

Task: Each year's annual walk-through survey (or a supplemental survey) will include a qualitative assessment (e.g. visual estimate of cover) of INU species. Additional actions to control INU species will be evaluated and prioritized in coordination with the Norfolk District Corps and the Virginia DEQ.

Task: Develop and implement a management plan to control/manage INU species on the mitigation site.

B Security, Safety, and Public Access

The mitigation site will be fenced or appropriately marked and shall have no general public access, nor any regular public use. Research and/or other educational programs or efforts, hunting, fishing, and passive recreational activities may be allowed on the mitigation site as deemed appropriate by the Norfolk District Corps and the Virginia DEQ and as provided for in the site protection instrument; but are not specifically funded or a part of this LTMP.

Potential wildfire fuels will be reduced as needed where approved by the Norfolk District Corps with the Virginia DEQ to be notified.

Element B.1 – Trash and trespass

Objective: Monitor sources of trash and trespass.

Objective: Collect and remove trash, repair vandalized structures, and rectify trespass impacts.

Task: During each site visit, record occurrences of trash and/or trespass. Record type, location, and management mitigation recommendations to avoid, minimize, or rectify a trash and/or trespass impact.

Task: At least once yearly collect and remove as much trash as possible and repair and rectify vandalism and trespass impacts.

C Infrastructure and Facilities

[*Fence and gate maintenance and repair frequency will be dependent on trespass and access control issues, as well as whether grazing is utilized as a vegetation management technique or otherwise allowed and to what extent.]*

Element C.1 Signage, and Property Boundaries

Objective: Monitor condition of signage and property boundaries.

Objective: Maintain signage and property boundaries to prevent casual trespass, allow necessary access, and facilitate management (if applicable).

Task: During each site visit, record condition of signs and property boundaries. Record location, type, and recommendations to implement repair or replacement to signage or property boundary markers, if applicable.

Task: Maintain signs and property boundary markers as necessary by replacing posts and signs. Replace signs, as necessary, and as funding allows. Note any trespass by livestock as well as any negative effects attributed to authorized livestock activities.

Element C.3 Wetland Berms, Water Control Structures, Grade Control Structures

Objective: Monitor condition of wetland berms and/or water control structures for stream mitigation, and grade control and other structures for stream mitigation, and any other mitigation practices, as appropriate.

Objective: Maintain berms and structures, etc. to facilitate management (if applicable) and maintain conditions of wetlands and streams.

Task: During each site visit, record condition of berms and structures. Record location, type, and recommendations to implement repair or replacement to berms and structures, if applicable.

Task: Maintain berms and structures, as necessary. Replace berms and structures, as necessary, and as funding allows.

D Reporting and Administration

Element D.1 – Annual Report

Objective: Provide annual report on all management tasks conducted and general mitigation site conditions to IRT and any other appropriate parties. Each report shall include a cover page with the following information: the mitigation site name, (umbrella mitigation site name if applicable), site name (if applicable), mitigation site phase (if applicable), Long-Term Steward (name, address, phone number, and email address), monitoring year, and any requested action (e.g. funding release, maintenance recommendations requiring Norfolk District Corps approval with the Virginia DEQ to be notified).

Task: Prepare annual report and any other additional documentation. Include a summary. Complete and circulate to the Norfolk District Corps, the Virginia DEQ, and other parties by December 31 of each year. Reports should be distributed electronically.

Task: Make recommendations with regard to 1) any enhancement measures deemed to be warranted, 2) any problems that need near-, short-, and long-term attention (e.g., weed removal, fence repair, erosion control), 3) any changes in the monitoring or management program that appear to be warranted based on monitoring results to date, 4) and provide documentation that the Long-Term Steward (if not an individual) is considered active and in good standing with the SCC. Provide documentation of the cost of any recommended maintenance and repairs.

Task: Provide a copy of the LTM Fund end of year statement that indicates the balance in the fund, interest accrued, withdrawals made, etc.

Element D.2 – Administrative & Contingency Fees

Objective: Provide funds for regular administrative costs incurred as a result of administrative tasks, maintenance of escrow, endowment, or other funding accounts, etc. These funds shall be paid from the interest of the account and not the principal funds.

Task: Pay all regular administrative or other fees through this task.

Element D.3 – Defense of Easement or Other Real Estate Issues

Objective: Ensure the perpetual protection of and address any encroachments on the property on which the wetland and stream mitigation activities occurred.

Task: Maintain conservation easements, declarations of restriction, or other protective instruments intended to protect the mitigation site.

Task: If the property is owned by the Sponsor or stewardship organization, assist in resolving real estate issues, such as property taxes, title considerations, Virginia Land Conservation Incentives Act, relevant county initiatives, mineral rights, easements and maintenance, and conservation, water or other district assessments.

Task: If the LTS is not the easement holder, then coordination/cooperation with the easement holder.

Task: Hire attorney or other legal representation for defense of easement or other proceedings, where necessary.

V Transfer, Replacement, Amendments, and Notices A Transfer

Any subsequent transfer of responsibilities under this LTMP to a different Long-Term Steward shall be requested by the Long-Term Steward in writing to the Norfolk District Corps with the Virginia DEQ to be notified, will require written approval by the Norfolk District Corps, and will be incorporated into this LTMP by amendment.

The long-term steward shall be required to ensure that any subsequent property owners (if not identified as the long-term steward) are notified of the deed restriction, conservation easement, purpose and location of the mitigation site lands, and requirements for long-term stewardship.

B Replacement

If the Long-Term Steward fails to implement the tasks described in this LTMP and is notified of such failure in writing by any member of the Norfolk District Corps and/or the Virginia DEQ, the Long-Term Steward shall have 90 days to correct such failure. If failure is not corrected within 90 days, the Long-Term Steward may request a meeting with the Norfolk District Corps and the Virginia DEQ to resolve the failure. Such meeting will occur within 30 days or a longer period if approved by the Norfolk District Corps with DEQ to be notified.

Based on the outcome of the meeting, or if no meeting is requested, the Norfolk District Corps may designate a replacement Long-Term Steward in writing by amendment of this LTMP with Virginia DEQ to be notified. If the Long-Term Steward fails to designate a replacement Long-Term Steward, then such public or private land or resource management organization acceptable to and as directed by the Norfolk District Corps, with the Virginia DEQ to be notified, may enter onto the mitigation site property in order to fulfill the purposes of this LTMP.

C Amendments

The Long-Term Steward**,** property owner**,** the Virginia DEQ, and the Norfolk District Corps may meet and confer from time to time, upon the request of any one of them, or at a minimum every five years, to revise the LTMP to better meet management objectives and preserve the conservation values of the mitigation site. Any proposed changes to the LTMP will be discussed with the Virginia DEQ, the Norfolk District Corps, and the Long-Term Steward.

Any proposed changes will be designed with input from all parties. Amendments to the LTMP will be approved by the Norfolk District Corps in writing with DEQ to be notified, will be required management components and will be implemented by the Long-Term Steward.

D Notices

Any notices regarding this LTMP will be directed as follows:

Long-Term Steward

HGS, LLC
1408 B Roseneath Road
Richmond, VA 23230

Property Owner(s)

CBAY-VA, LLC
6575 West Loop South, Suite 300
Bellaire, TX 77401

VI Funding and Task Prioritization

A Funding

Table 1 summarizes the anticipated costs of long-term management for the mitigation site. These costs include estimates of time and funding needed to conduct the basic monitoring site visits and reporting, trash removal, fence repair, etc. a prorated calculation of funding needed to fully repair and/or replace fences and other structures once every year, and funding for catastrophic event assessment and repair. The total annual funding anticipated is approximately $3,566.00, therefore, with the current annual estimated capitalization rate of 3.5% the total endowment amount (The Long-Term Management Fund) required will be $101,885.00.

The National Fish and Wildlife Foundation, or another entity approved to manage endowments, shall hold the endowment principal and interest monies (The Long-Term Management Fund) as required in the Final Mitigation Plan, which consists of monies that are paid into it in trust and is appropriated to fulfill the purposes for which payments into it are made. These interest monies will fund the long-term management, enhancement, and monitoring activities on mitigation site lands in a manner consistent with this LTMP.

B Task Prioritization

Due to unforeseen circumstances, prioritization of tasks, including tasks resulting from new requirements, may be necessary if insufficient funding is available to accomplish all tasks. The Long-Term Steward, the Virginia DEQ, and the Norfolk District will discuss task priorities and funding availability to determine which tasks will be implemented. In general, tasks are prioritized in this order: 1) required by a local, state, or federal agency; 2) tasks necessary to maintain or remediate the mitigation site (including unauthorized impacts); and 3) tasks that monitor resources, particularly if past monitoring has not shown downward trends. Equipment and materials necessary to implement priority tasks will also be considered priorities. Final determination of task priorities in any given year of

insufficient funding will be determined in consultation with the Norfolk District Corps and the Virginia DEQ and as authorized by the Norfolk District Corps in writing with the Virginia DEQ to be notified.

C Enforcement

The Norfolk District Corps, the Virginia DEQ, and its authorized agents will have the right to inspect the Property and take actions necessary to verify compliance with this LTMP. The LTMP herein shall be enforceable by any proceeding at law or in equity or administrative proceeding by the Norfolk District Corps and/or the Virginia DEQ. Failure by any agency (or owner) to enforce the LTMP contained herein shall in no event be deemed a waiver of the right to do so thereafter.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the date herein below last written.

_____ _____

Mitigation Site Sponsor Date

_____ _____

Long-Term Steward Date

Table 1: Long-Term Management Fund - Endowment Analysis									
General Management Activities		Description	Unit	Number of Units	Cost per Unit	Cost	Frequency	Schedule	Annual Funding
Wetland Berms and Water Control Structures									
	Survey and Assess Structures	Walking survey; notes, photos	Hours	4	$75	$450	Once every year	Any time	$300
	Repair/Replace Structures	Materials and Labor	1 structure	1	$500	$1000	Once every year	Any time	$500
Vegetation									
	Vegetative Assessment	Walking survey; notes, photos	Hours	4	$75	$300	Once every year	Any time	$300
	INU Species Management	Develop and implement a management plan if needed	Hours	8	$75	$600	Once every year	Any time	$600
Signage									
	Signage	Signs	Per Site	4	$100	$400	Once every 10 years	Any time	$40
	Signage Inspection and Repair	Walking survey and repair	Hours	2	$63	$252	Once every year	Any time	$126
Trash and Trespass									
	Trash	Walking survey, trash removal and disposal	Hours	4	$75	$300	Once every year	Any time	$300
	Trespass	repair trespass impacts	Hours	4	$75	$300	Once every year	Any time	$300
Reporting and Administration									
	Monitoring Documentation	Report preparation and submittal	Hours	4	$75	$300	Once every year	By 12/31 every year	$300
	Defense of DOR	Review	Hours	4	$150	$600	Once every 10 years	Any time	$60
	Administration/ Contingency		Percent	30%	$2,466	$740	Annual		$740
								TOTAL ANNUAL FUNDING AMOUNT	**$3,566**

Long-Term Management - Target Endowment Amount	
Annual Funding Requirement	$ 3,566
Capitalization Rate	3.50%
Endowment Amount	**$ 101,885**

Attachment J

Property Access Agreement

Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

PIEDMONT REGIONAL OFFICE
4949-A Cox Road, Glen Allen, Virginia 23060
(804) 527-5020 FAX (804) 527-5106
www.deq.virginia.gov

Matthew J. Strickler
Secretary of Natural Resources

David K. Paylor
Director
(804) 698-4000

James Golden
Regional Director

Virginia Water Protection Permit Program Property-Access Agreement

[PROPERTY OWNER NAME(S) – must include ALL] ("Owner") who own[s] the property located at **[ADDRESS and/or DEED BOOK INFORMATION and/or TAX PARCEL #]** ("Property") hereby authorizes the Department of Environmental Quality, its employees, agents, and contractors ("Authorized Parties") the right of entry to the Property to conduct inspections necessary to evaluate the application for and ensure compliance with **[PERMIT NUMBER]** ("VWP Permit").

For the purpose of this section, the time for inspection shall be deemed reasonable during regular business hours. Nothing contained herein shall make an inspection time unreasonable during an emergency.

Inspections may include but are not limited to the following activities:

1. Enter upon the property, and have access to, inspect and copy any records that required as part of the VWP permit;
2. Inspect any facilities, operations or practices (including monitoring and control equipment) regulated or required under the VWP permit; and
3. Sample or monitor any substance, parameter, or activity for the purpose of ensuring compliance with the VWP permit or as otherwise required by law.

The Owner understands that access to the Property is a requirement pursuant to 9VAC25-210-90 and the VWP Permit. The DEQ may enforce the provisions of this agreement utilizing all applicable procedures and authorities under Va. Code §§ 62.1-44.15 and 10.1-1186.

Ben Eubanks		General Manager	4.19.22
Property Owner Name (Print)	**Property Owner Signature**	**Title**	**Date**

[Include Title for owners who are not individual persons.]

[Insert additional signature lines for each individual owner listed on property record.]