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# Ecotone, Inc.
# Maryland Statewide Umbrella Mitigation Banking Instrument

# Final Prospectus

**Prepared for the Interagency Review Team:**
**U.S. Army Corps of Engineers Baltimore District – Co-Chair**
**Maryland Department of the Environment, Wetlands and Waterways Program – Co-Chair**
**U.S. Environmental Protection Agency**
**U.S. Fish and Wildlife Service**
**Maryland Department of Natural Resources**
**Maryland Historical Trust**
**Maryland Critical Area Commission**
**National Oceanic and Atmospheric Administration, Fisheries Habitat Conservation Division**

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As requested by the Corps of Engineers: Organization of this Umbrella Mitigation Banking Instrument Prospectus is based on the U.S. Army Corps/ Maryland Department of Environment document Information for a Complete Mitigation Bank Prospectus, dated November 13, 2018.

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## I. Introduction (The Basics)

Ecotone, Inc., the Bank Sponsor, proposes to prepare and submit an Umbrella Mitigation Banking Instrument (UMBI) in accordance with 33 CFR 332, Compensatory Mitigation for Losses of Aquatic Resources ("Mitigation Rule"). The purpose of this final prospectus is to outline the development of an UMBI, which will govern the establishment, use, operation, maintenance, and closure of the Umbrella Mitigation Bank by establishing guidelines and responsibilities.

The Bank Sponsor proposes to use a combination of restoration, creation, enhancement, and preservation of aquatic resources and uplands to generate compensatory mitigation credits under the proposed UMBI. The Bank Sponsor proposes to manage the development, release, and use of mitigation credits under the proposed UMBI with approval by the Interagency Review Team (IRT).

Mitigation credits will be generated and approved by the IRT on a site-specific basis. Mitigation details including service area, mitigation type, release schedule, etc. for each restoration site under the proposed UMBI will be provided in Site-Specific Mitigation Plans (SSMPs) incorporated as Addenda to the Final UMBI. The Pheasant Run Mitigation Bank (Pheasant Run) is the first mitigation bank site identified for inclusion in the proposed UMBI and the Pheasant Run SSMP is the first Addendum to the proposed UMBI (Addendum 1, Pheasant Run Mitigation Bank Site-Specific Mitigation Plan). Additional Addenda for newly proposed mitigation bank sites will be prepared as new proposed mitigation bank sites are identified for review and approval by the IRT.

The UMBI will set the framework by which future mitigation sites will be added as Addenda to the UMBI as they are identified. The roles and responsibilities of the IRT will be outlined, including responsibilities related to review of future Site-Specific Mitigation Plans within the UMBI. The intent of the UMBI will be to establish a framework and eliminate future redundancy in administration and focus review and resources on technical issues related to the development, implementation, and success of future mitigation plans as individual Bank Sites (Addenda) are identified.

### A. Contact Information

The contact information for the UMBI Sponsor is:

Ecotone, Inc.
129 Industry Lane
Forest Hill, MD 21050
Phone: 410-420-2600
Contact: Marie Brady
Email: mbrady@ecotoneinc.com

Each mitigation bank site proposed for inclusion under this UMBI will have site-specific contact information for landowners and consultants in the SSMP.

## II. Goals/Objectives

The purpose of the UMBI is to establish the framework for restoring, enhancing, creating, and preserving resources (e.g., tidal and non-tidal wetlands, riparian systems, streams, contiguous buffer corridors, uplands, and/or other aquatic resources) and their functions and values as approved by the IRT. The Sponsor plans to have the ability in this UMBI to develop credits for TMDL/NPDES MS4 permitting requirements. The mitigation will compensate for unavoidable and permitted wetland and stream impacts, or other purposes as may be approved by the IRT.

Establishment of mitigation bank sites under an UMBI will provide a means of developing advanced mitigation for permitted unavoidable impacts to Waters of the United States (WOUS). Potential, future mitigation bank needs will be identified and developed in watersheds where impacts are most anticipated. This will provide an inventory of compensatory mitigation credits prior to permitted impacts, which will decrease or eliminate temporal losses of valuable ecologic functions that occur after impacts.

The Bank Sponsor's goals in establishing the UMBI include:

- Streamline Section 404/401 and Section 10 permit evaluation processes by providing a means of compensating in advance for unavoidable wetland, stream, etc., impacts resulting from permitted projects.
- Provide high function and value, advanced compensatory mitigation based on a watershed approach.
- Support mitigation priorities established by the U.S. Army Corps of Engineers (Corps)/ Environmental Protection Agency (EPA) Mitigation Rule (33 CFR Part 332 and 40 CFR Part 230), Maryland Department of the Environment (MDE), and Maryland Department of Natural Resources (DNR).
- Restore and preserve resources based on environmental priorities and relative probability of successfully achieving self-maintaining ecological uplift.
- Achieve efficiencies for the IRT review process by eliminating repetitive practices and redundant review processes thereby reducing costs and addressing permitting priorities in a more expedient time frame.

Each mitigation bank site proposed for inclusion under this UMBI will have a specific purpose and objective outlined within the SSMP.

Compensatory mitigation for capital improvement projects permittees in Maryland has previously been provided under a typical permittee-responsible mitigation (PRM) framework causing delays in securing regulatory approvals or lags in implementing required mitigation preventing achievement of applicants' objectives. Future planned capital improvement projects will continue to require compensatory wetland and stream mitigation and/or water quality improvements. A dearth of suitable mitigation sites of scale exists, and those that are identified are difficult to secure. Establishment of mitigation sites under an UMBI will provide a means of developing advanced mitigation for those unavoidable impacts thus enabling permit applicants to expediently and effectively meet their respective improvement objectives. Potential, future mitigation bank needs

will be identified based on projects that are listed in applicable capital improvement plans and programs to target and prioritize watersheds where impacts are most anticipated.

The objective of the UMBI is to outline specific requirements for SSMPs and the process for amending the UMBI to include additional mitigation bank sites (Addenda). Each mitigation bank site proposed for inclusion under this UMBI will have a specific purpose and objective outlined within the SSMP.

## III. Umbrella Mitigation Bank Establishment and Operation

The Bank Sponsor intends to develop mitigation bank sites throughout the State of Maryland to comply with Section 404/401 and Section 10 permit requirements and related state laws and regulations. Sponsor may also develop mitigation bank sites to comply with TMDL/NPDES-MS4 permit requirements. Mitigation bank sites may be comprised of one or more land parcels and may include one or more mitigation types and functions. Each mitigation bank site will be subject to the terms of the UMBI and approved SSMP.

The UMBI will be developed by the Bank Sponsor in coordination with the CORPS, MDE and the IRT, and will contain detailed information governing the establishment, use, operation, and maintenance of mitigation sites that fall under the UMBI, including Pheasant Run Mitigation Bank and future, proposed bank sites. The UMBI and the development and operation of mitigation bank sites documented in future UMBI Addenda will be in accordance with the Mitigation Rule requirements.

The Bank Sponsor will obtain all appropriate environmental documentation, permits, or other authorizations needed to establish and maintain the Mitigation Bank Site. The UMBI will not fulfill or substitute for such authorization, but would rather fulfill authorization for establishment, use, operation, and maintenance of a Mitigation Bank Site to be administered by the Bank Sponsor.

Once mitigation credits are available through ratification of the UMBI, approval of the first Addendum (Pheasant Run Mitigation Bank), and/or future mitigation bank sites (Addenda) in accordance with this UMBI and the Mitigation Rule, compensatory mitigation can be accomplished through the withdrawal of credits. The sale, conveyance, or transfer of credits includes all natural services, functions, and values associated with the resource from which credits were derived. No credit may be resold or used in any way in relation to another permit requirement, as compensation for another resource, or to satisfy the requirements of any other program. The preliminary number of credits, and the number of credits available for initial release, will be determined in the approved SSMP. Credit withdrawals require final approval from the Corps and MDE, in consultation with the IRT. No credits will be used for compensatory mitigation outside the geographic service area without prior written approval by the Chairs.

A. Establishment of the Umbrella Mitigation Bank and Bank Sites

1. Establishment of the Umbrella Mitigation Bank: The Bank Sponsor will obtain all appropriate environmental documentation, permits, or other authorizations needed to establish and maintain the Umbrella Mitigation Bank. The UMBI will not fulfill or substitute for such authorization, but would rather fulfill authorization for establishment, use, operation, and maintenance of an Umbrella Mitigation Bank to be administered by the Sponsor.

2. Establishment of Future Individual Bank Sites and UMBI Addenda: The Bank Sponsor will obtain all appropriate environmental documentation, permits, or other authorizations needed to establish and maintain future individual Bank Sites. The UMBI would not fulfill or substitute for such authorizations. The UMBI and SSMP

Addenda would fulfill authorization for the establishment, use, operation, and maintenance of Bank Sites to be administered via the UMBI.

3. Perpetual Protection/Real Estate Provisions: Property subject to the UMBI and authorized by the Corps and MDE as a mitigation Bank Site will be perpetually protected and preserved through management agreements, plat and restrictive covenants with third party enforcement, or conservation easements, and/or Declaration of Restrictive Covenants on a project-by-project basis, unless otherwise approved by the Corps and MDE. Conservation Easements are the preferred method for protecting the bank site property and will be used when possible. These provisions will conform to the Mitigation Rule with the language modified on a case-by-case basis to allow for existing elements such as road/utility easements, road/bridge/utility crossings, hike/bike trails, and other activities that are pertinent to each site proposed for bank use.

4. Financial Assurances: The Bank Sponsor will provide financial assurances based on the size and complexity of the Site-Specific Mitigation Plans, the likelihood of success, the past performance of the Sponsor, and any other factors deemed appropriate. The amount and form of the required financial assurances is subject to written approval of the IRT. The financial assurances must be maintained, renewed, extended, or replaced so that it remains effective until the IRT determines that a Bank Site is successful in accordance with its Performance Standards and that the new financial assurance is eligible for release. Financial assurances will be addressed during the review of each SSMP covering any new site and project proposed under this UMBI. If required, financial assurances will then be addressed during bank site-specific review, permitting, and approvals.

B. Operation of Umbrella Mitigation Bank and Bank Sites
   1. Umbrella Mitigation Bank Geographic Service Area: The Geographical Service Area (GSA) is the designated area wherein a mitigation bank can reasonably be expected to provide appropriate compensation for impacts to streams and wetlands and other aquatic resources. The GSA for this UMBI will be statewide, in Maryland. The Bank Sponsor will establish separate GSAs for each individual Bank Site as they are identified. Bank Sites will be identified as needed to compensate for future improvement projects planned within the various Hydrologic Unit Codes (HUC), or as otherwise defined by the IRT. Each Bank Site will have a primary service area and may also have a larger secondary service area as proposed and approved by the IRT. Primary and secondary service areas will be based on USGS 8-Digit HUCs, but may also consider physiographic regions, EPA ecoregions, or other relevant considerations in defining primary and secondary service areas. For individual Bank Sites, the GSA will be presented to the Corps, MDE, in coordination with the IRT, for final approval. Use of a Bank Site to compensate for impacts beyond the GSA may be considered by the Corps and MDE, in coordination with the IRT, on a case-by-case basis. For each mitigation bank site proposed for inclusion under this UMBI, a map showing the site

location and its position within the limits of the proposed geographic service area will be provided.

2. Preliminary Draft and Final Prospectus: A Preliminary Draft Prospectus will be developed by the Bank Sponsor and submitted to the IRT for each Bank Site. The purpose of the Preliminary Draft Prospectus is to provide basic site information and solicit preliminary approval from the IRT for each new Bank Site, pending acceptance of the Site-Specific Mitigation Plan/UMBI Addendum (described in B.3). The Preliminary Draft Prospectus will contain information such as:

   - Location of the site including maps, physiographic province, river basin, watershed, hydrologic unit, ecoregion.
   - Site condition including present/recent land use and adjacent area land use.
   - Ownership of the bank site and status of land exchange/control by the Bank Sponsor; encumbrances, utility easements, etc. on the land.
   - Preliminary Site Plan and functional goals.
   - Available Monitoring Reports (for previously approved consolidated mitigation sites).

Based on comments from the IRT on the Draft Prospectus, Bank Sponsor will prepare a Final Prospectus and Public Notice application for mitigation bank sites. The information included in the Final Prospectus will follow the "Information Required for a Complete Mitigation Bank Prospectus Checklist".

3. Site-Specific Mitigation Plans/UMBI Addenda: Site-Specific Mitigation Plans/UMBI Addenda will be developed by the Bank Sponsor and submitted to the Corps and MDE, for distribution by the Corps to the IRT, for each proposed Bank Site. The UMBI Addenda will include the following detailed information on each Bank Site as per CFR 332.4(c)(2)-(14):

   a. Objectives: A description of the resource type(s) and amount(s) that will be provided, the site-specific geographic service area, the method of compensation (i.e., restoration, establishment, enhancement, and/or preservation), and the way in which the resource functions of the compensatory mitigation project will address the needs of the watershed, ecoregion, physiographic province, or other geographic area of interest.

   b. Site selection factors considered: A description of the factors considered during the site selection process, including consideration of watershed needs, on-site alternatives where applicable, and the practicality of accomplishing ecologically self-sustaining aquatic resource restoration, establishment, enhancement, and/or preservation at the compensatory mitigation project site.

   c. Site protection instrument (conservation easement, declaration of restrictive covenants, title transfer, etc.): A description of the legal arrangements and instrument,

including site ownership that will be used to ensure the long-term protection of the compensatory mitigation project site.

d. Baseline information: A description of ecological characteristics of the proposed mitigation Bank Site, including descriptions of historic and existing plant communities, and mitigation site(s) or the geographic coordinates for those site(s), and other site characteristics appropriate to the type of resource proposed as compensation. The baseline information will also include a delineation of existing Waters of the United States (wetlands, streams, and other aquatic resources) on the proposed Bank Site.

e. Determination of credits: Description of the number of credits to be provided, including a brief explanation of the rationale for this determination.

f. Mitigation Work Plan: A detailed written specification and work descriptions for the mitigation Bank Site, including, but not limited to, the geographic boundaries of the project; construction methods, timing, and sequence; source(s) of water, including connections to existing waters and uplands; methods for establishing the desired plant community; plans to control invasive plant species; the proposed grading plan, including elevations and slopes of the substrate; soil management; and erosion control measures. For stream compensatory mitigation projects, the mitigation work plan may also include other relevant information, such as planform geometry, channel form (e.g., typical channel cross-sections), watershed size, design discharge, and riparian area plantings.

g. Maintenance Plan: A description and schedule of maintenance requirements to ensure the continued viability of the resource once initial construction is completed.

h. Performance Standards: Ecologically based, measurable, and repeatable standards used to determine whether the project is achieving its objectives as established or approved by the IRT.

i. Monitoring & Reporting requirements: A description of the parameters to be monitored in order to determine if the compensatory mitigation project is on track to meet performance standards and if adaptive management is needed. A schedule for monitoring and reporting on monitoring results must be included.

j. Long-term management plan: A description of mitigation Bank Site management after meeting all performance standards to ensure long-term sustainability of the site, including long-term financing mechanisms, if appropriate, and the party responsible for long-term management.

k. Adaptive management plan: A management strategy to address unforeseen changes in site conditions or other components of the mitigation project, including the party or parties responsible for implementing adaptive management measures. The plan will guide decisions for revising compensatory mitigation plans and implementing

measures to address both foreseeable and unforeseeable circumstances that may adversely affect compensatory mitigation success.

l. Financial assurances: The Sponsor shall provide sufficient Financial Assurances to ensure that aquatic functions will be restored, established, and/or maintained at each Mitigation Bank Site.

m. Credit release schedule: The credit release schedule should reserve a share of total credits for release only after full achievement of ecological performance standards. All credit releases must be approved by the Corps and MDE, in consultation with the IRT, based on a determination that required milestones have been achieved.

n. Bank Closure: Bank closure provisions will be clearly spelled out in the UMBI.

4. Mitigation Ratios and Establishment and Use of Credits: The UMBI will outline mitigation ratio agreements between the Bank Sponsor and the IRT. The UMBI will outline compensation ratios based on anticipated ecological uplift for specific wetland classifications and stream uses. This will be based on coordination and approval by the Corps and MDE, in consultation with the IRT. Should credits for TMDL/NPDES MS4 compensation be implemented, Sponsor will provide for IRT review credit ratios meeting established crediting protocols.

   The UMBI will also outline the Bank Sponsor's responsibility for accounting of credits and debits in the UMBI. A ledger will be developed for each mitigation bank site and will be coordinated through the IRT. Accounting procedures for the bank sites will be in accordance with the Federal Mitigation Rule. Each credit for mitigation will be comprised of an appropriate accounting metric determined in consultation with the IRT consistent with the terms of the UMBI and/or SSMP.

   Use of credits from the Umbrella Mitigation Bank to offset wetland and stream impacts authorized by Corps and MDE wetland/waterway permits must comply with the Federal and State regulations, including:

   - Sections 401 and 404 of the Clean Water Act (33 U.S.C 1344)
   - Sections 9 and 10 of the Rivers and Harbors Act of 1899 (33 U.S.C 401 and 403)
   - MD Nontidal Wetlands Protection Act, Environmental Article, Section 5-901, et Seq.
   - MD Waterway Construction Law, Environmental Article, Sec. 5-503
   - MD Tidal Wetlands Law, Environmental Article, Section 16-101
   - National Environmental Policy Act (NEPA) and all other applicable Federal and State legislation, rules, and regulations.

5. Credit Determination: Credits for all proposed wetland mitigation Bank Sites will be determined based on mitigation type employed (creation of wetlands from uplands, restoration of wetlands, enhancement, preservation, etc.), and enumerated by acres (or

fractions thereof) by mitigation type of wetlands created (open water, emergent, scrub-shrub, forested, etc.). The measure of aquatic functions will be based on resources restored, established/created, enhanced or preserved. The Bank Sponsor proposes 1:1 ratio for both wetland restoration (re-establishment) and wetland creation (establishment), with anticipated higher ratios for enhancement, rehabilitation, and preservation both to be determined on a case-by-case basis. Additionally, the Bank Sponsor may also propose wetland mitigation credits for terrestrial resources that provide important support functions to the aquatic mitigation habitat elements and/or the watershed (e.g., buffers, preservation, or enhancement). The number of stream mitigation credits created by development of mitigation Bank Sites will be determined by anticipated functional uplift, by linear feet of each activity, and/or based on an IRT-approved method of calculating functional uplift, and corresponding credit ratios for those activities, such as the Function-Based Framework for Stream Assessment and Restoration Projects (Harman & Starr, 2012) or other agency developed protocols.

6. Credit Release Schedule: The Bank Sponsor will recommend withdrawal of credits for permitted impacts within the defined GSA of a specific Bank Site based on agreed-upon site-specific credit release schedules. Final approval from Corps and MDE will be required regarding use and withdrawal of mitigation credit from the UMBI.

   For Bank Sites established under the UMBI, the Bank Sponsor proposes the following credit release schedules as a guideline, unless otherwise approved as part of a Final Mitigation Plan:

| Wetland Mitigation Bank Site Milestones | Accelerated Credit Release (RGL 19-01) | Cumulative % | Conventional Credit Release | Cumulative % | Range %[+] |
|---|---|---|---|---|---|
| Final Mitigation Plan approval by Corps and MDE | 35% | 35% | 15% | 15% | 15%-50% |
| Successful Post-Construction submittal (implementation of physical & biological improvements per approved plans) | 40% | 75% | 15% | 30% | 15%- 50% |
| First monitoring report (year two) | 5% | 80% | 20% | 50% | 5%- 20% |
| Second monitoring report (year three) | 5% | 85% | 10% | 60% | 5%- 20% |
| Third monitoring report (year five) | 5% | 90% | 15% | 75%* | 5%- 20% |
| Fourth monitoring report (year seven) | 5% | 95% | 10% | 85%* | 5%- 20% |
| Fifth monitoring report, or two consecutive years of successful results (year 10) | 5% | 100% | 15% | 100%* | 5%- 20% |

**Note: All remaining credits (100% cumulative) are proposed for release upon meeting all performance standards for two consecutive monitoring years.*

*[+]Range: Range of potential credit releases used to denote that any given Mitigation Bank Site may propose an alternative to the UMBI guidelines reflective of the specific site's level of risk for success, market needs, level of financial assurances, and level of agency confidence. The range applies to both wetlands and stream schedules.*

| Stream Mitigation Bank Site Milestones | Accelerated Credit Release (RGL 19-01) | Cumulative % | Conventional Credit Release | Cumulative % | Range %+ |
|---|---|---|---|---|---|
| Final Mitigation Plan approval by Corps and MDE | 35% | 35% | 15% | 15% | 15%-50% |
| Successful Post-Construction submittal (implementation of physical & biological improvements per approved plans) | 40% | 75% | 25% | 40% | 15%- 50% |
| After year 2 and success criteria met | 5% | 80% | 20% | 60% | 5%- 20% |
| After year 3 and success criteria met | 5% | 85% | 10% | 70% | 5%- 20% |
| After year 5 and success criteria met | 5% | 90% | 15% | 85%* | 5%- 20% |
| After year 7 and success criteria met | 5% | 95% | 10% | 95%* | 5%- 20% |
| After year 10 and success criteria met | 5% | 100% | 5% | 100% | 5%- 20% |

**Note: All remaining credits (100% cumulative) are proposed for release upon meeting all performance standards for two consecutive successful years. All credits cannot be released until after year 5.*

*+Range: Range of potential credit releases used to denote that any given Mitigation Bank Site may propose an alternative to the UMBI guidelines reflective of the specific site's level of risk for success, market needs, level of financial assurances, and level of agency confidence. The range applies to both wetlands and stream schedules.*

If the Sponsor elects to adhere to the accelerated credit release schedule the Sponsor shall provide adequate Financial Assurance, in an amount approved by the IRT, to provide a high degree of confidence that the ecological performance standards will be achieved.

Credits released upon Final Mitigation Plan approval and Successful Post-Construction submittal can be increased should Bank Sponsor provide additional Financial Assurances to IRT satisfaction.

When a mitigation site utilizes Legacy Sediment Removal (Integrated Stream Wetland Floodplain) restoration approaches, wetlands credits may follow the Stream Mitigation Bank Site Credit Release Schedule.

Credits for water quality mitigation for TMDL/MS4 compliance will be released based on agency approved milestones as determined in SSMP.

Note that credits cannot be released until all milestones included in the approved UMBI have been met, such as financial assurances are in place, site protection mechanism is in place, permits have been approved.

7. Annual Report: The Bank Sponsor will prepare an annual report on each anniversary of the date of execution of the UMBI and will describe the condition of the Umbrella Mitigation Bank as a whole. The UMBI will outline annual reporting requirements related to documentation of all credits used and balance of credits remaining until all credits have been utilized or the UMBI agreement is terminated. The report will summarize the credits withdrawn by Bank Site, the corresponding withdrawn percentage, and the remaining credits by type. The actual credit withdrawal summary

will reference consistency or inconsistency with the established credit release schedule in relation to the success criteria. If inconsistencies are identified during the annual reporting period, the Bank Sponsor will coordinate with the Corps, MDE, and the IRT to remedy the situation. Annual reports on the Umbrella Mitigation Bank will be submitted each year until termination of the UMBI.

## IV. Maintenance/Monitoring of Bank Sites

The Bank Sponsor agrees to establish and maintain the mitigation Bank Sites and ownership until the banking activity is terminated or a third-party organization adopts the long-term site management/maintenance responsibilities. The Bank Sponsor will propose future, ecologically sustainable mitigation Bank Sites, and will avoid establishing Bank Sites that require regular or intensive maintenance. The Bank Sponsor accepts full responsibility for any required maintenance activities that may be necessary related to achievement of performance standards, such as addressing invasive species control or tree/vegetation replacement. Any required maintenance activities proposed by the Bank Sponsor will be coordinated through Corps and MDE, in consultation with the IRT, prior to execution.

The Bank Sponsor understands that banking activity can only be terminated through coordination and approval by the Corps and MDE, in consultation with the IRT. As part of the Bank Sponsor's required maintenance, the Bank Sponsor will monitor all Bank Sites over a 10-year period, and recommend maintenance activities related to performance standards, or other possible maintenance activities such as repairing broken fences, cleaning up trash or vandalized areas, etc. The Bank Sponsor will continue to submit regular Monitoring Reports to the Corps, MDE, and the IRT describing site conditions in relation to the performance standards outlined in the UMBI and/or Site-Specific Mitigation Plans. Additionally, the Bank Sponsor will be responsible for developing an adaptive management plan, in coordination with the IRT, if the site fails to achieve the goals and objectives laid out in the Final Mitigation Plan. The UMBI will define site "close-out" procedures, Bank Sponsor/Corps/MDE/IRT responsibilities related to close-out and will define a timeline for acceptable termination of maintenance activities.

A. Monitoring: The UMBI will outline the Bank Sponsor's requirements for performing all necessary work to monitor the Bank Sites and to demonstrate compliance with the established success criteria. Bank Sponsor will be obligated to the completion of Bank Site site-specific monitoring requirements. Success criteria will be based on Corps and MDE guidance, IRT input, and those criteria outlined in the Site-Specific Mitigation Plans. Monitoring goals and schedules will be developed and submitted for each Bank Site in the Site-Specific Mitigation Plans. Monitoring procedures, duration, and reporting criteria, and scope will also be outlined in the UMBI.

   It is anticipated that any wetlands restoration, enhancement, or creation sites incorporated into the Umbrella Mitigation Bank will be monitored per the 2018 Mitigation Monitoring Protocols for Non-Tidal Wetland Mitigation Sites or other suitable monitoring protocols. Stream restoration or enhancement sites incorporated into the Umbrella Mitigation Bank will follow monitoring protocols established by the IRT, or a suitable alternative proposed by Bank Sponsor, current at the time SSMP Addenda is approved. Monitoring will occur for ten years following construction completion or until performance standards have been met, whichever is longer, with a final assessment in the last year of monitoring. At that time, the Bank Sponsor will either recommend remedial measures, continue monitoring, or will deem the Bank Site successful and recommend site closure and commencement of long-term management. Monitoring reports will be prepared by the Bank Sponsor (for the required monitoring years)

summarizing findings and will be made available to the IRT electronically or by hard copy as requested.

B. Long-term Management: The UMBI will outline the Bank Sponsor's commitment to implementing long-term management measures towards maintaining the ecological integrity of their mitigation Bank Sites and managing and maintaining these sites in perpetuity as functioning wetlands, streams, or other aquatic systems after meeting all performance standards. On completion of all phases of mitigation construction, the Bank Sponsor will either continue to ensure long-term sustainability or may transfer the conservation easement (or other executed long term protection mechanism) to a third party approved by the IRT (e.g., nonprofit entity, state conservation agency or a land trust), who would be responsible for the long-term conservation goals and managing the lands in perpetuity.

   The Bank Sponsor anticipates typical long-term management provisions for Bank Sites may include invasive species control, upkeep of physical barriers such as fences and gates, collection/removal of excessive trash, repair of vandalized structures, and rectification of trespass impacts, for example. 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 and to what extent. Grazing may also be discouraged by use of fencing based on its incompatibility with the goal of achieving mitigation objectives. Case-by-case long-term management opportunities will be determined through coordination with the Corps and MDE, in consultation with the IRT.

   The Bank Sponsor's approach to the long-term management of the Bank Sites will be to conduct periodic site examinations after the ten-year monitoring period and achievement of performance standards to determine stability and ongoing trends of the created, restored, enhanced, or preserved resources. The Bank Sponsor, or as may be assigned to the Long-Term Steward, will observe/assess the Bank Site's condition, degree of erosion, invasion of exotic species, fire hazard, and/or other aspects that may warrant management actions. The objective of the long-term management plan will be to conduct periodic site investigations to identify any issues that arise and implement adaptive management strategies to determine what actions will be most appropriate for individual Bank Sites, if required.

C. Assurance of Success: The UMBI will outline the Bank Sponsor's responsibility for assuring the success of the restoration, creation, enhancement, and preservation activities at the Bank Sites, and for the overall operation, maintenance, and management of the Umbrella Mitigation Bank. If a Bank Site is assigned to a third party, that third party will be required to assure the success of the Bank Site per the UMBI agreement with the mechanism of assurance to be determined by the Corps and MDE, in consultation with the IRT.

D. Accounting Procedures: The UMBI will outline all mitigation tracking requirements and responsibilities of the Bank Sponsor. The monitoring section of the UMBI will outline requirements related to tracking debits for permitted projects and any mitigation accrued when success criteria are met as specified in the UMBI. The cumulative total area of impacts to wetlands/streams/aquatic resources permitted to use credits from the Umbrella Mitigation

Bank shall not exceed the total area of wetlands/streams/aquatic resources created by the mitigation Bank Sites. If the Umbrella Mitigation Bank and/or the Bank Sites is constructed in phases, the accounting credits shall duly reflect this phasing of work. A ledger for tracking debits, available credits, and permitted projects will be submitted to the Corps, MDE, and the IRT. The Bank Sponsor will submit the ledger annually.

E. Default, Contingency/Adaptive Management/Remedial Action Plan: The Bank Sponsor will develop necessary adaptive management plans and implement appropriate remedial actions in coordination with the Corps and MDE if a Bank Site is not on a trajectory to meet performance criteria or permit requirements. A general adaptive management plan will be developed for the UMBI, and if necessary, for individual Bank Sites addressing site-specific conditions. The adaptive management plan will establish the framework by which the Bank Sponsor will proceed to correct deficiencies identified on a given Bank Site. Before considering any adaptive management changes, the Bank Sponsor, in coordination with the IRT, will consider whether such actions will help ensure the continued viability of a Bank Site's biological resources. As remedial actions cannot be fully determined at this time or at the time of the preparation of the Site-Specific Mitigation Plan, the Bank Sponsor retains the right to adaptively manage required amendments to the remedial action plans, as appropriate, upon identification of remedial needs in the future, and with approval from the IRT.

If the Bank Sponsor or the IRT determines that a Bank Site is operating at a deficit, or has failed to meet the success criteria, the Corps and MDE, in consultation with the IRT and the Bank Sponsor, will determine what remedial actions are necessary to correct the situation. In the event the Bank Sponsor fails to implement necessary remedial actions within one growing season (by November 1 of the following year) after notification by the Corps and/or MDE of necessary remedial action to address any failure in meeting the success criteria, the IRT will notify the Bank Sponsor and the appropriate authorizing agencies and direct appropriate remedial actions. As determined by the Corps and/or MDE, in coordination with the IRT and the Bank Sponsor, if conditions at the Bank Site do not improve or continue to deteriorate within one growing season from the date that the need for remedial action was first identified in writing to the Bank Sponsor by the Corps or MDE, the IRT may suspend credit transactions for that Bank Site until the deficiencies are corrected.

Following implementation of remedial measures and at the written request of the Bank Sponsor, the IRT will perform a compliance visit to determine whether identified remedial actions have been implemented successfully and, if necessary, lift the suspension on credit transactions for that Bank Site.

## V. Responsibility of the IRT

The IRT will be Co-Chaired by a representative of the U.S. Army Corps of Engineers – Baltimore District and the Maryland Department of the Environment. The IRT shall facilitate establishment of the UMBI and facilitate reaching consensus on future individual Mitigation Bank Sites through the Addendum process. It is anticipated that members of this Umbrella Bank's IRT team will include participants from:

- U.S. Army Corps of Engineers – Baltimore District
- Maryland Department of the Environment
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- Maryland Department of Natural Resources
- Maryland Historical Trust
- Maryland Critical Area Commission
- National Oceanic and Atmospheric Administration

Each entity represented on the IRT may replace their representative upon written notice to the IRT Chairs, other IRT members, and the Bank Sponsor.

In coordination with the Corps and MDE, the IRT will be responsible for providing appropriate oversight in carrying out the provisions of the UMBI. The IRT agency representatives agree to use their best efforts to review and provide comments on the UMBI, and subsequent site-specific mitigation prospectuses, draft and final SSMP/UMBI addenda, monitoring reports, success criteria, credit review reports, accounting ledgers, and remedial action plans for individual Mitigation Sites. The Corps and MDE retain final authority for approval of the UMBI and SSMPs. The IRT will also be responsible for adhering to time frames defined in the Mitigation Rule.

The UMBI will outline and define the Corps and MDE roles, as co-chairs of the IRT, regarding their responsibility for initiating IRT conflict resolution regarding UMBI development or use of a mitigation Bank Site for purposes of Section 404, Section 10 and other related state permit compliance when consensus cannot be reached. The UMBI will also establish timeframes for IRT comment periods and Corps and MDE final decisions.

## VI. Sponsor Qualifications

The Sponsor, Ecotone, Inc., is a full-service ecological consulting, design, and construction company established in 1998. Over the past two decades Ecotone has delivered quality outcomes and pioneered innovative approaches that have helped establish the company and staff as experts in ecological restoration. The company provides full-delivery ecosystem restoration and mitigation, restoration design, consulting, and construction services. The diverse and multi-disciplinary staff of ecologists, regulatory specialists, restoration designers, engineers, construction managers, and equipment operators participate in all aspects of project implementation including data collection, conceptual design, permitting/regulatory coordination, construction oversight, planting, and pre- and post-construction monitoring, maintenance, and adaptive management.

To date, Ecotone has provided ecological restoration services for more than 300 public and private environmental restoration projects, designed and/or constructed over 32 miles (over 172,000 linear feet) of river and stream restoration, 665 acres of reforestation, and 600 acres of wetland restoration throughout the Mid-Atlantic region. The restoration approach varies by job and expansive project history gives Ecotone a wide range of experience that allows for innovative and effective restoration. In keeping with Ecotone's habitat restoration approach, staff recognize that wetland restoration projects are multi-faceted and have a larger impact than a project's "limit of disturbance". During the implementation of all projects, careful attention is paid to the integration of the adjacent ecosystems, hydrologic interactions between streams, wetlands, and groundwater, and vegetative communities therein to ensure that ecological uplift is maximized.

Ecotone has provided design-build services for more than 300 public and private environmental restoration projects. Several of these projects have been design-build mitigation projects for either private users or for agencies such as the Maryland Department of the Environment, Maryland Department of Natural Resources, and the State Highway Administration.

Located in Forest Hill, Maryland, Ecotone is well-versed in local regulations and conditions and will be able to ensure long-term success of the project. The first proposed Mitigation Site of this UMBI, Pheasant Run Mitigation Bank, will be Ecotone's sixth wetland mitigation bank/consolidated user project (pre-2008 Rule) in in the Chesapeake Bay watershed.

## VII. Miscellaneous

The UMBI will address other administrative or technical elements related to the Umbrella Mitigation Bank establishment, use, operation, and maintenance through coordination with the IRT. Other potential elements that will be addressed in the UMBI that are not part of this prospectus may include, but is not limited to:

- Effective Date of UMBI and amendment/modification process/approval requirements
- Dispute resolution process
- Authorities
- Process for IRT participation termination
- Delays/Defaults
- Force Majeure
- Catastrophic Events
- Eminent Domain
- Notice
- Counterparts
- Binding nature of agreement
- Third Party Beneficiaries
- Governing Laws
- UMBI Amendments
- IRT Contracts
- Responsibility for Compensatory Mitigation

END

**Ecotone, Inc.**
410.420.2600 (P)
410.420.6983 (F)

# Ecotone, Inc.
# Maryland Statewide Umbrella Mitigation Banking Instrument

# Pheasant Run Mitigation Site
# Site-Specific Mitigation Plan Final Prospectus

**Prepared for the Interagency Review Team:**
**U.S. Army Corps of Engineers Baltimore District – Co-Chair**
**Maryland Department of the Environment, Wetlands and Waterways Program – Co-Chair**
**U.S. Environmental Protection Agency**
**U.S. Fish and Wildlife Service**
**Maryland Department of Natural Resources**
**Maryland Historical Trust**
**Maryland Critical Area Commission**
**National Oceanic and Atmospheric Administration, Fisheries Habitat Conservation Division**

**Prepared By:**
**Ecotone, Inc.**
**129 Industry Lane,**
**Forest Hill, Maryland 21050**
**410-420-2600**
**Contact: Marie Brady**
**mbrady@ecotoneinc.com**

**February 2021**

Organization of this Site-Specific Mitigation Plan Prospectus is based on the U.S. Army Corps/ Maryland Department of Environment document *Information for a Complete Mitigation Bank Prospectus*, dated November 13, 2018.

# Table of Contents

**Proposed Mitigation Site Overview**

Bank Name: Pheasant Run Mitigation Site

Bank Sponsor: Ecotone, Inc.
129 Industry Lane
Forest Hill, MD 21050
410-420-2600

Property Owner: Wooly Bugger, LLC
129 Industry Lane
Forest Hill, MD 21050

Bank Type: Commercial

Property Information:

| | |
|---|---|
| Location: | S 5617 Patterson Road<br>Baldwin, Baltimore County, MD 21013 |
| Coordinates: | N 39.496067, W 76.474526 |
| Size: | Total property: 70.90 acres<br>Bank site: 33.00 acres |
| Stream Use: | Use III |
| Wetland Restoration: | 23.60 acres |
| Wetland Enhancement: | 3.02 acres |
| Wetland Buffer Enhance/Establish: | 4.26 acres |
| Stream Restoration: | 5,233 linear feet |

Mitigation Credits:

| | |
|---|---|
| Wetland Restoration: | 23.60 acres (1:1 Ratio) |
| Wetland Enhancement: | 0.76 acres (4:1 Ratio) |
| Wetland Buffer Enhance/Establish: | 0.28 acres (15:1 Ratio) |
| Stream Restoration: | 5,233 linear feet (1:1 Ratio) |

Geographic Service Areas (USGS HUC):

| | |
|---|---|
| Primary: | Gunpowder-Patapsco River Basin (02060003) |
| Secondary: | Piedmont physiographic region of the following:<br>Lower Susquehanna (02050306)<br>Patuxent (02060006) |

## I. Introduction (The Basics)

A. Landowner Letter
Landowner letter of support can be found in Appendix A.

B. Bank Name: Pheasant Run Mitigation Site

C. Bank Purpose
Ecotone, Inc., the Bank Sponsor, proposes to establish the Pheasant Run Mitigation Site (hereinafter, Mitigation Site) as an Addendum under the Ecotone Umbrella Mitigation Banking Instrument (UMBI), approval pending. The Pheasant Run Mitigation Site is the first Mitigation Site proposed for inclusion in the Ecotone UMBI and shall be included as Addendum 1.

The development of the UMBI and the operation of the Mitigation Site will be in accordance with the "Compensatory Mitigation for Losses of Aquatic Resources: Final Rule, 33 CFR 332 ("Mitigation Rule")." The UMBI serves to establish guidelines and responsibilities for the Bank Sponsor within the approved service area. The objective of the UMBI is to provide compensatory mitigation for unavoidable impacts to Waters of the U.S. (WOTUS) and their functions resulting from permitted projects authorized under Section 404 and 401 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, Maryland Non-tidal Wetlands Protection Act, and the Maryland Tidal Wetlands Protection Act provided the project has met all applicable requirements and been authorized.

The purpose of the Pheasant Run Mitigation Site is to provide WOTUS credits to compensate for impacts to regulated WOTUS in the Gunpowder- Patapsco Basin.

D. Vicinity Map & Plan View Drawings. These can be found in Appendix A.

E. Contact Information

Bank Sponsor: Ecotone, Inc.
129 Industry Lane
Forest Hill, MD 21050
Phone: 410-420-2600
Fax: 410-420-6983
Contact: Marie Brady
Email: mbrady@ecotoneinc.com

Property Owner: Wooly Bugger, LLC
129 Industry Lane
Forest Hill, MD 21050
Phone: 410-420-2600
Fax: 410-420-6983
Contact: Scott McGill
Email: smcgill@ecotoneinc.com

F. Adjacent Property Owners – to be notified by Public Notice Mailing
Provided under separate cover and a list included with Public Notice application.

G. Agency Correspondence and Natural Resources

1. Rare, Threatened, and Endangered Species: The U.S. Fish and Wildlife Service IPaC database indicates that there are no rare, threatened, or endangered species nor critical habitats on the Mitigation Site. The Maryland Department of Natural Resources (DNR) – Wildlife & Heritage Service review determined that there are no official records for rare, threatened, or endangered species present at the proposed Mitigation Site (Appendix A). In addition, Beth Schlimm, a biologist with DNR, confirmed via email that no bog turtle habitat exists on or near the property.

2. Historically and Culturally Significant Resources: No known historic or culturally significant resources are present on the property. According to DNR online mapping database, Maryland Environmental Resources and Land Information Network (MERLIN), the Mitigation Site is located within the Long Green Valley Historic District (BA-2188). This agricultural area has many buildings dating from the 18th, 19th, and early 20th centuries. The historic properties/structures located nearby are: BA-1393, BA-885, BA-1881, and BA-1884. Ehrhardt House (BA-1884) is located to the northeast, across Baldwin Mill Road from the Mitigation Site. God's Grace Farm (BA-885) is immediately northeast, adjacent to the Mitigation Site. Day House (BA-1881) and Watkins/Charles Hotel (BA-1393) is to the east across the Baldwin Mill Road/Pleasantville Road intersection. The Maryland Historical Trust (MHT) determined that the proposed activities would not diminish any of the characteristics associated with areas of historical significance. MHT concluded that the proposed Pheasant Run Mitigation Site will have no adverse effect on historic properties (Appendix A).

3. Essential Fish Habitat: There is no Essential Fish Habitat at this location.

4. Fisheries: The tributary to Long Green Creek was surveyed by Maryland Biological Stream Survey (MBSS) approximately 0.6 miles southwest of the parcel in 2002 and again in 2016 for fish and benthic macroinvertebrates. Fish Index of Biotic Integrity (IBI) was determined to be "Fair" in both 2002 and 2016. Benthic IBI was determined to be "Poor" in 2002 and "Fair" in 2016. Fish species encountered during both surveys were typical and included species such as American Eel (*Anguilla rostrata*), Blacknose Dace (*Rhinichthys atratulus*), Rosyside Dace (*Clinostomus funduloides*) and a small number of Brown Trout (*Salmo trutta*).

5. Adjacent Natural Resources: Information obtained from MERLIN, indicates potential Forest Interior Dwelling Species (FIDS) habitat existing along the northern property boundary and extending north. Another area of FIDS habitat is southeast of the property. An extensive area of FIDS habitat is located 0.8 miles to the northeast of the property. Green Infrastructure Hubs and Corridors and Targeted Ecological Areas are mapped within one mile to the northeast along Gunpowder Falls.

6. Airport Coordination: No regional or international airports are near the Pheasant Run Mitigation Site. Fallston Airport, a small, local airport is located approximately 4 miles east of the site. Correspondence with Maryland Aviation Administration indicates that this project will not likely affect the airport and as the airport is not federally-funded, the regional Airport District Office would not need to comment.

## II. Goals/Objectives

A. Resource Types

The Pheasant Run Mitigation Site will provide self-sustaining and functional, non-tidal wetland, including palustrine forested (PFO), scrub-shrub (PSS), and emergent (PEM) wetlands; perennial stream; and upland buffer.

B. Amount of Mitigation Resources Provided

**Table 1: Pheasant Run Mitigation Site Proposed Mitigation by Type**

| Proposed Mitigation Type | Mitigation Area |
|---|---|
| Wetland Restoration | 23.60 acres |
| Wetland Enhancement | 3.02 acres |
| Non-tidal Wetland Buffer Creation/Restoration | 4.26 acres |
| Stream Restoration | 5,233 lf |

C. Methods of Proposed Compensation

The proposed wetland credits will come from the restoration, creation, and enhancement of non-tidal wetland. Perennial stream credits will be generated through the restoration and functional uplift of five existing stream reaches. Upland buffer credits will be generated through the creation/restoration of a 25-foot buffer around the project area.

D. Functional Needs

The Mitigation Site will provide compensatory mitigation by replacing functions and values lost from unavoidable and permitted non-tidal wetland and stream impacts. The Mitigation Site also serves to provide advanced replacement of future functional losses and thus serves to eliminate temporal loss present in other mitigation approaches. The location of the Mitigation Site along headwater streams will address the functional uplift needs of the Gunpowder-Patapsco River Basin in the form of water quality and wildlife habitat improvements. A comprehensive site restoration plan will maximize stream and wetland function to provide a diverse, stable, functional, and self-sustaining ecosystem.

Using *The Highway Methodology*[1], the wetland functions expected to be enhanced or provided include groundwater recharge and discharge; flood attenuation; fish habitat, food sources, and shade; sediment storage; nutrient removal; organic production export; stabilization of associated streams; and wildlife habitat. Using *Stream Functions Pyramid Framework*[2], major stream components that will be enhanced are hydraulics, geomorphology, physiochemical, and biological functions.

[1] U.S. Army Corps of Engineers, New England District, The Highway Methodology Workbook Supplement, Wetland Functions and Values.

[2] Harman, W., et al. 2012. A Function-Based Framework for Stream Assessment and Restoration Projects. US Environmental Protection Agency, Office of Wetlands, Oceans, and Watersheds. Washington, DC. EPA 843 -K-12-0 06.

Hydraulics will be enhanced by restoring the existing straightened agricultural ditches to resemble that of a more sinuous, floodplain connected stream-wetland complex. The channels will have a significantly reduced bank height ratios, increased entrenchment ratios, and high width to depth ratios to promote more frequent out of bank events. Low-flow channels will be created throughout most portions of the project, with gradual sloping sides and shallow bankfull depth. This will allow for a frequent hydraulic connection between the channels and the proposed wetlands to further promote hydrology from both storm events and groundwater connections. Improved flow dynamics will lower stream velocity, shear stress, and stream bank erosion to improve an enhanced hyporheic zone for groundwater/surface water exchange.

Geomorphological functions will be enhanced by improved large woody debris transport and storage, riparian vegetation, creation of bedform diversity, and improved sediment storage. Large woody debris will be placed in the floodplain and constructed wetlands to provide roughness, habitat, and carbon. A dense riparian buffer of native species will be planted adjacent to the streams and within the constructed wetlands. Enhancing the hydrology of the site may help control invasive species, allowing the replanted and regenerative native flora to grow and contribute to a healthy, functioning ecosystem. The low-flow channels will be designed to have a variety of habitat regimes and substrate sizes, that will be calculated appropriately based on shear stresses and velocities. By developing a plan form that promotes frequent out of bank events and floodplain connection, the streams will have functional lift by providing more hydrology to the surrounding ecosystem. In-channel habitat will be created that will encourage colonization by aquatic species.

Physiochemical enhancement may include improved surface water quality parameters such as temperature, dissolved oxygen, conductivity, pH, and turbidity; improved biological nutrient uptake and storage; and enhanced organic carbon availability and processing. Native vegetation will shade and cool the tributaries while providing a mosaic of habitats valuable to a variety of flora and fauna. Organic matter will be added to the system as large woody debris and later, as leaf fall and natural plant succession. By focusing on wetland creation, nitrogen, phosphorus, and sediment will be filtered or stored before impacting downstream reaches.

By focusing on restoring those categories higher on the function-based pyramid, biological components such as habitat enhancement and creation will benefit. Post-construction, the system is anticipated to have increased biodiversity of microbial, macrophytic plant, and aquatic macroinvertebrate communities which will in turn support upper trophic levels including fish. In addition, there will be improved connectivity with adjacent riparian habitats and DNR important habitats, including Forest Interior Dwelling Species habitat and DNR-designated Green Infrastructure Hubs and Corridors and Targeted Ecological Areas.

The restoration of each tributary will begin with the construction of a small, base-flow channel built using a combination of natural channel and process-based design concepts. These channels will be created by filling in and raising the invert of the existing channel as well as channel realignment. Construction of the new channels will be completed in-the-dry wherever feasible while using the existing channels as a clear-water diversion. Where feasible, the new base flow channel will be given time to vegetate prior to water being diverted into the newly

constructed channel. This approach will mitigate any temporal thermal warming of water during the construction period. Post-construction, increased flow from storm events will quickly flood the new low-flow channels and be dispersed throughout the width of the floodplain. This will spread out energy while providing hydrology to surrounding wetlands. Habitat wood and microtopography will aide in slowing flows and providing water retention in the floodplain, encouraging wetlands to naturally develop. The base-flow channel will be discouraged from incising and may instead laterally migrate over time within the wide floodplain. Over time, the project area will evolve into a stream-wetland complex providing maximum ecological uplift.

Research on stream function shows that increased physical complexity supports an increase in habitat and ecosystem benefits [3]. The structural complexity provided will allow varying flow regimes in the streams providing excellent habitat for trout, other species of fish, aquatic insects, and microscopic organisms. Stream-wetland complexes also support dense vegetation growth, which provide shade, habitat, cover from predators, and food for primary consumers. Overall, stream-wetland complexes provide improved habitat for trout when compared to degraded single-thread systems.

Stream-wetland complexes also provide temperature benefits to trout streams. The major factor influencing stream response to influxes of heat is connection to the hyporheic zone, which facilitates exchange between cold groundwater and warmer stream water[4]. Extremely channelized streams, such as those on-site, show reduced hyporheic connection. Ecotone's proposed restoration approach will restore and enhance hyporheic zones throughout the stream valley by the introduction of wood, morphological features, and riparian seeding and plantings. Raising the invert of the channels can also raise the water table of the stream valley supporting continuous hyporheic exchange and allowing cool groundwater to enter the stream system and reduce overall water temperature. In addition, the proposed restoration approach facilitates interconnectivity between the streams and floodplain. Enhanced hyporheic exchange in combination with the resulting high water table, ensures that groundwater will supply the stream during dry periods and sustain aquatic habitat. Dense floodplain and wetland vegetation will provide shade to reduce the input of heat from the sun. The inclusion of woody debris and roughness elements in the floodplain encourage the formation of deep pools throughout the stream-wetland complexes, which also provide drought refugia for aquatic species. Research shows that fish populations will not persist in stream reaches without adequate refugia from high flows. The current conditions of these tributaries do not offer this refugia. Ecotone is confident that the Mitigation Site will support a robust and diverse ecosystem that is more resilient to droughts and floods following restoration.

E. Public Funding

No public funding has or will be used for this project.

[3] Newson, M.D., and C.L. Newson. "Geomorphology, Ecology and River Channel Habitat: Mesoscale Approaches to Basin-Scale Challenges." Progress in Physical Geography, vol. 24, no. 2, 2000, pp. 1195–217.

[4] Triska, F., et al. "Retention and Transport of Nutrients in a Third-Order Stream in Northwestern California: Hyporheic Processes." Ecology, vol. 70, no. 6, 1989, pp. 1893–1905.

## III. Bank Establishment and Operation

A. Site Location

The Pheasant Run Mitigation Site is in Baldwin, Maryland, a rural and mostly agricultural portion of Baltimore County. The parcel is approximately 3.3 miles southwest of Fallston and 5.5 miles southeast of Jacksonville. The property is located east of Patterson Road and west of Baldwin Mill Road (N 39.496067 latitude, W 76.474526 longitude). The property is surrounded by family farms and rural residences with a small group of commercial properties located along the southeast boundary.

The 70.9-acre property is zoned agricultural and protected by a Rural Legacy Easement held by Baltimore County and Long Green Conservancy. In 2018, Wooly Bugger, LLC purchased the property from Pheasant Run Farm, Inc. Historically, uses for the site included agricultural crop production and a commercial nursery operation. The Pheasant Run Mitigation Site will span approximately 32.00 acres of the property.

B. Bank Type: Commercial

C. Scope of Work

The proposed Mitigation Site will be fully integrated with the property's existing Rural Legacy Easement providing an increase of contiguous, high-quality wetland, stream, and forest habitat. The Mitigation Site will likely be completed in a single phase to benefit native trout and other wildlife. Feasibility studies support a mitigation design that would include the following elements:

1. Wetland Restoration/Creation: Wetland elevations will be selected to connect with seasonal high groundwater and to manage both vertical and horizontal surface and groundwater movement. These wetlands will maximize retention of precipitation and runoff, as well as bankfull flows from the adjacent streams by establishing microtopography to support wetland hydrology, vegetation, and soils. In addition, stream restoration will reconnect the historic floodplain, which will provide additional hydrology to adjacent created wetlands. Habitat provided will be predominantly PFO. Wetland restoration/creation will account for 23.60 ac/1,028,275 square feet of credits based on a 1:1 credit ratio.

2. Wetland Enhancement: Three existing wetlands will be enhanced to provide functional uplift. Two of the three wetlands have extensive invasive species which will receive treatment before construction and will be monitored closely to prevent re-establishment or spreading. Wetland enhancement will improve vegetation and hydrology to provide PFO habitat.

   Wetland 1 contains reed canary grass (*Phalaris arundinacea*), which will be periodically sprayed and/or mowed prior to construction. Construction will likely include scraping and disposal of soils from those areas with high reed canary grass. To increase likelihood of success, these existing wetland areas will be heavily planted with woody species to attempt

to shade out any invasive species. The forested areas of Wetland 1 will be treated for invasive with supplemental planting where appropriate. Wetland 3 contains phragmites (*Phragmites australis*); it will be periodically sprayed and mowed prior to construction and the release of credits. Wetland 2 will simply involve some minor regrading and planting.

PEM wetland enhancement will total 3.02 ac/131,566 square feet for 0.76 acre-credits based on a 4:1 credit ratio.

Wetland Buffer Enhancement/Establishment: Surrounding all mitigation areas, 25 feet of forested upland buffer will be established. These areas will be planted with native trees and shrubs to establish habitat connectivity and provide further resource protection. The riparian vegetation chosen will have long-term resilience and an emphasis on species that will provide yearlong habitat and food sources for a variety of organisms.

3. Stream Restoration: The existing incised channels will be restored using low-flow channels. The channels will be realigned, and the invert raised to allow reconnection with the historic floodplain. The new channels will allow frequent out-of-bank flows, and floodplain microtopograhy will allow the hydrology of the system to spread valley-wide creating a stream-wetland complex. Dense wetland vegetation will offer floodplain protection, slowing the flow of water where out-of-bank floods would typically occur. On-site salvaged materials such as wood, sod, gravel, and vegetation will be used for stabilization and roughness elements throughout the design. Materials will increase floodplain roughness and further slow water velocities as well as promote nutrient cycling, sediment storage, and ecological diversity. The riparian area will be planted with native woody species to promote stability.

   Approximately 5,233 lf of stream will be restored for 5,233 stream credits based on a 1:1 ratio. Proposed wetland restoration areas adjacent to the streams will function as stream buffers.

D. Conceptual Mitigation Plan
   Planview Concept can be found in Appendix A.

E. Projected Credits
   Credit calculations will follow IRT and MDE guidelines. The final calculation of the anticipated credits generated will be determined by the IRT based upon final approval of the design, SSMP, and UMBI. The release of credits will be determined by the IRT based on an approved as-built and successful attainment of Performance Standards. Credits generated for the use of compensatory mitigation credits cannot also be used to provide credits for another federal program (e.g., TMDL credits). No credit may be re-sold or used in any way in relation to another permit requirement, as compensation for another resource, or to satisfy the requirements of any other program. Proposed credit ratios and total credits are contained in Table 2. The credits shown are based on the ratio method currently being used by the agencies. However, additional methods of credit calculation are being considered and may be proposed in the Site-Specific Mitigation Plan in the future. These crediting protocols are function based rather than ratio based. Ecotone is evaluating functional/condition assessment methodologies

to quantify functional lift at the Mitigation Site, such as the North Carolina Stream Quantification tool.

**Table 2: Summary of Pheasant Run Mitigation Site Credits by Type**

| Proposed Mitigation Type | Area | Ratio | Credits Available |
|---|---|---|---|
| Wetland Restoration | 23.60 ac | 1:1 | 23.60 ac |
| Wetland Enhancement (Wetland 1-*Phalaris*) | 2.54 ac | 4:1 | 0.64 ac |
| Wetland Enhancement (Wetland 2) | 0.02 ac | 4:1 | 0.005 ac |
| Wetland Enhancement (Wetland 3- *Phragmites*) | 0.45 ac | 4:1 | 0.11 ac |
| Wetland Buffer Enhancement/Establishment | 4.26 ac | 15:1 | 0.28 ac |
| Stream Restoration | 5,233 lf | 1:1 | 5,233 lf |

F. Proposed Credit Release Schedule

The credit release schedule will be tied to the achievement of specific, performance-based milestones, and financial assurance criteria defined in the Pheasant Run Site-Specific Mitigation Plan and the Ecotone UMBI. Monitoring may be terminated, or the extent of monitoring may be reduced over part or the entire site at the petitioning of the Bank Sponsor and at the discretion of the IRT based on overall site performance. Conversely, the IRT may extend the original monitoring period upon a determination that Performance Standards have not been met or the Mitigation Site is not on track to meet them. A summary of the credit release schedules for stream and wetland credit are contained in Table 3 and 4, respectively. These credit releases are based on guidance for initial, interim, and final credit release schedules from Corps Regulatory Guidance Letter 19-01 (February 22, 2019).

**Table 3: Summary of Pheasant Run Mitigation Site Stream Credit Release Schedule**

| **Stream Mitigation Bank Milestones** | **Credits Released** | **Cumulative Credits Released** |
|---|---|---|
| UMBI execution by Sponsor, Corps, MDE, and other IRT agencies; approval of the SSMP; implementation of financial assurances, recordation of the approved site protection mechanism; and approval of the long-term management plan. | 20% | 20% |
| Successful completion of all required physical and biological work in accordance with the UMBI and approved SSMP. The Sponsor must submit a request for this release to the Corps and MDE with an as-built drawing documenting completion of construction and planting. A site visit may be performed by the IRT to confirm the status of the mitigation site and written approval will be provided by the Corps and MDE. Financial assurances will be in place. | 60% | 80% |
| Attainment of year ten performance standards as determined by the IRT and contingent upon the Sponsor's submission of the year ten monitoring report. If during or after the fifth monitoring year, the Mitigation Site has met the final Performance Standards for two consecutive monitoring years, the sponsor may propose that all remaining credits be released. | 20% | 100% |

**Table 4: Summary of Pheasant Run Mitigation Site Wetland Credit Release Schedule**

| **Wetland Mitigation Bank Milestones** | **Credits Released** | **Cumulative Credits Released** |
|---|---|---|
| UMBI execution by Sponsor, Corps, MDE, and other IRT agencies; approval of the SSMP; implementation of financial assurances, recordation of the approved site protection mechanism; and approval of the long-term management plan. | 20% | 20% |
| Successful completion of all required physical and biological work in accordance with the UMBI and approved SSMP. The Sponsor must complete the initial physical and biological improvements no later than the first full growing season (by November 1 of the following year) following initial debiting from the Mitigation Site. The Sponsor must submit a request for this release to the Corps and MDE with an as-built drawing documenting completion of construction and planting. A site visit may be performed by the IRT to confirm the status of the mitigation site and written approval will be provided by the Corps and MDE. Financial assurances will be in place. | 60% | 80% |
| Attainment of year ten Performance Standards as determined by the IRT and contingent upon the Sponsor's submission of the year ten monitoring report. If during or after the fifth monitoring year, the Mitigation Site has met the final Performance Standards for two consecutive monitoring years, the sponsor may propose that all remaining credits be released. | 20% | 100% |

G. Joint Permit Application & Other Permits

A revised permit application will be submitted to MDE and the Corps regarding the Mitigation Site; a Joint Permit Application will be submitted with the draft mitigation banking instrument/Mitigation Site Plan and further development of concept plans. A Preliminary Jurisdictional Determination will be requested at the time of Joint Permit Application. The Bank Sponsor will obtain all appropriate permits or other authorizations needed to construct and maintain the Mitigation Site prior to initiating construction activities at the Mitigation Site and prior to Debiting any Credits beyond the initial release. The Prospectus and UMBI do not fulfill, substitute for, or affect such authorization.

Based on consultation with regulatory agencies, a Nationwide 27 authorization will be pursued. Therefore, a separate public notice is not required for permit authorizations.

## IV. Proposed Geographic Service Area

A. Service Area Map

The Mitigation Site shall provide mitigation to compensate for impacts to WOTUS and/or Waters of the State within the service areas as shown on the Service Area Map (Appendix A). Primary Geographic Service Area: Gunpowder-Patapsco River Basin, Federal 8-digit HUC 02060003.

Secondary Geographic Service Areas: Piedmont physiographic provinces - Lower Susquehanna (Federal 8-digit HUC: 02050306) and Patuxent (Federal 8-digit HUC: 02060006).

B. Rational Geographic Service Areas

The primary geographic service area will be the Gunpowder-Patapsco River Basin. This watershed is affected by the development and urbanization of the Baltimore metropolitan region, resulting in many impaired waterways. Within the watershed, non-tidal wetlands potentially be affected by development may be PFO, PSS, or PEM. These wetlands have similar functions and values to those proposed at the Mitigation Site. Impacts to wetlands of special concern or those deemed unique by regulatory agencies may require mitigation at higher ratios or other means as determined on a case-by-case basis by the IRT. The Service Area contains similar geographic, soil, and vegetation characteristics between the various sub watersheds. Most wetlands within the Service Area have similar hydrology inputs in the form of precipitation and seasonal high groundwater, with some that may be located adjacent to a stream large enough to provide substantial flood water.

The secondary service area will include the Piedmont physiographic province of the following watersheds: Lower Susquehanna and Patuxent. These adjacent watersheds are acceptable as secondary service areas because the Mitigation Site is in the Piedmont physiographic province and because topography, functions and values, and species composition is similar across the watersheds. These secondary service areas are within or drain to the Upper Chesapeake watershed (020600).

Use of this Mitigation Site for compensatory mitigation within the secondary service area may be considered during permit review process only when there are no available credits in the primary service area of any other Mitigation Site and the applicant can demonstrate with documentation that the secondary service area will replace the lost aquatic functions at the impact site with in-kind mitigation. No Credits will be used for compensatory mitigation outside the geographic service area unless approved by the permitting agencies on a case-by-case basis, through the project-specific permit decision.

## V. Need and Technical Feasibility

A. Watershed

The Mitigation Site is located within the Long Greek Creek watershed, a sub watershed of Lower Gunpowder Falls within the Gunpowder-Patapsco River Basin. The Long Green Creek watershed is primarily agricultural, though watersheds to the south are highly developed and/or facing heavy development pressure. Water quality in the Lower Gunpowder is largely affected by nutrient and sediment inputs. Primary land uses within the Gunpowder-Patapsco River Basin watershed are urban, residential, agriculture, and forest. Major tributaries within this include the Gunpowder, Patapsco, and Middle Rivers, all of which are experiencing water quality impairment. The drainage for these rivers is almost entirely within Maryland and includes the major urban areas of Baltimore, Towson, Dundalk, and Bel Air, Maryland, all of which are experiencing development pressures. The Mitigation Site is consistent with goals and needs within its watershed.

B. Site Selection

The following site selection factors were evaluated when considering this mitigation site: agreement with existing watershed plans, water quality, aquatic/terrestrial habitat diversity and connectivity, hydrologic sources, habitat connectivity, ecological benefits, and compatibility with adjacent land uses.

In the *Lower Gunpowder Falls Watershed Sediment TMDL Implementation Plan* (Draft 2018, State Highway Administration), the Long Green Creek watershed is identified as impaired and is a high restoration priority. Suggested Best Management Practices for TMDL improvement include tree plantings, stream restorations, and stream buffer improvements, all of which are a goal of this project. Among sub watersheds within Lower Gunpowder, the *Lower Gunpowder Falls (Rural) Small Watershed Action Plan* (2017) ranks the Long Green Creek as the highest in nitrogen and phosphorus loading, the lowest in fish and benthic indices, and it has the most potential "hotspots" for high concentrations of stormwater pollutants. Long Green Creek was ranked as the highest for restoration prioritization. In addition, the tributaries on-site have various impairments according to Maryland's online mapping of *2016 Integrated Report of Surface Water Quality and Total Maximum Daily Loads*. Impairments include the nutrients nitrogen and phosphorus, and total suspended solids.

The five unnamed tributaries to Long Green Creek have limited geomorphic functionalities due to historic straightening, ditching, and bed and bank erosion. Degradation to the channels originates from agriculture and within the drainage area causing sheet runoff into the stream channel resulting in increased scour. Historic straightening of the channels has removed much of the natural sinuosity, further adding to degradation. In addition, the upstream end of the mainstem currently serves as a barrier to fish passage; the bottom of the concrete box culvert sits approximately 18 inches above the stream invert. Restoration of the stream will reconnect aquatic habitat upstream of the site. Holistic site restoration will help to improve habitat quality and availability in these first-order, Use III trout streams. In addition, the site has robust hydrologic resources including five incised streams and a high water table over portions of the

site. Properly harnessing these resources will allow for high quality stream and wetland restoration.

The Mitigation Site is ideally situated to offer habitat connectivity to FIDS habitat located on the northern portion of the property and more extensive areas to the northeast. These areas are also designated by DNR as Tier 5 of the Biodiversity Conservation Network, indicating they are "significant" for biodiversity conservation. Existing forested wetland occurs adjacent to the northern boundary of the property. Pheasant Run farm is located 0.5 miles from a Green Infrastructure corridor to the southeast, and 0.7 miles from a Green Infrastructure hub and DNR Targeted Ecological areas along the Little Gunpowder. In addition, the establishment of a robust riparian corridor and taking some agricultural areas out of production will help mitigate and eliminate non-point source nutrient and sediment inputs from agricultural runoff that have and continue to impact the aquatic resources within the watershed. The use of the property for restoration and some continued agriculture is comparable with surrounding land usage.

The Mitigation Site is ideally situated to fit into current surrounding land uses, provide habitat connectivity and ecological benefits. The Mitigation Site is located in close proximity to previously restored reaches in Long Green Valley. In addition, the Gunpowder-Patapsco watershed is under high development pressure with high demand for wetland and stream mitigation; the site will provide necessary mitigation for Primary and Secondary Service Areas. Water quality improvements in the form of elimination of sediment, nitrogen, phosphorus, and other pollutants and improved channel stability will benefit the watershed.

Feasibility studies are ongoing and consist of both office review of resources and visual assessments evaluating soil profiles, drainage patterns, and aerial imagery. Groundwater monitoring wells, soil borings, vegetation identification, water samples, topographic surveys, geomorphic surveys, sediment transport analyses, and photo documentation stations will be employed to establish baseline monitoring.

C. Regional and Local Benefits

The primary benefits of the restoration include the improved water quality to downstream landowners and users within the watershed. Improved function will benefit aquatic and terrestrial wildlife and allow increased movement between ecologically rich areas. Additional benefits include the ability of impacted wetlands or waterway functions within the geographic service area to be replaced in a manner that may provide better functionality and ecological uplift than smaller, piecemeal mitigation efforts.

D. Potential Threats

As in any ecological restoration the most substantial threats to the bank or resource types provided are likely to be climate change and invasive species potential. Climate change has the potential to alter plant species' range and cover within the Mitigation Site but should not affect the overall function of the ecosystem. Invasive plant species may be introduced on the site, however long-term monitoring and maintenance should sustain the integrity of the site. In general, threats to the bank or resource functionality are expected to be minimal. Alterations

to hydrology in the form of water withdrawals, planned diversions, and man-made dams are unlikely to be a threat.

E. Access

Access to the parcel is available directly from Patterson Road and Baldwin Mill Road. Several entrances into the property will be maintained for continued agricultural use and access into the mitigation area.

F. Description of Construction

Preliminary assessments reveal that minimal disturbance, grading, and alteration to existing hydrologic conditions will be required to construct a self-sustaining stream and wetland ecosystem requiring minimal maintenance over time. Proposed restoration measures are listed below:

- Soil, wood, and other organic material will be spoiled on site and used in the design to add habitat complexity and achieve a cut-fill balance.
- Site preparation will include installation of stabilized construction entrances, establishment of dedicated stockpile and staging areas, implementation of soil erosion and sediment control measures, and limited clearing and grubbing.
- Wetland restoration will include excavation, soil decompaction, and grading to establish microtopography.
- Stream channel restoration will include filling the channel with soil to raise the invert of the stream and reconnect the stream with its historic floodplain.
- Implement a native species planting/seeding plan to establish targeted community composition, structure, and diversity.
- Implement a proactive and diligent invasive/non-native vegetation control and management plan.
- Implement adaptive management, maintenance, and monitoring plans, assuring successful achievement of mitigation objectives.

Stream restoration will involve raising the invert of the streams until the desired grade is achieved and the streams are reconnected with the historic floodplain. Channels will also be realigned. Construction of the new channels will be completed in-the-dry wherever feasible while using the existing channels as a clear-water diversion. Where possible, new channels will be allowed to revegetate before reconnecting flow within them. Planted and volunteer wetland vegetation provide shade and stability to the system. The resulting stream-wetland complex will act as floodplain protection, slowing the flow of water where out-of-bank floods would typically occur.

Adjacent to the restored stream, wetland restoration and creation will be accomplished by stripping and grading the existing cropland. Existing topography will be modified by lowering grades to connect with seasonal high groundwater and to manage both vertical and horizontal surface and groundwater movement. Wetland grading will maximize retention of precipitation and runoff, as well as bankfull flows from the adjacent streams. Microtopography will be

established to support a variety of wetland hydrology, vegetation, and soils. Wetland enhancement will focus on maximizing hydrology and planting of native wetland species.

Large woody debris will play a significant role as any trees removed during construction will be reused on-site. Large woody debris will be placed in the floodplain as well as in the constructed wetlands to direct flows during out of bank events and to provide roughness, habitat, and carbon. Additional materials salvaged on-site such as wood, sod, gravel, and vegetation will be used for stabilization and roughness elements throughout the design. These materials will increase floodplain roughness and further slow water velocities as well as promote nutrient cycling, sediment storage, and ecological diversity.

Surrounding the entire resource restoration area 25 feet of forested buffer will be established. After construction, all areas will be planted with a wide variety of native trees, shrubs, and herbaceous species to establish habitat connectivity and provide further resource protection.

## VI. Long-term Management

A. Long-term Ownership
After restoration, the parcel will continue to be owned by Wooly Bugger, LLC. Those areas not permanently protected for mitigation, will be used for agriculture including, crop production and growing landscape/nursery plants. Wooly Bugger. LLC will own the easement area that includes the restoration activities.

B. Long-term Management
After the Monitoring & Maintenance period and Mitigation Site closeout, a Long-Term Management Plan will be implemented by the Long-Term Steward. After Mitigation Site closure, the Long-Term Steward shall be responsible for reporting in accordance with the Long-Term Management Plan. Monitoring may be terminated, or the extent of monitoring may be reduced over part or the entire Mitigation Site at the discretion of the IRT acting through the Chairs. The final SSMP will contain more details on the Long-Term Steward.

C. Site Protection Instrument
The property is currently protected in perpetuity by a Rural Legacy Easement held by Baltimore County, Long Green Conservancy, and Department of Natural Resources. Ecotone has discussed and presented the restoration project to the easement holders to obtain their support of an additional conservation easement related to the mitigation bank. The project is consistent with conservation values and attributes described the rural legacy easement. If for unforeseen reasons an additional conservation easement is not feasible, a Declaration of Restrictive Covenants will be used to ensure site protection. Any site protection will follow the guidelines set up by MDE and the Corps.

D. Holder of Site Protection Instrument
If an easement is recorded, Ecotone and Wooly Bugger, LLC intend to have Long Green Conservancy as the easement holder. Discussions are ongoing.

## VII. Sponsor Qualifications

The Sponsor, Ecotone, Inc., is a full-service ecological consulting, design, and construction company established in 1998. Over the past two decades Ecotone has delivered quality outcomes and pioneered innovative approaches that have helped establish the company and staff as experts in ecological restoration. The diverse and multi-disciplinary staff of ecologists, regulatory specialists, restoration designers, engineers, construction managers, and equipment operators participate in all aspects of project implementation including data collection, conceptual design, permitting/regulatory coordination, construction oversight, planting, and pre- and post-construction monitoring, maintenance, and adaptive management.

To date, Ecotone has provided ecological restoration services for more than 300 public and private environmental restoration projects, designed and/or constructed over 32 miles (over 172,000 linear feet) of river and stream restoration, 665 acres of reforestation, and 600 acres of wetland restoration throughout the Mid-Atlantic region. The restoration approach varies by job and expansive project history gives Ecotone a wide range of experience that allows for innovative and effective restoration. In keeping with Ecotone's habitat restoration approach, staff recognize that wetland restoration projects are multi-faceted and have a larger impact than a project's "limit of disturbance." During the implementation of all projects, careful attention is paid to the integration of the adjacent ecosystems, hydrologic interactions between streams, wetlands, groundwater, and vegetative communities therein to ensure that ecological uplift is maximized.

Ecotone has provided design-build services for more than 300 public and private environmental restoration projects. Several of these projects have been design-build mitigation projects for either private users or for agencies such as the Maryland Department of the Environment, Maryland Department of Natural Resources, and the State Highway Administration.

Located in Forest Hill, Maryland, Ecotone is well-versed in local regulations and conditions and will be able to ensure long-term success of the project. The Pheasant Run Mitigation Site will be Ecotone's sixth wetland mitigation bank/consolidated user project (pre-2008 Rule) in the Chesapeake Bay watershed.

## VIII. Ecological Suitability

A. Title Report
See Appendix A. As noted previously, there is a Rural Legacy Easement on the property that is compatible with the proposed restoration uses. There were no other encumbrances noted in the report that would affect the ability to conduct/approve the activities proposed.

B. Property Assessment
The following is a summary of all liens and easements.

- Mortgage: In 2018, Wooly Bugger, LLC secured a mortgage from MidAtlantic Farm Credit, ACA for the purchase of the property.
- Right of Way Agreement: In 1969, BGE secured a right of way adjacent to Patterson Road north of the Tributary to Long Green Creek. This area is outside of any proposed mitigation areas.
- Conservation Easement: In 2002, previous owners, Pheasant Run Farm, Inc. placed the property in a Rural Legacy Easement. The purpose of the easement is to enhance natural resource, agricultural, forestry, and environmental protection while maintaining the viability of resource-based land usage and proper management of tillable and wooded areas through accepted agricultural and silvicultural practices. This easement extends over the entire property and does not prohibit mitigation banks. Ecotone is working with the easement holders to secure their approval.

C. Title Insurance Policy
See Appendix A

D. Other Credit Types
No other existing or proposed credit types will affect the property or restrict the credit capacity of the proposed restoration activities.

E. Baseline Conditions
The parcel is located in Long Green Valley, east of Patterson Road and west of Baldwin Mill Road. It is surrounded by family farms and rural residences with a small group of commercial properties located along the southeast boundary. Zoned agricultural, the parcel is used for crop production and commercial cultivation of landscaping trees and shrubs. The only buildings located on the parcel are two small equipment sheds. Soils are predominantly silt loam and range from well-drained to poorly-drained within the restoration area (Table 5). Except for three existing non-tidal wetlands, the proposed restoration areas lack all three parameters (hydrology, vegetation, soil) required to be a classified as wetland. Photos are included in the Wetland Report in Appendix A.

| Table 5: Soil Table for Pheasant Run Mitigation Site | | | | |
|---|---|---|---|---|
| **Map Unit Symbol** | **Map Unit Name** | **Hydric** | **Hydrologic Soil Group** | **Drainage** |
| BaA | Baile silt loam, 0 to 3 percent slopes | Yes | C/D | Poorly drained |
| BcA | Baltimore gravelly loam, 0 to 3 percent slopes | No | B | Well drained |
| BgB | Benevola silt loam, 3 to 8 percent slopes | No | C | Well drained |
| ChB | Conestoga silt loam, 3 to 8 percent slopes | No | B | Well drained |
| LsA | Lindside silt loam, 0 to 3 percent slopes | Yes | C | Moderately well drained |
| WhA | Wiltshire silt loam, 0 to 3 percent slopes | No | C | Moderately well drained |
| WhB | Wiltshire silt loam, 3 to 8 percent slopes | No | C | Moderately well drained |

The property's five unnamed tributaries to Long Green Creek drain toward the centrally-located tributary. **Tributary 1** is an approximately 841-linear foot, perennial waterway located in the western portion of the site. It flows southeast through Wetland 1 before joining with Tributary 3 near Patterson Road. **Tributary 2** is an approximately 900-linear foot, perennial waterway located in the central portion of the site. It flows south within a straightened channel that separates two agricultural fields. Tributary 2 flows into Tributary 3 near Patterson Road. **Tributary 3** is an approximately 1,947-linear foot, perennial waterway in the central portion of the site. It enters the site via a culvert under Baldwin Mill Road and flows southwest, joining with other tributaries before flowing offsite via a culvert under Patterson Road. The box culvert at Baldwin Mill Road is a barrier to fish passage, as the culvert bottom is approximately 18 inches above the water surface. **Tributary 4** is an approximately 662-linear foot, perennial waterway located in the eastern portion of the site. It enters the site from between two commercial properties to the south and flows northwest within a narrow, forested riparian buffer to its confluence with Tributary 3. **Tributary 5** is an approximately 1,044-linear foot, perennial waterway/ditch located adjacent to Patterson Road. It flows west along the roadway to its confluence with Tributary 3. The total drainage area of streams on site is approximately 1.1 square miles. The floodplain is extensive and encompasses all central portions of the site.

Within the property, all tributaries have been historically straightened and lack sinuosity. At present, all channels are incised and disconnected from their former floodplains. Agricultural practices adjacent to Tributaries 2, 3, and portions of 4 have created berms on the streambanks, further constraining floodplain access. Tributaries 3, 4, and 5 are directly impacted from runoff originating from adjacent roadways and parking lots. Tributary 5 is regularly maintained by Baltimore County to prevent roadside flooding. The existing conditions of the tributaries demonstrate low functional ability, substrate, diversity of regimes, native vegetation, and floodplain connection, all major contributors in habitat availability for most fish and macroinvertebrates.

The *North Carolina Stream Quantification Tool's* Catchment Assessment ranks the overall catchment condition between poor and fair. The catchment area demonstrates poor functional ability with the possible for functional uplift as a result of restoration. All tributaries scored as poor or fair in most categories, with the exclusion of land use change. Tributaries demonstrate concentrated flows and impairments without treatment upstream of the project. Tributaries 1-3 have between 10.6 and 11.1% impervious cover, while Tributary 4 has 23.5% impervious cover. Tributary 5 is too small to calculate impervious cover. Moderate-to-high sediment supply from upstream bank erosion and surface runoff is carried into the tributaries, resulting in silted and sandy stream bottoms with minimal riffle-pool sequences.

The catchment area land use is majority low-density residential and agricultural. The drainage area for Tributaries 2, 3, 4, and 5 are less than 11% forested, while the drainage area for Tributary 1 is 32.8% forested. All tributaries have some stream buffer; however, existing buffers lack diversity and are comprised of large amounts of invasive species. The proposed restoration will restore approximately 40% of the catchment area; the ability to work on multiple reaches feeding into a major body of water will magnify ecological benefits. Upon the completion of proposed restoration, the catchment will be classified at a higher rating.

Three non-tidal wetlands totaling 3.02 acres are present on site. **Wetland 1** contains emergent (PEM) and forested (PFO) wetland along the northern edge of the property and is 2.54 acres. The PEM portion of Wetland 1 is 2.30 acres vegetated by grasses and sedges; the PFO portion is 0.24 acres populated mainly with red maple and small shrubs. **Wetland 2** is a small emergent (PEM) wetland in the center of the property; it is 0.02 acres in size and vegetated by sedges, soft rush, and other herbaceous vegetation. **Wetland 3** is a predominantly emergent (PEM) and located along the southeastern property boundary totaling 0.45 acres. Wetland 3 is comprised almost entirely of phragmites with small, scattered black willow. None of the wetlands are currently farmed.

Existing wetland functions were analyzed using the concepts outlined in *The Highway Methodology Workbook Supplement: Functions and Values by the U.S. Army Corps of Engineers New England District*. The principal functions of Wetlands 1 and 3 are floodflow alteration, sediment/toxicant reduction, sediment/shoreline stabilization, and wildlife habitat. These functions can be attributed to the dense emergent vegetation present. However, the vegetation is dominated by non-native species. In Wetland 2, the principal functions are floodflow alteration and wildlife habitat. The wetland in a relatively flat area surrounded by uplands and therefore serves as storage for overland flow during rain events.

The Mitigation Site is primarily comprised of existing agricultural fields and area planted for commercial nursery trees. The property falls within the USDA plant hardiness zone 7a, meaning plants in this region are tolerant of temperature lows of 0-5°F. Nursery areas consist mainly of native tree cultivars, surrounded by grassy areas. No mature forest exists on site. Invasive vegetation was common along stream banks (Table 6).

| Table 6: Common Plant Species found at the Pheasant Run Mitigation Site | |
|---|---|
| **Native Species** | |
| Eastern White Pine (*Pinus strobus)* | Green Ash *(Fraxinus pennsylvanica)* |
| Eastern Red Cedar *(Juniperus virginiana)* | American Sycamore *(Platanus occidentalis)* |
| Black Cherry *(Prunus serotina)* | Black Locust *(Robinia pseudoacacia)* |
| Silver Maple *(Acer saccharinum)* | Tulip Poplar *(Liriodendron tulipifera)* |
| Red Maple *(Acer rubrum)* | Soft Rush *(Juncus effusus)* |
| Black Willow *(Salix nigra)* | Common Milkweed *(Asclepias syriaca)* |
| Red Osier Dogwood *(Cornus sericea)* | Allegheny Monkeyflower *(Mimulus ringens)* |
| Pin Oak *(Quercus palustris)* | Sweet Gum *(Liquidambar styraciflua)* |
| Timothy Grass (*Phleum pretense)* | Goldenrod *(Solidago spp.)* |
| Arrowleaf Tearthumb (*Persicaria sagittata)* | Beggarsticks *(Bidens sp.)* |
| Fescue *(Festuca sp.)* | Prairie Wedgescale *(Sphenopholis obtusata)* |
| Rice Cutgrass (*Leersia oryzoides*) | Pokeweed (*Phytolacca Americana)* |
| **Non-native, Invasive Species** | |
| Wineberry *(Rubus phoenicolasius)* | Japanese Honeysuckle *(Lonicera japonica)* |
| Phragmites *(Phragmites australis)* | Bradford Pear *(Pyrus calleryana)* |
| Reed Canarygrass (*Phalaris arundinacea*) | Norway Maple *(Acer platanoides)* |
| Privet *(Ligustrum sp.)* | Multiflora Rose *(Rosa multiflora)* |

F. Previous Land Use

The Mitigation Site has historically been used for agriculture. Historical use of the surrounding land was also largely agricultural. More recently, some surrounding parcels have been used for low density, rural residences and commercial businesses to the south.

G. Zoning & Development

Current zoning of the parcel is agricultural. Surrounding zoning is predominantly agricultural and residential except for a small number of commercial properties to the south.

H. Historical Hydrology

Historical Hydrology is not known. Some of the agricultural fields may have drain tiles though there is no record of when or where this may have been installed. Broken drain tile has been located near Baldwin Mill Road and Tributary 3 and there is evidence of portions of the agricultural fields having low crop yield because of wet soils. Streams have been relocated/straightened by ditching and no historical records have indicated dams or mills on the property. There is a functioning water well on site for nursery operations.

I. Monitoring

Groundwater monitoring wells were installed in April 2019 in six locations. Two are located on the edge of the Tributary 3, with four more located within the existing farm field or nursery areas. Data collection is ongoing.

Water temperature monitoring loggers were also deployed in Tributary 3 from April-October 2020 to monitor summer temperatures. Loggers will be deployed again in Spring 2021.

Channel morphology and bank substrate analysis was conducted on all five tributaries.

Fisheries and benthic macroinvertebrate information will be collected in Spring 2021 to determine population and usage within on-site streams. Post-construction, Ecotone will work with DNR fisheries to continue assessments of these populations.

J. Bank Reference Maps
Reference Maps can be found in Appendix A.

K. Delineation Report
The wetlands and waters on the site have been delineated in the field per current standards, surveyed, and depicted on the site plan. The delineation limits are shown on Planview Concept in Appendix A and in the Delineation Report which can be found in Appendix A.

L. Existing Resource Types/Classifications

**Table 7: Wetland and Waterway Classification Summary**

| Resource | Type | Cowardin Classification | Stream Order | Cluer & Thorne[5] Channel Evolution Stage |
|---|---|---|---|---|
| Wetland 1 | Emergent | PEMIA, PFO1A | - | - |
| Wetland 2 | Emergent | PEM1A | - | - |
| Wetland 3 | Emergent | PEM1B | - | - |
| Unnamed Tributary 1 | Perennial | R4SB6/7 | First | Stage 0 (Anastamosing) |
| Unnamed Tributary 2 | Perennial | R2UB1/2 | First | Stage 3 (Degrading) |
| Unnamed Tributary 3 | Perennial | R2UB1/2/3 | Second | Stage 3 (Degrading) |
| Unnamed Tributary 4 | Perennial | R2UB1/2 | First | Stage 3 (Degrading) |
| Unnamed Tributary 5 | Perennial | R2UB1/2 | First | Stage 2 (Channelized) |

[5] Cluer, B., and C. Thorne. "A Stream Evolution Model Integrating Habitat and Ecosystem Benefits." River Research and Applications, vol. 30, no. 2, 2013, pp. 135–154.

## IX. Hydrology and Water Rights

A. Water Rights

The Mitigation Site is located within the headwaters of the Long Green Creek watershed. The proposed project includes grading and planting which will spread out available hydrology from stormwater and high flows to allow groundwater recharge but is not intended to interrupt downstream flows. The proposed project will not flood upstream properties. The Bank Sponsor is not aware of any upstream owners having any rights to divert or withdrawal water that could affect the quantity and duration of hydrology to this site.

B. Hydrological Disturbances

Existing hydrological disturbances include the historical straightening and ditching of the tributaries leading to severely incised streams. Additionally, tile drains are likely within portions of the existing agricultural fields. Restoration seeks to remove these existing disturbances. If any hydrological disturbances occur post-construction, they will likely originate on adjacent properties or roadways. Given the land use in this area and the laws of Baltimore County protecting stream buffers and wetlands from development, hydrological disturbances are unlikely to occur. The most plausible disturbance could come from future development within the drainage area; any additional impervious surfaces occurring from such development would serve to improve the hydrology and efficacy of the Mitigation Site to improve hydrologic conditions within the watershed.

C. Structural Management Requirements

No culverts will be required for the proposed project. Small weirs or berms may be used to assist with water retention and to regulate water depth throughout the project area. These areas are intended to be small. No levees or stream diversions from off-site would be required.

D. Water Sources and Losses

Water sources and inputs to the restoration area include precipitation, five non-tidal streams, and surface runoff from adjacent fields, roads, and commercial properties. Water losses are anticipated through evapotranspiration, groundwater recharge, and outflow of five non-tidal streams.

E. Hydroperiod

The Mitigation Site is anticipated to have strong early-spring and fall hydroperiods, with a slight drawdown during typically dryer summer months. These hydroperiods will last for a minimum of 14 consecutive days and include flooding, ponding, or a water table within 12 inches of the soil surface occurring at a minimum frequency of 5 years out of 10. In addition, heavy rainfall frequently associated with summer storms will be captured and retained in the restoration area. Depth of inundation during the hydroperiods is anticipated to range from 3 to 6 inches in low areas with higher areas seeing seasonal saturation.

F. Drainage Area

Drainage area of the Mitigation Site includes five on-site tributaries. The total drainage area of the Mitigation Site is 906.7 acres (1.42 square miles). Drainage Area Map can be found in Appendix A.

END

Ecotone, Inc.
410.420.2600 (P)
410.420.6983 (F)

# Pheasant Run Mitigation Bank

# Site-Specific Mitigation Plan Prospectus

## Appendix A: Supporting Documents

**1. Landowner Support Letter**
**2. Vicinity Map**
**3. Planview Concept Drawing**
**4. U.S. Fish and Wildlife IPaC Review**
**5. DNR – WHS Review**
**6. MHT Review**
**7. Geographic Service Area Map**
**8. Title Report**
**9. Title Insurance Policy**
**10. Reference Maps (Historic Aerials, NWI & FEMA, NRCS Soil, USGS Topo, 8-digit HUC)**
**11. Wetland Delineation Report**
**12. Drainage Area Map**

**WOOLY BUGGER, LLC**
129 Industry Lane
Forest Hill, MD 21050
410-459-6312

July 3, 2019

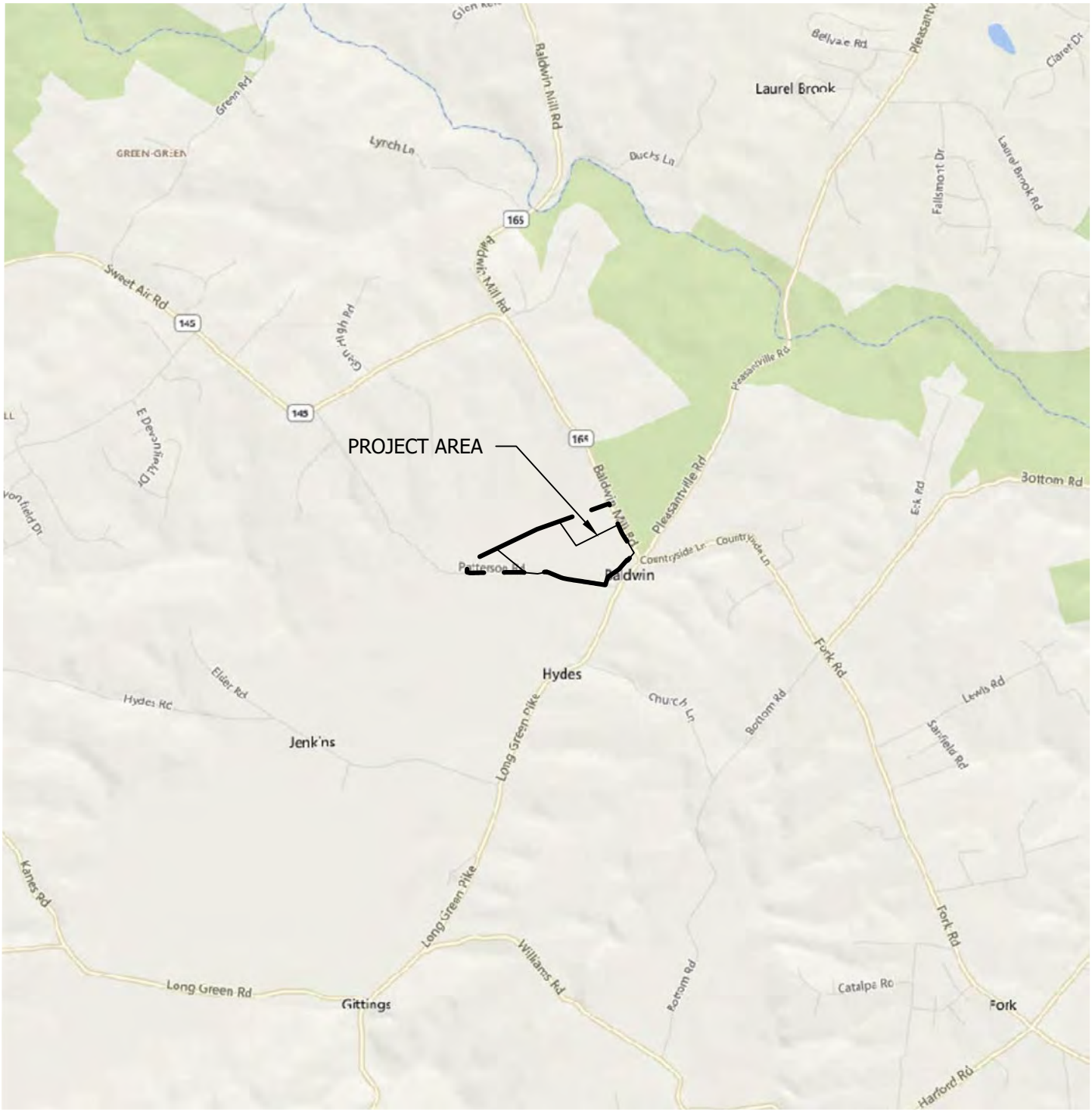
To Whom It May Concern:

I am writing to advise you that I am the owner of Pheasant Run Farm located on Baldwin Mill Road, Baltimore, Maryland 21013. I have entered into an agreement with Ecotone, Inc. for the purpose of creating a mitigation bank on a portion of the property. I am also the owner of Ecotone, Inc.

I understand that the long-term goal of the project is to provide water quality improvements and wildlife habitat through stream and wetland restoration and planting of native vegetation. Furthermore, I understand that all restoration areas and buffers will be protected in perpetuity through additional easements or declaration of restrictive covenants.

Respectfully submitted,

Scott G. McGill, Sr., Member




LEGEND

PROPERTY BOUNDARY

PROJECT AREA- LIMIT OF DISTURBANCE

ecotone
ecological restoration
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(410) 420 2600 · www.ecotoneinc.com

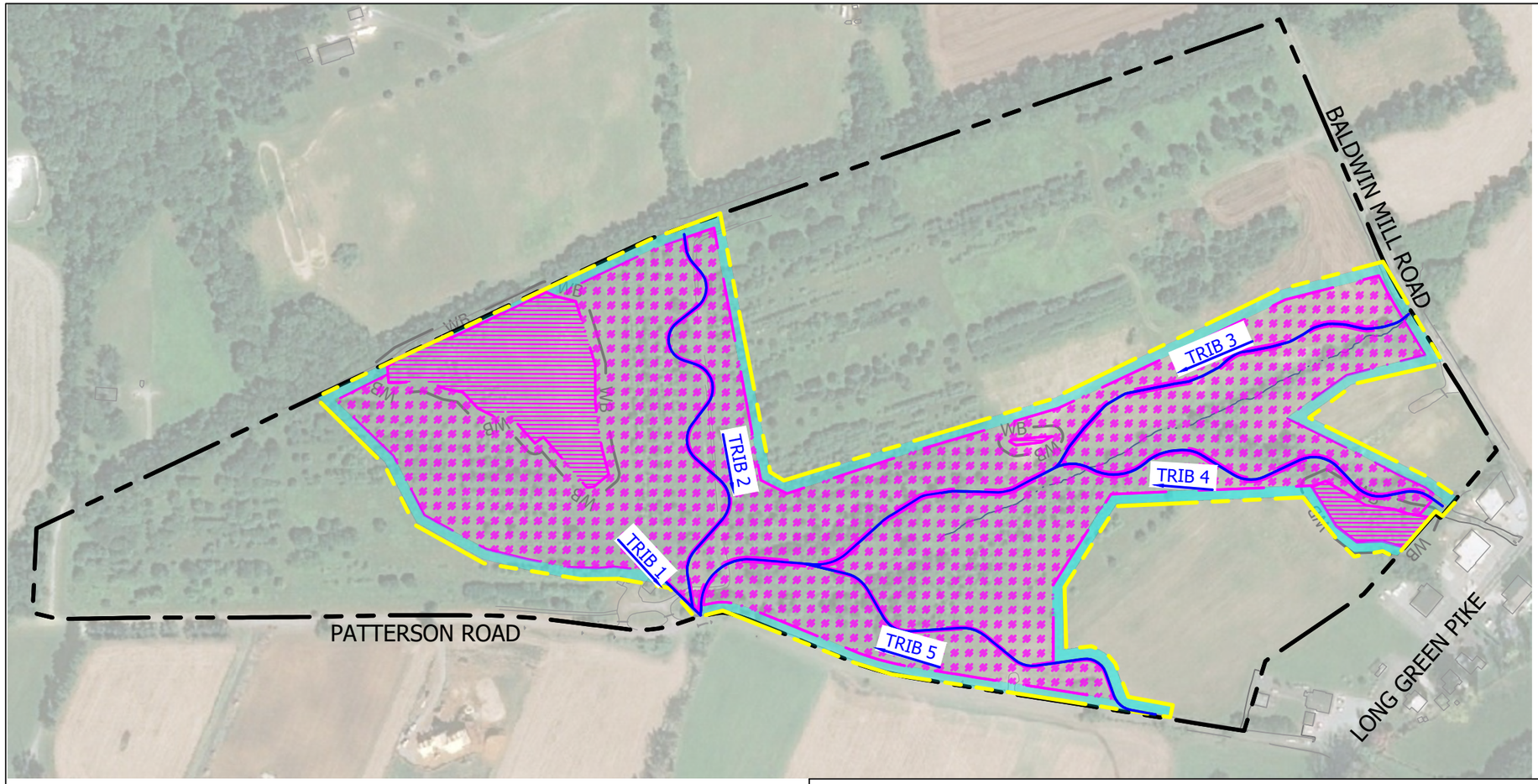
# PHEASANT RUN MITIGATION

## VICINITY MAP

BALDWIN MILL ROAD, BALDWIN, MD 21013

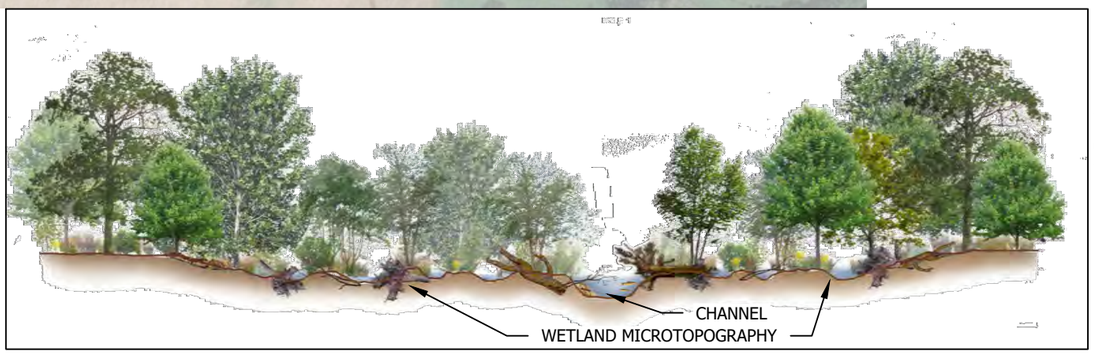
SCALE: 1" = 3000'

| PROJECT NO: 18-15-010 | DATE:7/22/2019 | DRAWN BY: CSM | CHECKED BY: MVB |
|---|---|---|---|




LEGEND

- PROPERTY BOUNDARY
- EASEMENT BOUNDARY
- STREAM RESTORATION (5,233 LF)
- WETLAND RESTORATION (23.60 AC)
- WETLAND ENHANCEMENT (3.02 AC)
- 25' BUFFER (4.26 AC)




TYPICAL LOW FLOW STREAM CROSS SECTION SHOWING WOODY DEBRIS AND WETLAND

0 300 600 Feet

SCALE: 1" = 300'

# PHEASANT RUN MITIGATION BANK

## PROPOSED CONCEPT MAP

S 5617 PATTERSON, BALDWIN, MD 21013

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# United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
Phone: (410) 573-4599 Fax: (410) 266-9127
http://www.fws.gov/chesapeakebay/
http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html

In Reply Refer To: November 16, 2018
Consultation Code: 05E2CB00-2019-SLI-0342
Event Code: 05E2CB00-2019-E-00764
Project Name: Pheasant Run Wetland Mitigation Bank

Subject: List of threatened and endangered species that may occur in your proposed project location, and/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. This 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.*).

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

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

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 Consultation Tracking Number 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
- Wetlands

# 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:

**Chesapeake Bay Ecological Services Field Office**
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
(410) 573-4599

# Project Summary

Consultation Code: 05E2CB00-2019-SLI-0342

Event Code: 05E2CB00-2019-E-00764

Project Name: Pheasant Run Wetland Mitigation Bank

Project Type: LAND - RESTORATION / ENHANCEMENT

Project Description: Proposed creation of 20-acre wetland mitigation bank.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/39.49649053024987N76.47702415936035W


Counties: Baltimore, MD

# Endangered Species Act Species

There is a total of 0 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.

---

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.

## 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.

# Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED. PLEASE VISIT HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

***Larry Hogan,*** *Governor*
***Boyd Rutherford,*** *Lt. Governor*
***Mark Belton,*** *Secretary*
***Joanne Throwe,*** *Deputy Secretary*

December 10, 2018

Ms. Marie Brady
Ecotone, Inc.
129 Industry Lane
Forest Hill, MD 21050

**RE: Environmental Review for Pheasant Run/Tributary to Long Green Creek - Stream Restoration and Wetland Creation Project, Baldwin Road and Patterson Road, Baltimore County, Maryland.**

Dear Ms. Brady:

The Wildlife and Heritage Service has determined that there are no official State or Federal records for listed plant or animal species within the delineated area shown on the map provided. As a result, we have no specific concerns regarding potential impacts or recommendations for protection measures at this time. Please let us know however if the limits of proposed disturbance or overall site boundaries change and we will provide you with an updated evaluation.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2018.1744.ba

20180594 1

ecotone
ecological restoration

Ecotone, Inc.
410.420.2600 (P)
410.420.6983 (F)

RECEIVED
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By

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COE
DLN

November, 14th, 2018

Ms. Elizabeth Cole, Administrator
Project Review and Compliance
Maryland Historical Trust
100 Community Place
Crownsville, Maryland 21032

***Re: Request for MHT Review; Pheasant Run/ Unnamed tributary to Long Green Creek Property Stream and Wetland Restoration Project, Baltimore County***

Dear Ms. Cole,

Ecotone, Inc. is currently designing and permitting a stream and wetland restoration project in Baltimore County, Maryland. The project is located West of Baldwin Mill Rd and North of Patterson Rd (39.496067, -76.474526). We request information from your office regarding historic and cultural resources associated with the project area.

Ground disturbance is associated with this project and involves excavation, grading, planting, and stabilization of the stream and wetland. No audible changes to the areas are expected beyond the time period required for construction. Viewshed effects would result from the temporary removal of trees and vegetation within the proposed Limit of Disturbance.

Enclosed please find a Project Review Form and a map of the project. The actual work consists of temporary impacts, with the majority of ground disturbance being associated with the realignment of the stream and creation of wetlands.

We appreciate your assistance in this matter. If you have any questions regarding the project, please feel free to contact me at mbrady@ecotoneinc.com or 410-420-2600 ext. 117.

Sincerely,

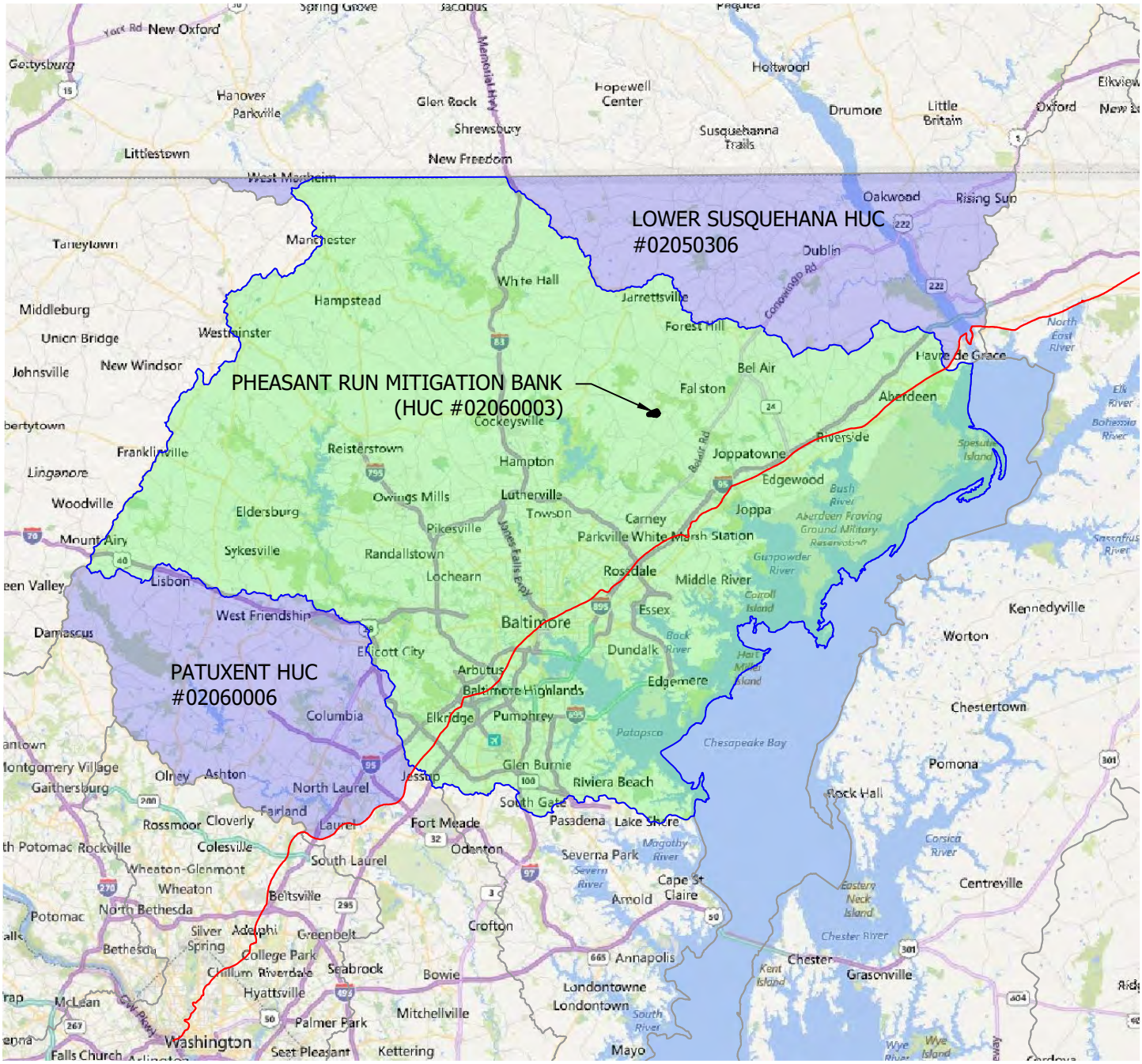
**Ecotone, Inc.**
Marie V. Brady
Environmental Scientist

The Maryland Historical Trust has determined that this undertaking will have no adverse effect on historic properties.

Date 12/4/18

**FOREST HILL**
129 Industry Lane
Forest Hill, MD 21050

Archer
12/4/18
2nd




## LEGEND

PRIMARY SERVICE AREA

SECONDARY SERVICE AREA

PHYSIOGRAPHIC PROVINCE BORDER

ecotone
ecological restoration
129 Industry Lane · Forest Hill, Maryland 21050
(410) 420 2600 · www.ecotoneinc.com

# PHEASANT RUN MITIGATION

## PROPOSED GEOGRAPHIC SERVICE AREA

BALDWIN MILL ROAD, BALDWIN, MD 21013

SCALE: 1" = 10 mi

| PROJECT NO: 18-15-010 | DATE:7/22/2019 | DRAWN BY: CSM | CHECKED BY: MVB |
|---|---|---|---|

**LAW OFFICES OF DEBRA B. ADLER, LLC**
**100 PAINTERS MILL ROAD**
**SUITE 200**
**OWINGS MILLS, MARYLAND 21117**
**PHONE 410-992-2549**

October 31, 2019

TO: Wooly Bugger, LLC
129 Industry Lane
Forest Hill, MD 21050
And

Ecotone, Inc.
129 Industry Lane
Forest Hill, MD 21050

PROFESSIONAL LIABILITY INSURANCE
Co. :, ARC Excess & Surplus of Midsouth LLC
[redacted]
LIMITS OF LIABILITY-$ 1,000,000.00

CERTIFICATE OF TITLE FOR: Baldwin Road

ADDRESS OF OWNER: 129 Industry Lane, Forest Hill, MD 21050

The undersigned attorney at law, duly admitted to practice before the Court of Appeals of Maryland, having established an office at 100 Painters Mill Road, Suite 200, Owings Mills, Maryland, being familiar with the Land Records, Circuit Court Records, Orphans Court Records and other records of Baltimore County, has examined the aforegoing records, or such of them that may relate to the title and encumbrances thereon of land hereinbelow described and certifies to Baltimore County, Maryland, that the said records disclose the following:

LOCATION AND GENERAL DESCRIPTION OF LAND: Baldwin Road

BEGINNING FOR THE SAME at a spike previously found in the center of Patterson Road at a corner common to these lands and the lands now or formerly owned by Louis T. Wright, et al, said point also being 265 feet, more or less, westerly of Long Green Pike; thence leaving said point and running with the center of said Patterson Road the five (5) following courses and distances, viz: North 73° 32' 14" West 871.44 feet; North 60° 01' 10" West 386.44 feet; South 77° 46' 00" West 170.68 feet; North 75° 47' 30" West 363.45 feet; and North 82° 45' 56" West 1031.21 feet to a corner common to these lands and the lands now or formerly owned by John W. MacCubbin; thence leaving said Patterson Road and running with the lands of said MacCubbin North 10° 11' 40" East 246.58 feet to a point on the south side of the lands now or formerly The Maryland and Pennsylvania Railroad Company right of way, the four (4) following courses and distances, viz: North 72° 30' 11" East 1429.64 feet; North 74° 02' 10" East 100.79 feet; North 77° 08' 10" East 101.03 feet; and North 77° 45' 11" East 1471.48 feet to a point in the center of Baldwin Mill Road; thence leaving the south side of said Maryland and Pennsylvania Railroad Company right of way and running with the center of said Baldwin Mill Road the two (2) following courses and distances, viz: South 15° 41' 10" East 669.50 feet and South 24° 21' 47" East 500.46 feet to a corner common to these lands and the lands now or formerly owned by Arthur W. Burall; thence leaving said Baldwin Mill Road and running with the lands of said Burall and with the lands now or formerly owned by Mrs. Charles H. Burton, South 48° 27' 50" West 201.35 feet; thence leaving the lands of said Burton and running

with the lands now or formerly owned by Jack W. and Evelyn Peterson, the three (3) following courses and distances, viz: North 50° 02' 00" West 38.81 feet to a pipe previously found, South 51° 47' 50" West 151.87 feet to a pipe previously found, and South 51° 41' 37" West 208.93 feet to a pipe previously found, thence leaving the lands of said Peterson and running with the other lands now or formerly owned by Mrs. Charles E. Burton, South 64° 38' 51" West 224.67 feet to a pipe previously found, thence leaving the lands of aid Burton and running with the lands now or formerly owned by Louis T. Wright, et al., South 20° 37' 30" West 138.11 feet to the place of beginning. Containing 70.9086 acres of land, more or less, as shown on "Plat Showing the Property of Mrs. Christine O. Burton" prepared by Van Reuth and Weidner, Inc., Civil Engineers and Surveyors, Baltimore, Maryland, dated March 19, 1962.

SUBJECT TO the terms in a Deed of Conservation Easement dated October 29, 2002 and recorded among the Land Records of Baltimore County in Liber SM 17154, page 471, between Pheasant Run Farm, Inc. and Long Green Valley Conservancy, Inc. and Baltimore County, Maryland.

OWNERS OF LAND: Wooly Bugger, LLC, a Maryland limited liability company

OTHER TITLE INTERESTS OF RECORD: NONE

REFERENCE TO DEEDS AND OTHER INSTRUMENTS BY WHICH TITLE WAS ACQUIRED:

Deed dated October 9, 2018 and on recorded October 23, 2018, in the Land Records of Baltimore County, Maryland in Book 40804, page 177 from Pheasant Run Farm, Inc. a Maryland corporation unto Wooly Bugger, LLC, a Maryland limited liability company

MORTGAGE LIENS:

> Deed of Trust (Purchase Money) dated October 9, 2018 by Wooly Bugger, LLC, a, Maryland limited liability company unto James D. Aird and Stuart Cooper, Trustees securing MidAtlantic Farm Credit, ACA, as agent/nominee in the principal sum of $644,000.00 as recorded on October 23, 2018 among the Land Records of Baltimore County, Maryland in Book 40804 page 182.

EXCEPTIONS AND RIGHTS OF WAY: See "Schedule B" attached hereto and made a part hereof

2019/20 TAXES: Account # 11-11-02-085300 paid in the amount of $339.89

OTHER LIENS, ENCUMBRANCES, OR PENDING CASES (U.S. and Baltimore County): NONE

Unrecorded easements, if any, on, above or below the surface, and discrepancies or conflicts in boundary lines or shortage in area or encroachments on the certified property by abutting properties or by the certified property on abutting properties, which a true and accurate survey or an inspection of the premises would disclose.

Possible unfiled Mechanics' and Materialmen's Liens

Taxes and other public charges, including Metropolitan District, Sanitary Commission or other benefit charges, assessments, lien or encumbrances for sewer, water, drainage or other public improvements completed or commenced on, prior to the date hereof, or subsequent thereto, payable on a recurring basis. Nor does this certificate insure against possible future tax levies, nor against possible public charges as defined above or assessed on escaped property that have been levied or assessed.

Any rights, claims, liens or encumbrances arising or created after the date and time of certifications as set forth hereinabove.

Matters not of public record known to the titleholder prior to certification.

Upon the basis of this examination as disclosed by the indices of Public Land Records of Baltimore County, Maryland, relation to liens, encumbrances and conveyances, for a period of at least sixty (60) years, the undersigned is of the opinion that through the date of October 25, 2019, Wooly Bugger, LLC, a Maryland limited liability company holds a good and marketable, fee simple title to the herein described parcel of land.

The Law Offices of Debra B. Adler, LLC

Dated: 10/31/19

By: _____

Debra B. Adler
Phone No. 410-992-2549
100 Painters Mill Road
Suite 200
Owings Mills, Maryland 21117

Schedule B, continued

1. Subject to a grant to Baltimore Gas and Electric Company recorded in Liber OTG 5040, page 465.

2. Subject to the terms in a Deed of Conservation Easement dated October 29, 2002 and recorded in Liber SM 17154, page 471, between Pheasant Run Farm, Inc. and Long Green Valley Conservancy, Inc. and Baltimore County, Maryland.

# OWNER'S POLICY OF TITLE INSURANCE

**Policy Issuer:**
**RESIDENTIAL TITLE & ESCROW COMPANY**
**100 PAINTERS MILL ROAD**
**SUITE 200**
**OWINGS MILLS, MD 21117**
**PHONE: (410) 653-3400**

Policy Number [redacted] **File Number:** [redacted]

Issued by Old Republic National Title Insurance Company

**Any notice of claim and any other notice or statement in writing required to be given to the Company under this Policy must be given to the Company at the address shown in Section 18 of the Conditions.**

## COVERED RISKS

SUBJECT TO THE EXCLUSIONS FROM COVERAGE, THE EXCEPTIONS FROM COVERAGE CONTAINED IN SCHEDULE B, AND THE CONDITIONS, OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY, a Florida corporation (the "Company") insures, as of Date of Policy and, to the extent stated in Covered Risks 9 and 10, after Date of Policy, against loss or damage, not exceeding the Amount of Insurance, sustained or incurred by the Insured by reason of:

1. Title being vested other than as stated in Schedule A.

2. Any defect in or lien or encumbrance on the Title. This Covered Risk includes but is not limited to insurance against loss from:
   (a) A defect in the Title caused by
      (i) forgery, fraud, undue influence, duress, incompetency, incapacity, or impersonation;
      (ii) failure of any person or Entity to have authorized a transfer or conveyance;
      (iii) a document affecting Title not properly created, executed, witnessed, sealed, acknowledged, notarized, or delivered;
      (iv) failure to perform those acts necessary to create a document by electronic means authorized by law;
      (v) a document executed under a falsified, expired, or otherwise invalid power of attorney;
      (vi) a document not properly filed, recorded, or indexed in the Public Records including failure to perform those acts by electronic means authorized by law; or
      (vii) a defective judicial or administrative proceeding.
   (b) The lien of real estate taxes or assessments imposed on the Title by a governmental authority due or payable, but unpaid.
   (c) Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land. The term "encroachment" includes encroachments of existing improvements located on the Land onto adjoining land, and encroachments onto the Land of existing improvements located on adjoining land.

3. Unmarketable Title.

4. No right of access to and from the Land.

5. The violation or enforcement of any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (a) the occupancy, use, or enjoyment of the Land;
   (b) the character, dimensions, or location of any improvement erected on the Land;
   (c) the subdivision of land; or
   (d) environmental protection

if a notice, describing any part of the Land, is recorded in the Public Records setting forth the violation or intention to enforce, but only to the extent of the violation or enforcement referred to in that notice.

*Countersigned:*

BONNIE PERLOW, PRESIDENT
RESIDENTIAL TITLE & ESCROW COMPANY
OWINGS MILLS, MARYLAND

*Authorized Officer or Licensed Agent*

**OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY**
*A Stock Company*
*400 Second Avenue South, Minneapolis, Minnesota 55401*
*(612) 371-1111*

*By* [signature] *President*

*Attest* [signature] *Secretary*

6. An enforcement action based on the exercise of a governmental police power not covered by Covered Risk 5 if a notice of the enforcement action, describing any part of the Land, is recorded in the Public Records, but only to the extent of the enforcement referred to in that notice.

7. The exercise of the rights of eminent domain if a notice of the exercise, describing any part of the Land, is recorded in the Public Records.

8. Any taking by a governmental body that has occurred and is binding on the rights of a purchaser for value without Knowledge.

9. Title being vested other than as stated in Schedule A or being defective

(a) as a result of the avoidance in whole or in part, or from a court order providing an alternative remedy, of a transfer of all or any part of the title to or any interest in the Land occurring prior to the transaction vesting Title as shown in Schedule A because that prior transfer constituted a fraudulent or preferential transfer under federal bankruptcy, state insolvency, or similar creditors' rights laws; or
(b) because the instrument of transfer vesting Title as shown in Schedule A constitutes a preferential transfer under federal bankruptcy, state insolvency, or similar creditors' rights laws by reason of the failure of its recording in the Public Records
(i) to be timely, or
(ii) to impart notice of its existence to a purchaser for value or to a judgment or lien creditor.

10. Any defect in or lien or encumbrance on the Title or other matter included in Covered Risks 1 through 9 that has been created or attached or has been filed or recorded in the Public Records subsequent to Date of Policy and prior to the recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

The Company will also pay the costs, attorneys' fees, and expenses incurred in defense of any matter insured against by this Policy, but only to the extent provided in the Conditions.

## EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to

(i) the occupancy, use, or enjoyment of the Land;
(ii) the character, dimensions, or location of any improvement erected on the Land;
(iii) the subdivision of land; or
(iv) environmental protection;

or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
(b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.

2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.

3. Defects, liens, encumbrances, adverse claims, or other matters

(a) created, suffered, assumed, or agreed to by the Insured Claimant;
(b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
(c) resulting in no loss or damage to the Insured Claimant;
(d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 9 and 10); or
(e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.

4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction vesting the Title as shown in Schedule A, is

(a) a fraudulent conveyance or fraudulent transfer; or
(b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.

5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

# CONDITIONS

1. **DEFINITION OF TERMS**

The following terms when used in this policy mean:

(a) "Amount of Insurance": The amount stated in Schedule A, as may be increased or decreased by endorsement to this policy, increased by Section 8(b), or decreased by Sections 10 and 11 of these Conditions.

(b) "Date of Policy": The date designated as "Date of Policy" in Schedule A.

(c) "Entity": A corporation, partnership, trust, limited liability company, or other similar legal entity.

(d) "Insured": The Insured named in Schedule A.

(i) The term "Insured" also includes

(A) successors to the Title of the Insured by operation of law as distinguished from purchase, including heirs, devisees, survivors, personal representatives, or next of kin;

(B) successors to an Insured by dissolution, merger, consolidation, distribution, or reorganization;

(C) successors to an Insured by its conversion to another kind of Entity;

(D) a grantee of an Insured under a deed delivered without payment of actual valuable consideration conveying the Title

(1) if the stock, shares, memberships, or other equity interests of the grantee are wholly-owned by the named Insured,

(2) if the grantee wholly owns the named Insured,

(3) if the grantee is wholly-owned by an affiliated Entity of the named Insured, provided the affiliated Entity and the named Insured are both wholly-owned by the same person or Entity, or

(4) if the grantee is a trustee or beneficiary of a trust created by a written instrument established by the Insured named in Schedule A for estate planning purposes.

(ii) With regard to (A), (B), (C), and (D) reserving, however, all rights and defenses as to any successor that the Company would have had against any predecessor Insured.

(e) "Insured Claimant": An Insured claiming loss or damage.

(f) "Knowledge" or "Known": Actual knowledge, not constructive knowledge or notice that may be imputed to an Insured by reason of the Public Records or any other records that impart constructive notice of matters affecting the Title.

(g) "Land": The land described in Schedule A, and affixed improvements that by law constitute real property. The term "Land" does not include any property beyond the lines of the area described in Schedule A, nor any right, title, interest, estate, or easement in abutting streets, roads, avenues, alleys, lanes, ways, or waterways, but this does not modify or limit the extent that a right of access to and from the Land is insured by this policy.

(h) "Mortgage": Mortgage, deed of trust, trust deed, or other security instrument, including one evidenced by electronic means authorized by law.

(i) "Public Records": Records established under state statutes at Date of Policy for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without Knowledge. With respect to Covered Risk 5(d), "Public Records" shall also include environmental protection liens filed in the records of the clerk of the United States District Court for the district where the Land is located.

(j) "Title": The estate or interest described in Schedule A.

(k) "Unmarketable Title": Title affected by an alleged or apparent matter that would permit a prospective purchaser or lessee of the Title or lender on the Title to be released from the obligation to purchase, lease, or lend if there is a contractual condition requiring the delivery of marketable title.

2. **CONTINUATION OF INSURANCE**

The coverage of this policy shall continue in force as of Date of Policy in favor of an Insured, but only so long as the Insured retains an estate or interest in the Land, or holds an obligation secured by a purchase money Mortgage given by a purchaser from the Insured, or only so long as the Insured shall have liability by reason of warranties in any transfer or conveyance of the Title. This policy shall not continue in force in favor of any purchaser from the Insured of either (i) an estate or interest in the Land, or (ii) an obligation secured by a purchase money Mortgage given to the Insured.

3. **NOTICE OF CLAIM TO BE GIVEN BY INSURED CLAIMANT**

The Insured shall notify the Company promptly in writing (i) in case of any litigation as set forth in Section 5(a) of these Conditions, (ii) in case Knowledge shall come to an Insured hereunder of any claim of title or interest that is adverse to the Title, as insured, and that might cause loss or damage for which the Company may be liable by virtue of this policy, or (iii) if the Title, as insured, is rejected as Unmarketable Title. If the Company is prejudiced by the failure of the Insured Claimant to provide prompt notice, the Company's liability to the Insured Claimant under the policy shall be reduced to the extent of the prejudice.

4. **PROOF OF LOSS**

In the event the Company is unable to determine the amount of loss or damage, the Company may, at its option, require as a condition of payment that the Insured Claimant furnish a signed proof of loss. The proof of loss must describe the defect, lien, encumbrance, or other matter insured against by this policy that constitutes the basis of loss or damage and shall state, to the extent possible, the basis of calculating the amount of the loss or damage.

5. **DEFENSE AND PROSECUTION OF ACTIONS**

(a) Upon written request by the Insured, and subject to the options contained in Section 7 of these Conditions, the Company, at its own cost and without unreasonable delay, shall provide for the defense of an Insured in litigation in which any third party asserts a claim covered by this policy adverse to the Insured. This obligation is limited to only those stated causes of action alleging matters insured against by this policy. The Company shall have the right to select counsel of its choice (subject to the right of the Insured to object for reasonable cause) to represent the Insured as to those stated causes of action. It shall not be liable for and will not pay the fees of any other counsel. The Company will not pay any fees, costs, or expenses incurred by the Insured in the defense of those causes of action that allege matters not insured against by this policy.

(b) The Company shall have the right, in addition to the options contained in Section 7 of these Conditions, at its own cost, to institute and prosecute any action or proceeding or to do any other act that in its opinion may be necessary or desirable to establish the Title, as insured, or to prevent or reduce loss or damage to the Insured. The Company may take any appropriate action under the terms of this policy, whether or not it shall be liable to the Insured. The exercise of these rights shall not be an admission of liability or waiver of any provision of this policy. If the Company exercises its rights under this subsection, it must do so diligently.

(c) Whenever the Company brings an action or asserts a defense as required or permitted by this policy, the Company may pursue the litigation to a final determination by a court of competent jurisdiction, and it expressly reserves the right, in its sole discretion, to appeal any adverse judgment or order.

6. **DUTY OF INSURED CLAIMANT TO COOPERATE**

(a) In all cases where this policy permits or requires the Company to prosecute or provide for the defense of any action or proceeding and any appeals, the Insured shall secure to the Company the right to so prosecute or provide defense in the action or proceeding, including the right to use, at its option, the name of the Insured for this purpose. Whenever requested by the Company, the Insured, at the Company's expense, shall give the Company all reasonable aid (i) in securing evidence, obtaining witnesses, prosecuting or defending the action or proceeding, or effecting settlement, and (ii) in any other lawful act that in the opinion of the Company may be necessary or desirable to establish the Title or any other matter as insured. If the Company is prejudiced by the failure of the Insured to furnish the required cooperation, the Company's obligations to the Insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such cooperation.

(b) The Company may reasonably require the Insured Claimant to submit to examination under oath by any authorized representative of the Company and to produce for examination, inspection, and copying, at such reasonable times and places as may be designated by the authorized representative of the Company, all records, in whatever medium maintained, including books, ledgers, checks, memoranda, correspondence, reports, e-mails, disks, tapes, and videos whether bearing a date before or after Date of Policy, that reasonably pertain to the loss or damage. Further, if requested by any authorized representative of the Company, the Insured Claimant shall grant its permission, in writing, for any authorized representative of the Company to examine, inspect, and copy all of these records in the custody or control of a third party that reasonably pertain to the loss or damage. All information designated as confidential by the Insured Claimant provided to the Company pursuant to this Section shall not be disclosed to others unless, in the reasonable judgment of the Company, it is necessary in the administration of the claim. Failure of the Insured Claimant to submit for examination under oath, produce any reasonably requested information, or grant permission to secure reasonably necessary information from third parties as required in this subsection, unless prohibited by law or governmental regulation, shall terminate any liability of the Company under this policy as to that claim.

7. **OPTIONS TO PAY OR OTHERWISE SETTLE CLAIMS; TERMINATION OF LIABILITY**

In case of a claim under this policy, the Company shall have the following additional options:

(a) To Pay or Tender Payment of the Amount of Insurance.

To pay or tender payment of the Amount of Insurance under this policy together with any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment or tender of payment and that the Company is obligated to pay.

Upon the exercise by the Company of this option, all liability and obligations of the Company to the Insured under this policy, other than to make the payment required in this subsection, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation.

(b) To Pay or Otherwise Settle With Parties Other Than the Insured or With the Insured Claimant.

(i) To pay or otherwise settle with other parties for or in the name of an Insured Claimant any claim insured against under this policy. In addition, the Company will pay any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment and that the Company is obligated to pay; or

(ii) To pay or otherwise settle with the Insured Claimant the loss or damage provided for under this policy, together with any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment and that the Company is obligated to pay.

Upon the exercise by the Company of either of the options provided for in subsections (b)(i) or (ii), the Company's obligations to the Insured under this policy for the claimed loss or damage, other than the payments required to be made, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation.

8. **DETERMINATION AND EXTENT OF LIABILITY**

This policy is a contract of indemnity against actual monetary loss or damage sustained or incurred by the Insured Claimant who has suffered loss or damage by reason of matters insured against by this policy.

(a) The extent of liability of the Company for loss or damage under this policy shall not exceed the lesser of

(i) the Amount of Insurance; or

(ii) the difference between the value of the Title as insured and the value of the Title subject to the risk insured against by this policy.

(b) If the Company pursues its rights under Section 5 of these Conditions and is unsuccessful in establishing the Title, as insured,

(i) the Amount of Insurance shall be increased by 10%, and

(ii) the Insured Claimant shall have the right to have the loss or damage determined either as of the date the claim was made by the Insured Claimant or as of the date it is settled and paid.

(c) In addition to the extent of liability under (a) and (b), the Company will also pay those costs, attorneys' fees, and expenses incurred in accordance with Sections 5 and 7 of these Conditions.

9. **LIMITATION OF LIABILITY**

(a) If the Company establishes the Title, or removes the alleged defect, lien, or encumbrance, or cures the lack of a right of access to or from the Land, or cures the claim of Unmarketable Title, all as insured, in a reasonably diligent manner by any method, including litigation and the completion of any appeals, it shall have fully performed its obligations with respect to that matter and shall not be liable for any loss or damage caused to the Insured.

(b) In the event of any litigation, including litigation by the Company or with the Company's consent, the Company shall have no liability for loss or damage until there has been a final determination by a court of competent jurisdiction, and disposition of all appeals, adverse to the Title, as insured.

(c) The Company shall not be liable for loss or damage to the Insured for liability voluntarily assumed by the Insured in settling any claim or suit without the prior written consent of the Company.

10. **REDUCTION OF INSURANCE; REDUCTION OR TERMINATION OF LIABILITY**

All payments under this policy, except payments made for costs, attorneys' fees, and expenses, shall reduce the Amount of Insurance by the amount of the payment.

11. **LIABILITY NONCUMULATIVE**

The Amount of Insurance shall be reduced by any amount the Company pays under any policy insuring a Mortgage to which exception is taken in Schedule B or to which the Insured has agreed, assumed, or taken subject, or which is executed by an Insured after Date of Policy and which is a charge or lien on the Title, and the amount so paid shall be deemed a payment to the Insured under this policy.

12. **PAYMENT OF LOSS**

When liability and the extent of loss or damage have been definitely fixed in accordance with these Conditions, the payment shall be made within 30 days.

13. **RIGHTS OF RECOVERY UPON PAYMENT OR SETTLEMENT**

(a) Whenever the Company shall have settled and paid a claim under this policy, it shall be subrogated and entitled to the rights of the Insured Claimant in the Title and all other rights and remedies in respect to the claim that the Insured Claimant has against any person or property, to the extent of the amount of any loss, costs, attorneys' fees, and expenses paid by the Company. If requested by the Company, the Insured Claimant shall execute documents to evidence the transfer to the Company of these rights and remedies. The Insured Claimant shall permit the Company to sue, compromise, or settle in the name of the Insured Claimant and to use the name of the Insured Claimant in any transaction or litigation involving these rights and remedies.

If a payment on account of a claim does not fully cover the loss of the Insured Claimant, the Company shall defer the exercise of its right to recover until after the Insured Claimant shall have recovered its loss.

(b) The Company's right of subrogation includes the rights of the Insured to indemnities, guaranties, other policies of insurance, or bonds, notwithstanding any terms or conditions contained in those instruments that address subrogation rights.

14. **ARBITRATION**

Either the Company or the Insured may demand that the claim or controversy shall be submitted to arbitration pursuant to the Title Insurance Arbitration Rules of the American Land Title Association ("Rules"). Except as provided in the Rules, there shall be no joinder or consolidation with claims or controversies of other persons. Arbitrable matters may include, but are not limited to, any controversy or claim between the Company and the Insured arising out of or relating to this policy, any service in connection with its issuance or the breach of a policy provision, or to any other controversy or claim arising out of the transaction giving rise to this policy. All arbitrable matters when the Amount of Insurance is $2,000,000 or less shall be arbitrated at the option of either the Company or the Insured. All arbitrable matters when the Amount of Insurance is in excess of $2,000,000 shall be arbitrated only when agreed to by both the Company and the Insured. Arbitration pursuant to this policy and under the Rules shall be binding upon the parties. Judgment upon the award rendered by the Arbitrator(s) may be entered in any court of competent jurisdiction.

15. **LIABILITY LIMITED TO THIS POLICY; POLICY ENTIRE CONTRACT**

(a) This policy together with all endorsements, if any, attached to it by the Company is the entire policy and contract between the Insured and the Company. In interpreting any provision of this policy, this policy shall be construed as a whole.

(b) Any claim of loss or damage that arises out of the status of the Title or by any action asserting such claim shall be restricted to this policy.

(c) Any amendment of or endorsement to this policy must be in writing and authenticated by an authorized person, or expressly incorporated by Schedule A of this policy.

(d) Each endorsement to this policy issued at any time is made a part of this policy and is subject to all of its terms and provisions. Except as the endorsement expressly states, it does not (i) modify any of the terms and provisions of the policy, (ii) modify any prior endorsement, (iii) extend the Date of Policy, or (iv) increase the Amount of Insurance.

16. **SEVERABILITY**

In the event any provision of this policy, in whole or in part, is held invalid or unenforceable under applicable law, the policy shall be deemed not to include that provision or such part held to be invalid, but all other provisions shall remain in full force and effect.

17. **CHOICE OF LAW; FORUM**

(a) Choice of Law: The Insured acknowledges the Company has underwritten the risks covered by this policy and determined the premium charged therefor in reliance upon the law affecting interests in real property and applicable to the interpretation, rights, remedies, or enforcement of policies of title insurance of the jurisdiction where the Land is located.

Therefore, the court or an arbitrator shall apply the law of the jurisdiction where the Land is located to determine the validity of claims against the Title that are adverse to the Insured and to interpret and enforce the terms of this policy. In neither case shall the court or arbitrator apply its conflicts of law principles to determine the applicable law.

(b) Choice of Forum: Any litigation or other proceeding brought by the Insured against the Company must be filed only in a state or federal court within the United States of America or its territories having appropriate jurisdiction.

18. **NOTICES, WHERE SENT**

Any notice of claim and any other notice or statement in writing required to be given to the Company under this policy must be given to the Company at 400 Second Avenue South, Minneapolis, Minnesota 55401-2499.

# OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY

**OWNERS POLICY**
**SCHEDULE A**

Name and Address of
Title Insurance Company:

Residential Title & Escrow Company
100Painters Mill Road, Suite 200
Owings Mills, Maryland 21117

*Issued with Loan Policy #* [redacted]

Agent File No. [redacted]

Policy No.: [redacted]

Amount of Insurance: $805,000.00

Date of Policy: October 23, 2018

1. Name of Insured:

   Wooly Bugger, LLC, a Maryland limited liability company, by virtue of a Deed dated October 9, 2018 and on recorded October 23, 2018, in the Land Records of Baltimore County, Maryland in Book 40804, page 177 from Pheasant Run Farm, Inc. a Maryland corporation.

2. The estate or interest in the land described or referred to in this Policy and covered herein is,

   Fee Simple;

3. Title to the fee simple estate or interest in said land is at the effective date hereof vested in the insured.

4. The Land referred to in this Policy is described as follows:

*FOR LEGAL DESCRIPTION SEE EXHIBIT 'A' ATTACHED HERETO AND MADE A PART HEREOF.*

**EXHIBIT 'A'**
**LEGAL DESCRIPTION**

BEGINNING FOR THE SAME at a spike previously found in the center of Patterson Road at a corner common to these lands and the lands now or formerly owned by Louis T. Wright, et al, said point also being 265 feet, more or less, westerly of Long Green Pike; thence leaving said point and running with the center of said Patterson Road the five (5) following courses and distances, viz: North 73° 32' 14" West 871.44 feet; North 60° 01' 10" West 386.44 feet; South 77° 46' 00" West 170.68 feet; North 75° 47' 30" West 363.45 feet; and North 82° 45' 56" West 1031.21 feet to a corner common to these lands and the lands now or formerly owned by John W. MacCubbin; thence leaving said Patterson Road and running with the lands of said MacCubbin North 10° 11' 40" East 246.58 feet to a point on the south side of the lands now or formerly The Maryland and Pennsylvania Railroad Company right of way, the four (4) following courses and distances, viz: North 72° 30' 11" East 1429.64 feet; North 74° 02' 10" East 100.79 feet; North 77° 08' 10" East 101.03 feet; and North 77° 45' 11" East 1471.48 feet to a point in the center of Baldwin Mill Road; thence leaving the south side of said Maryland and Pennsylvania Railroad Company right of way and running with the center of said Baldwin Mill Road the two (2) following courses and distances, viz: South 15° 41' 10" East 669.50 feet and South 24° 21' 47" East 500.46 feet to a corner common to these lands and the lands now or formerly owned by Arthur W. Burall; thence leaving said Baldwin Mill Road and running with the lands of said Burall and with the lands now or formerly owned by Mrs. Charles H. Burton, South 48° 27' 50" West 201.35 feet; thence leaving the lands of said Burton and running with the lands now or formerly owned by Jack W. and Evelyn Peterson, the three (3) following courses and distances, viz: North 50° 02' 00" West 38.81 feet to a pipe previously found, South 51° 47' 50" West 151.87 feet to a pipe previously found, and South 51° 41' 37" West 208.93 feet to a pipe previously found, thence leaving the lands of said Peterson and running with the other lands now or formerly owned by Mrs. Charles E. Burton, South 64° 38' 51" West 224.67 feet to a pipe previously found, thence leaving the lands of aid Burton and running with the lands now or formerly owned by Louis T. Wright, et al., South 20° 37' 30" West 138.11 feet to the place of beginning. Containing 70.9086 acres of land, more or less, as shown on "Plat Showing the Property of Mrs. Christine O. Burton" prepared by Van Reuth and Weidner, Inc., Civil Engineers and Surveyors, Baltimore, Maryland, dated March 19, 1962.

SUBJECT TO the terms in a Deed of Conservation Easement dated October 29, 2002 and recorded among the Land Records of Baltimore County in Liber SM 17154, page 471, between Pheasant Run Farm, Inc. and Long Green Valley Conservancy, Inc. and Baltimore County, Maryland.

*Any inaccuracy in the area, square footage, or acreage of land described in Schedule A or attached plat, if any. The Company does not insure the area, square footage, or acreage of the land.*

## SCHEDULE B – PART 1
## EXCEPTIONS FROM COVERAGE

Agent File No. [redacted] Policy No.: [redacted]

This Policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of the following:

**General Exceptions:**

1. Rights and claims of parties in possession.
2. Mechanics, Contractor's or Materialmen's liens and lien claims, if any, where no notice thereof appears on record.
3. Any facts, rights, interest or claims which are not shown by the public record, but which could be ascertained or by making inquiry of person(s) in possession thereof.
4. Liens, encumbrances, or claims, thereof, which are not shown by the public record.
5. Defects, liens encumbrances, adverse claims or other matters, if any, created, first appearing in the public records or attaching subsequent to the Effective Date but prior to the date of the proposed Insured acquires for value of record the estate or interest or mortgage thereon covered by this Policy.
6. General or special taxes and assessments required to be paid in the year 2019 and subsequent years.

***FOR LIST OF FURTHER EXCEPTIONS, SEE SCHEDULE B, PART I, EXCEPTIONS FROM COVERAGE CONTINUED, ATTACHED HEREWITH AND MADE A PART HEREOF.***

## SCHEDULE B – PART I
## EXCEPTIONS FROM COVERAGE, CONTINUED

Agent File No. [redacted]

Policy No.: [redacted]

(All documents referred to below are recorded among the Land Records of Baltimore County, Maryland, unless otherwise stated)

8. Taxes and other public charges, including assessments by any county, municipality, metropolitan district or commission, payable on an annual basis not now due and payable. This Commitment/Policy specifically insures that if taxes are payable on an annual basis they have been paid through the fiscal year ending June 30, 2019 and that if payable on a semi-annual basis, taxes and any applicable service charge(s) have been paid through June 30th or December 31st first following the Effective Date of the herein Commitment/Policy, whichever of said dates is the first to occur. This Commitment/Policy does not insure against the balance of any public charges (including assessments by any county, municipality, metropolitan district or commission) payable on an annual basis subsequent to the current fiscal year or part thereof for which such charges have last been levied. Nor does this Commitment/Policy insure against possible future tax levies nor against possible public charges as defined above that have not been levied or assessed.

9. This Commitment/Policy specifically guarantees that any past, present, or future violation of the restrictions, covenants, building setback lines, easement areas, widening strips, partition walls, or other limitations and restrictions will not work a forfeiture or reversion of the title or result in a lien or charge superior to the interests of the mortgagee to be insured herein, and that the same have not been violated as of the date of this Commitment/Policy. (Lender's Policy Only).

10. This Commitment/Policy guarantees that none of the documents referred to in this Commitment/Policy contain a first right of refusal or any connotation thereof. (Lender's Policy Only).

11. This Policy is to be issued on 2006 Title Policy Forms. (Lender's Policy Only).

12. Any claim which arises out of the transaction creating the interest of the mortgagee insured by this Commitment/Policy by reason of the operation of federal bankruptcy, state insolvency, or similar creditor's rights laws. (Owner's Policy Only).

13. Subject to a grant to Baltimore Gas and Electric Company recorded in Liber OTG 5040, page 465.

14. Subject to the terms in a Deed of Conservation Easement dated October 29, 2002 and recorded in Liber SM 17154, page 471, between Pheasant Run Farm, Inc. and Long Green Valley Conservancy, Inc. and Baltimore County, Maryland.

15. Deed of Trust (Purchase Money) dated October 9, 2018 by Wooly Bugger, LLC, a, Maryland limited liability company unto James D. Aird and Stuart Cooper, Trustees securing MidAtlantic Farm Credit, ACA, as agent/nominee in the principal sum of $644,000.00 as recorded on October 23, 2018 among the Land Records of Baltimore County, Maryland in Book 40804 page 182.


LEGEND

PROPERTY BOUNDARY

EX. STREAM CENTERLINE

0 500 1000 Feet

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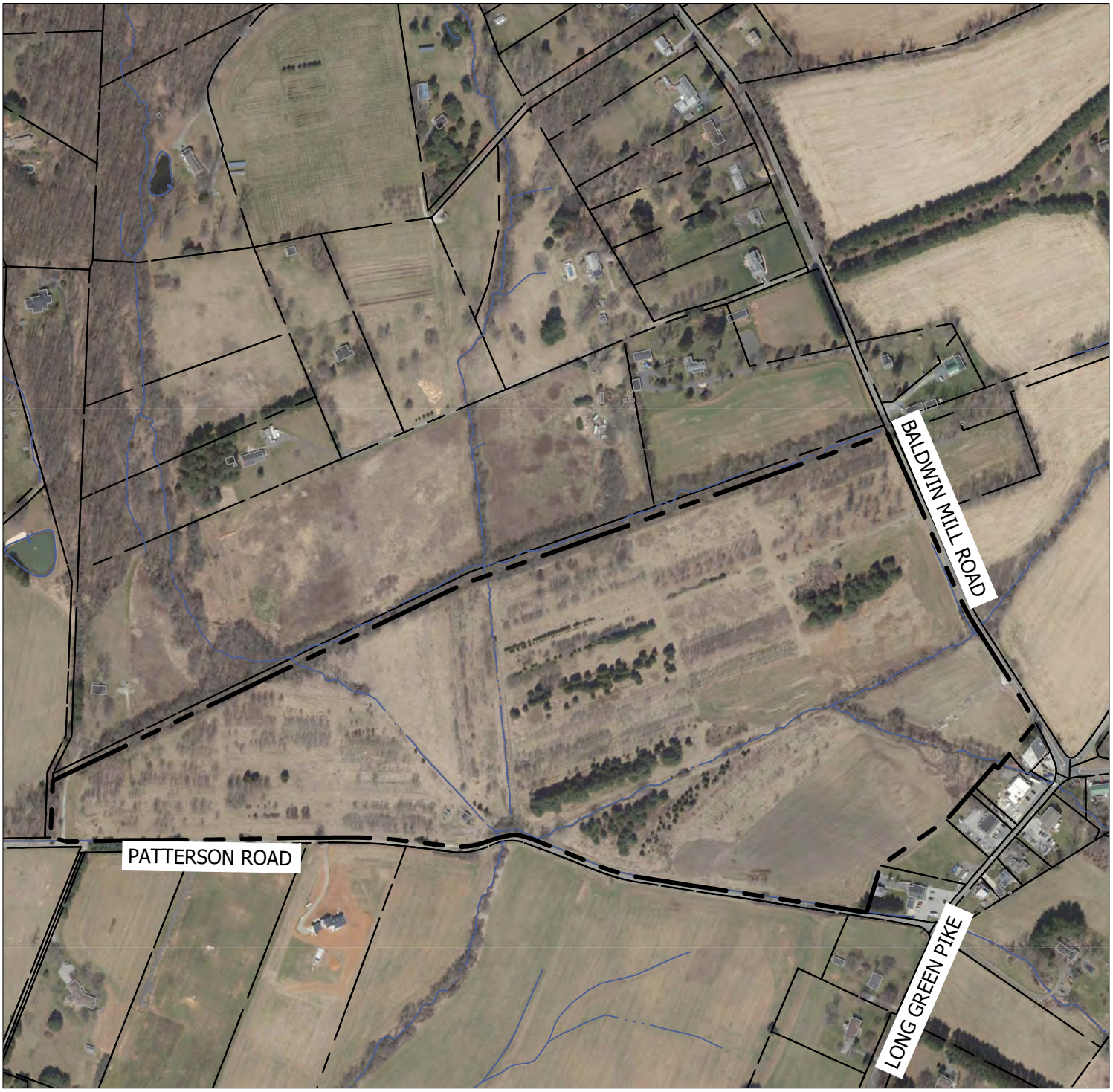
# PHEASANT RUN MITIGATION

## 1994 AERIAL PHOTOGRAPH

BALDWIN MILL ROAD, BALDWIN, MD 21013

SCALE: 1" = 500'

| PROJECT NO: 18-15-010 | DATE:7/23/2019 | DRAWN BY: CSM | CHECKED BY: MVB |
|---|---|---|---|




LEGEND

PROPERTY BOUNDARY

EX. STREAM CENTERLINE

0 500 1000 Feet

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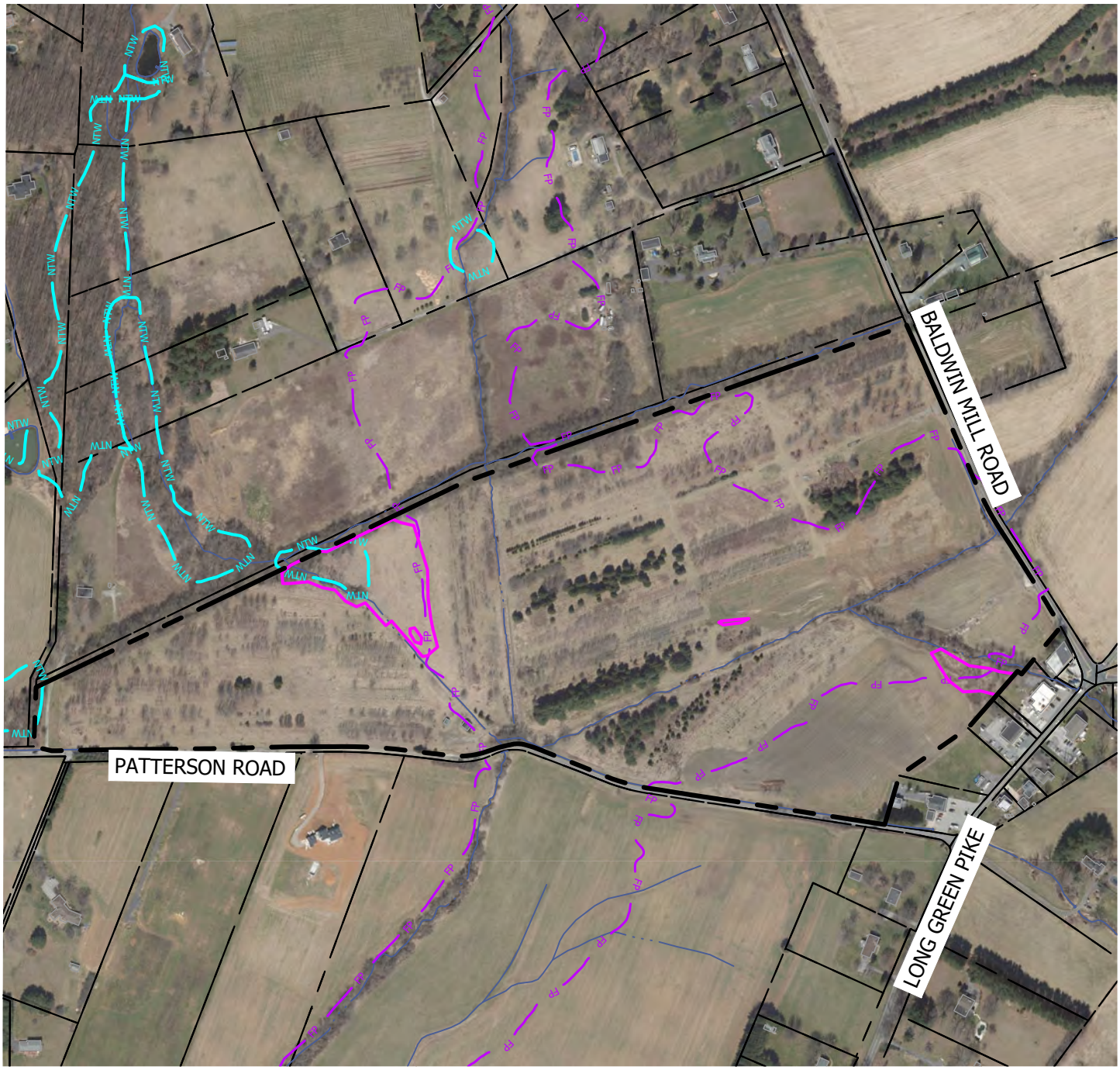
# PHEASANT RUN MITIGATION

## 2017 AERIAL PHOTOGRAPH

BALDWIN MILL ROAD, BALDWIN, MD 21013

SCALE: 1" = 500'

| PROJECT NO: 18-15-010 | DATE:7/23/2019 | DRAWN BY: CSM | CHECKED BY: SFM |
|---|---|---|---|




## LEGEND

- PROPERTY BOUNDARY
- EX. STREAM CENTERLINE
- EX. DELINEATED WETLAND
- EX. NWI WETLANDS (NTW)
- EX. FLOODPLAIN - FEMA (FP)

0 500 1000 Feet

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# PHEASANT RUN MITIGATION

## WETLAND DELINEATION, NWI, FEMA FLOODPLAIN MAP

BALDWIN MILL ROAD, BALDWIN, MD 21013

SCALE: 1" = 500'

| PROJECT NO: 18-15-010 | DATE:7/23/2019 | DRAWN BY: CSM | CHECKED BY: MVB |
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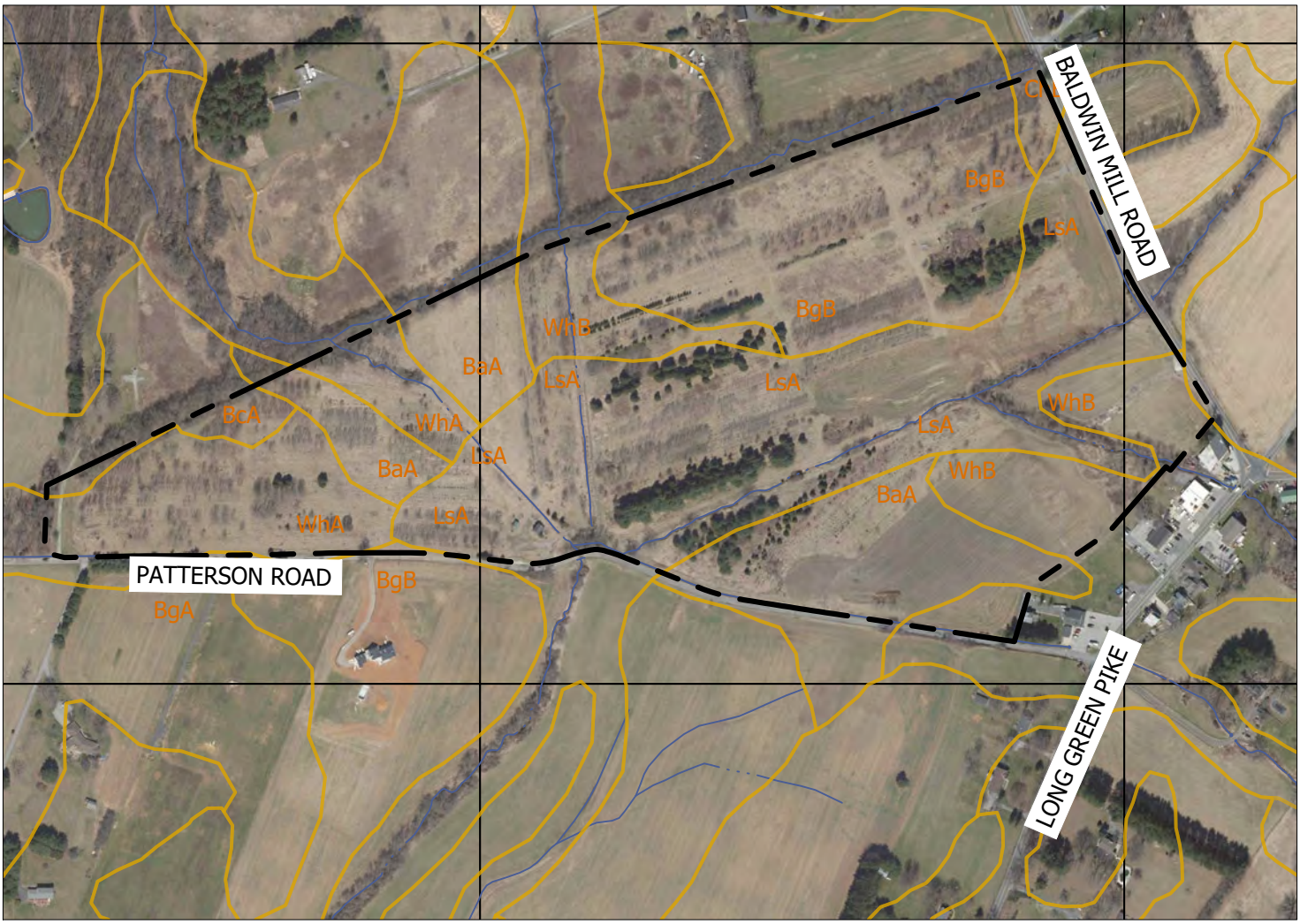


LEGEND

PROPERTY BOUNDARY

EX. STREAM CENTERLINE

BaA

EX. SOIL BOUNDARY

0 500 1000 Feet

| SOILS LEGEND | | |
|---|---|---|
| SYMBOL | SOIL DESCRIPTION | HYDRIC |
| BaA | Baile silt loam, 0-3% slopes | Yes |
| BgB | Benevola silt loam, 3-8% slopes | No |
| ChB | Conestoga silt loam, 3-8% slopes | No |
| LsA | Lindside silt loam, 0-3% slopes | Yes |
| WhB | Wiltshire silt loam, 3-8% slopes | No |
| BcA | Baltimore gravelly loam, 0-3% slopes | No |
| WhA | Wiltshire silt loam, 0-3% slopes | No |

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# PHEASANT RUN MITIGATION

## NRCS SOIL SURVEY

BALDWIN MILL ROAD, BALDWIN, MD 21013

SCALE: 1" = 500'

| PROJECT NO: 18-15-010 | DATE:7/23/2019 | DRAWN BY: CSM | CHECKED BY: MVB |
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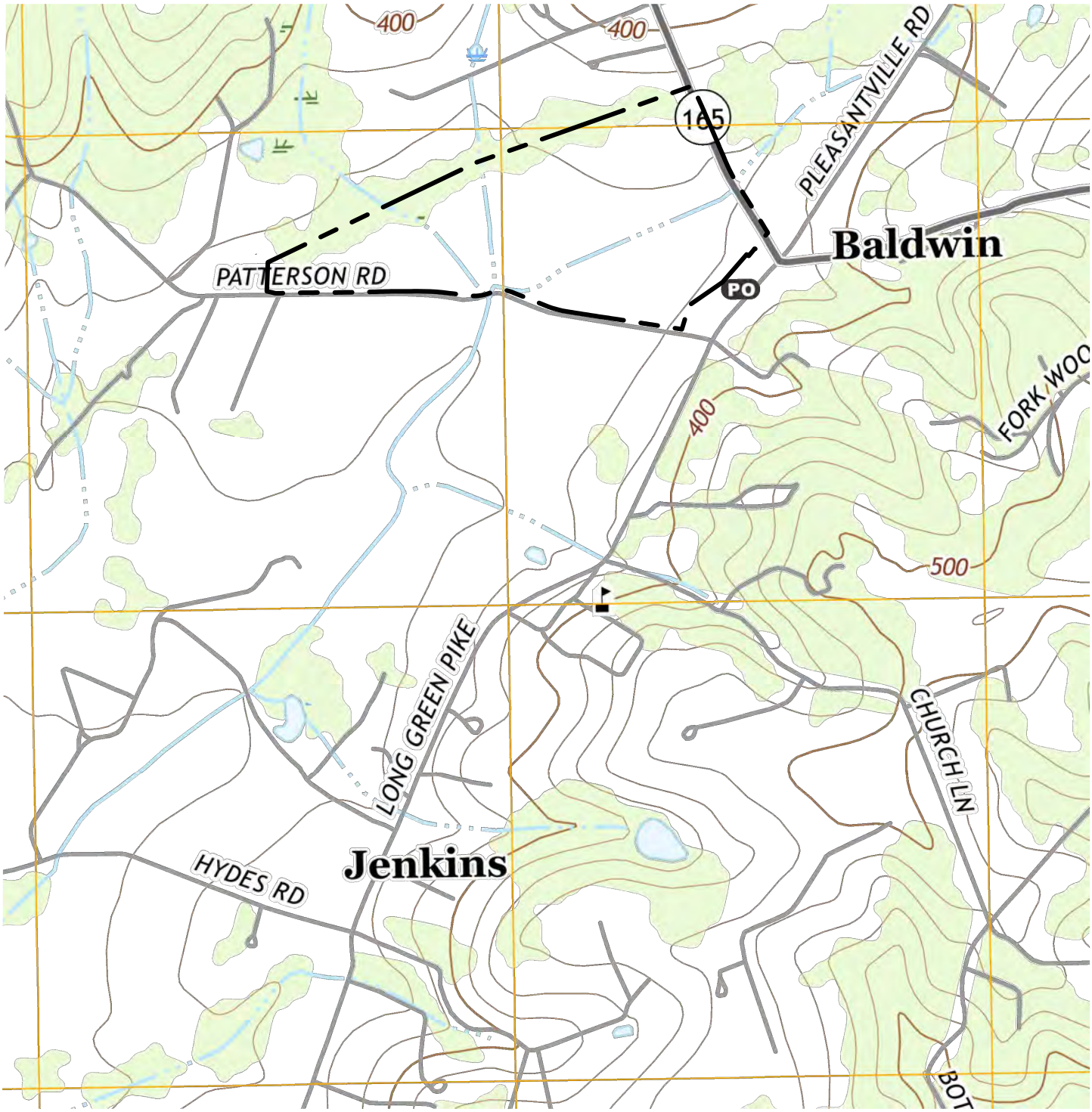


LEGEND

PROPERTY BOUNDARY

EX. STREAM CENTERLINE

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# PHEASANT RUN MITIGATION

## 7.5 MINUTE USGS TOPO MAP (HAMPSTEAD, MD)

BALDWIN MILL ROAD, BALDWIN, MD 21013

SCALE: 1" = 1,000'

| PROJECT NO: 18-15-010 | DATE:7/22/2019 | DRAWN BY: CSM | CHECKED BY: MVB |
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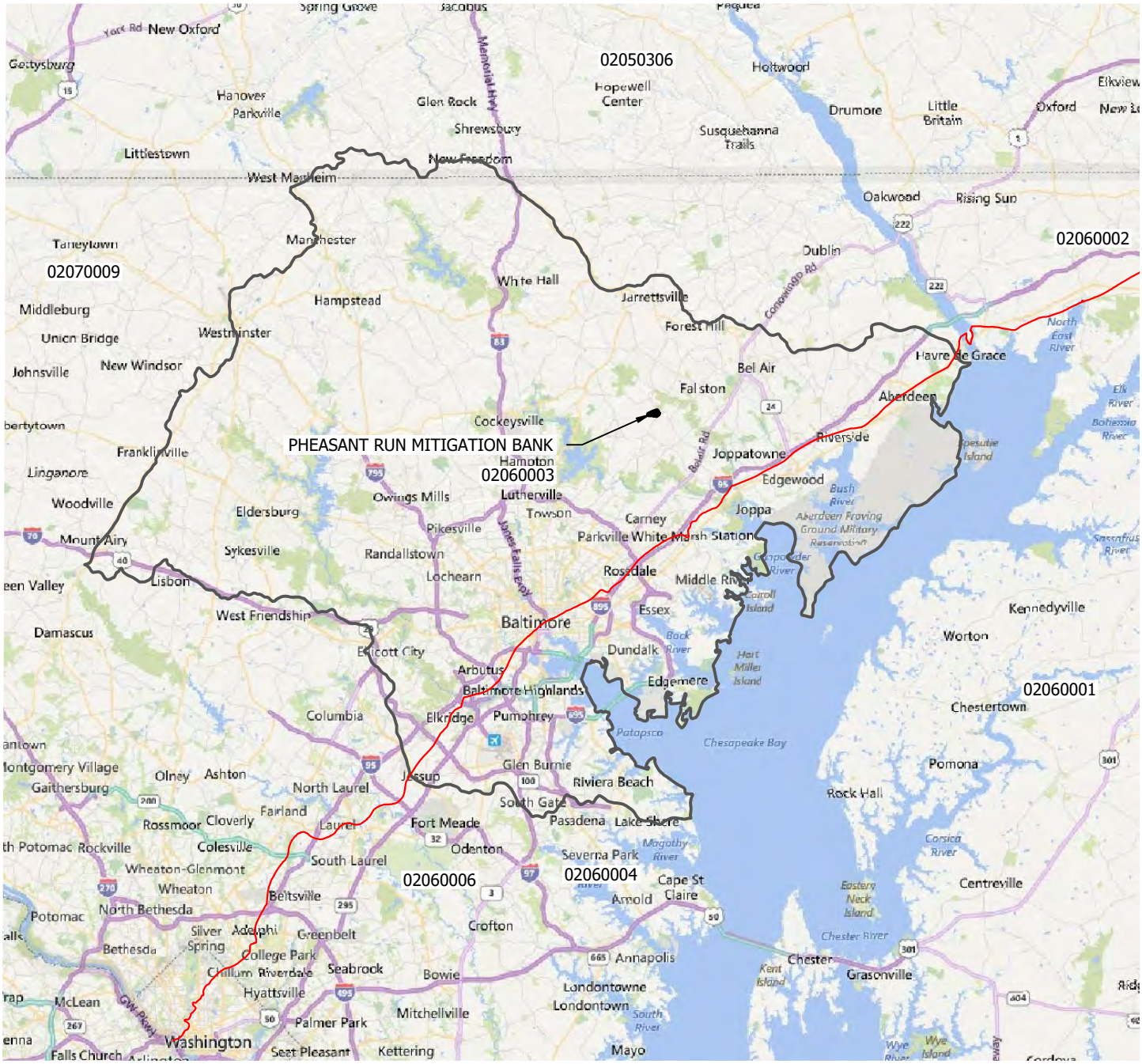


## LEGEND

8-DIGIT HUC BOUNDARY

PHYSIOGRAPHIC PROVINCE BORDER

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# PHEASANT RUN MITIGATION

## 8-DIGIT HYDROLOGIC UNIT CODE

BALDWIN MILL ROAD, BALDWIN, MD 21013

SCALE: 1" = 10 mi

| PROJECT NO: 18-15-010 | DATE:7/22/2019 | DRAWN BY: CSM | CHECKED BY: SFM |
|---|---|---|---|


LEGEND

PROPERTY BOUNDARY

EX. STREAM CENTERLINE

0 500 1000 Feet

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# PHEASANT RUN MITIGATION

## 1994 AERIAL PHOTOGRAPH

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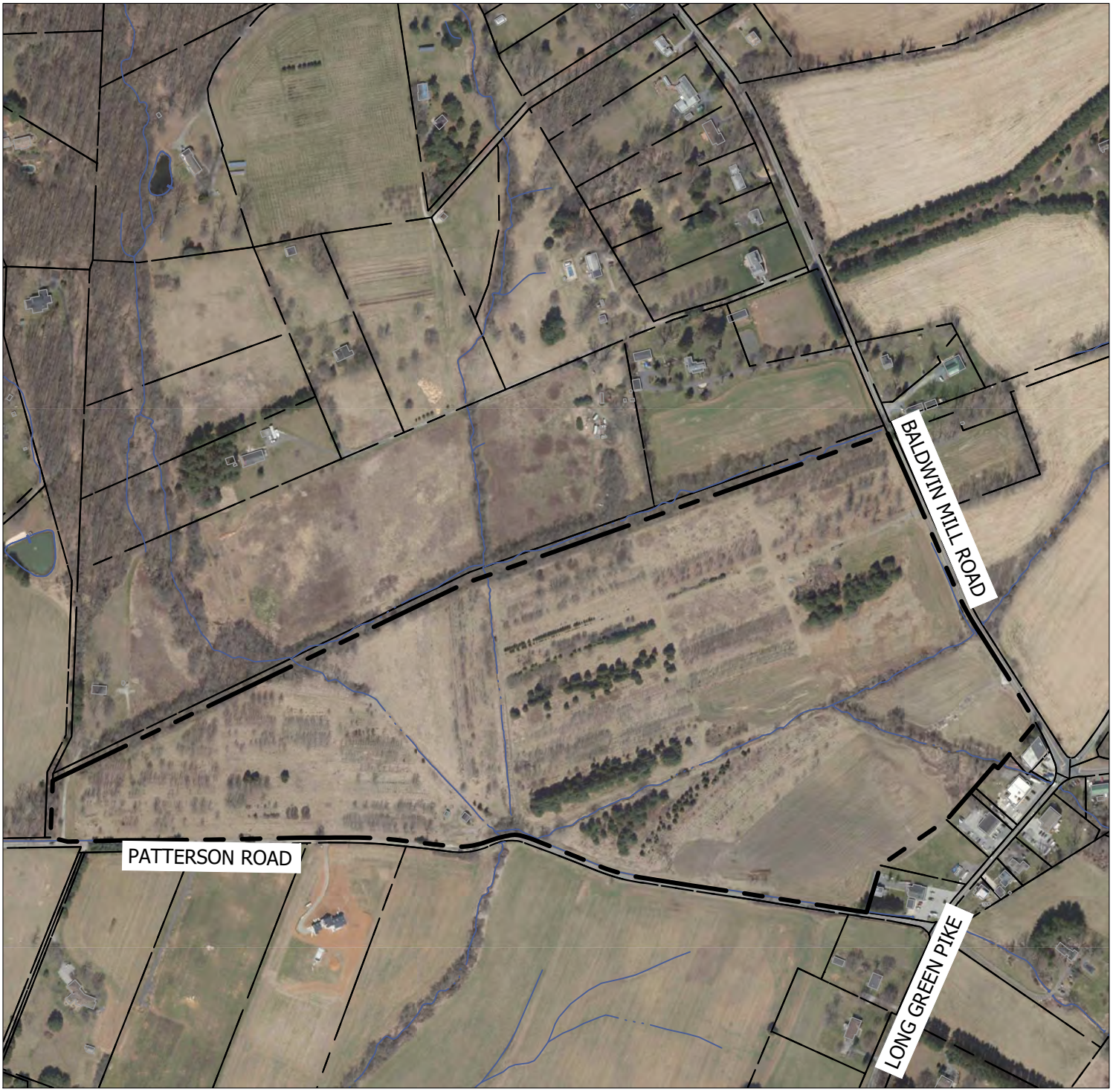


LEGEND

PROPERTY BOUNDARY

EX. STREAM CENTERLINE

0 500 1000 Feet

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# PHEASANT RUN MITIGATION

## 2017 AERIAL PHOTOGRAPH

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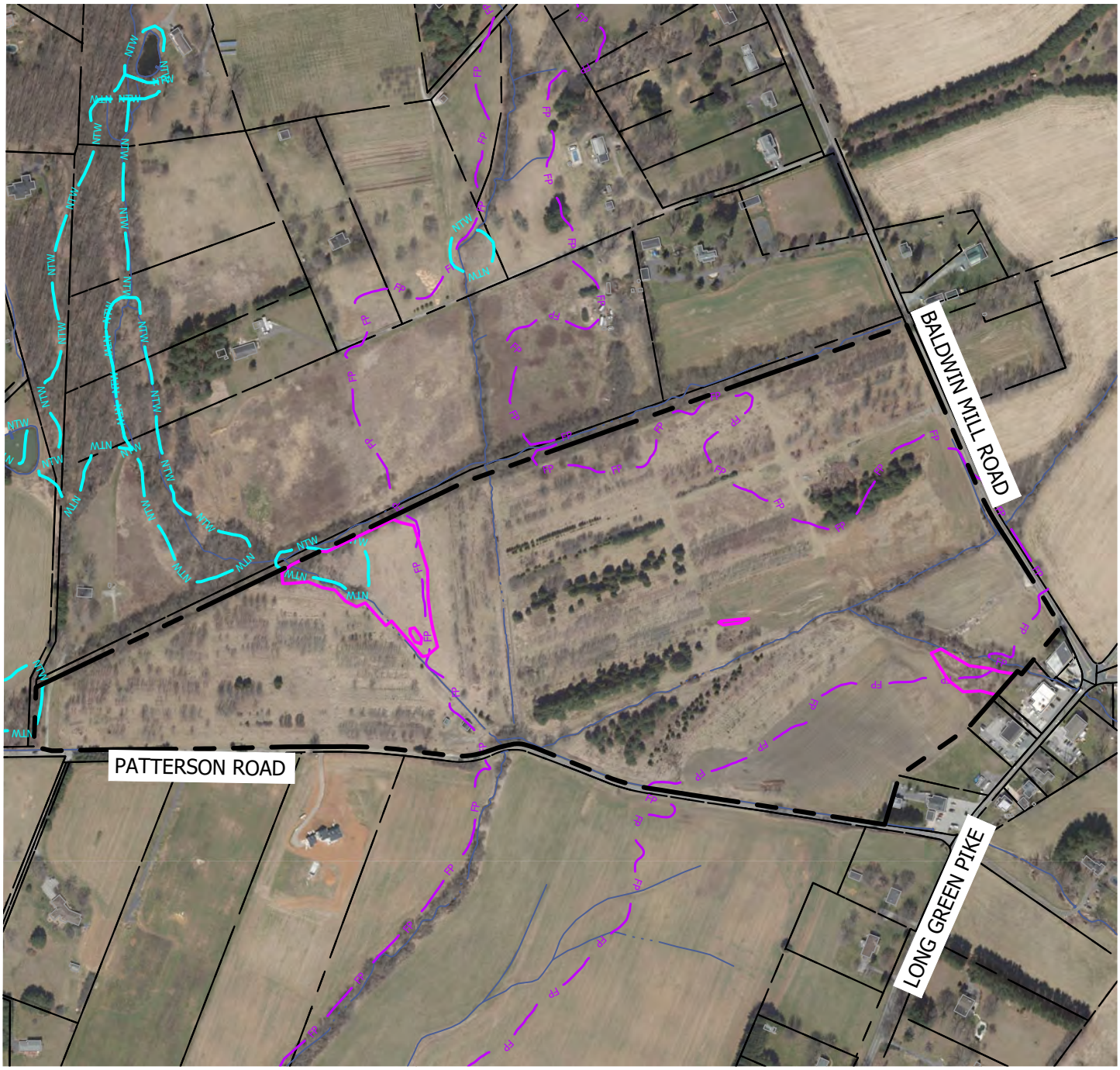


## LEGEND

- PROPERTY BOUNDARY
- EX. STREAM CENTERLINE
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- EX. NWI WETLANDS (NTW)
- EX. FLOODPLAIN - FEMA (FP)

0 500 1000 Feet

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# PHEASANT RUN MITIGATION

## WETLAND DELINEATION, NWI, FEMA FLOODPLAIN MAP

BALDWIN MILL ROAD, BALDWIN, MD 21013

SCALE: 1" = 500'

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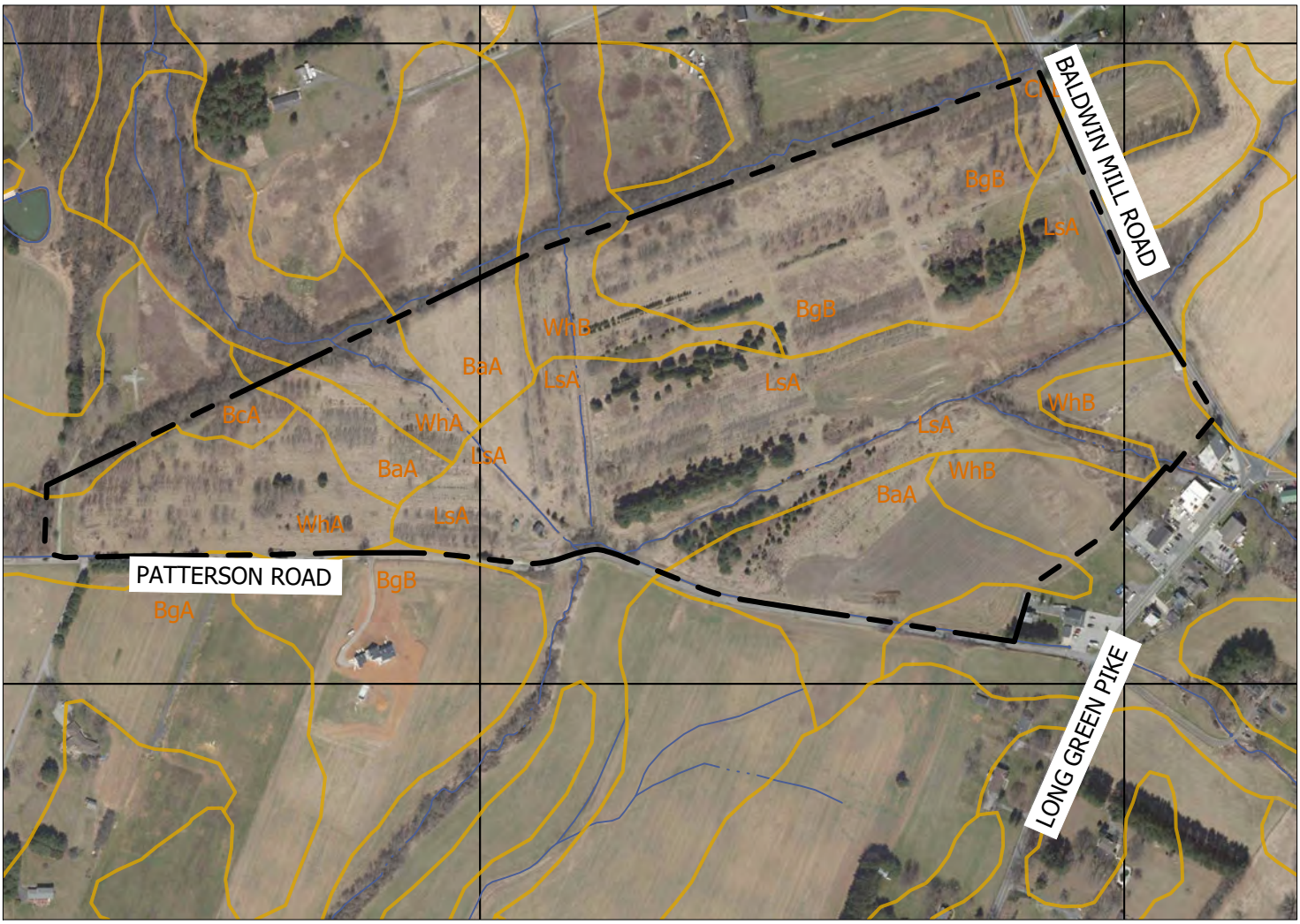


LEGEND

PROPERTY BOUNDARY

EX. STREAM CENTERLINE

BaA

EX. SOIL BOUNDARY

0 500 1000 Feet

| SOILS LEGEND | | |
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# PHEASANT RUN MITIGATION

## NRCS SOIL SURVEY

BALDWIN MILL ROAD, BALDWIN, MD 21013

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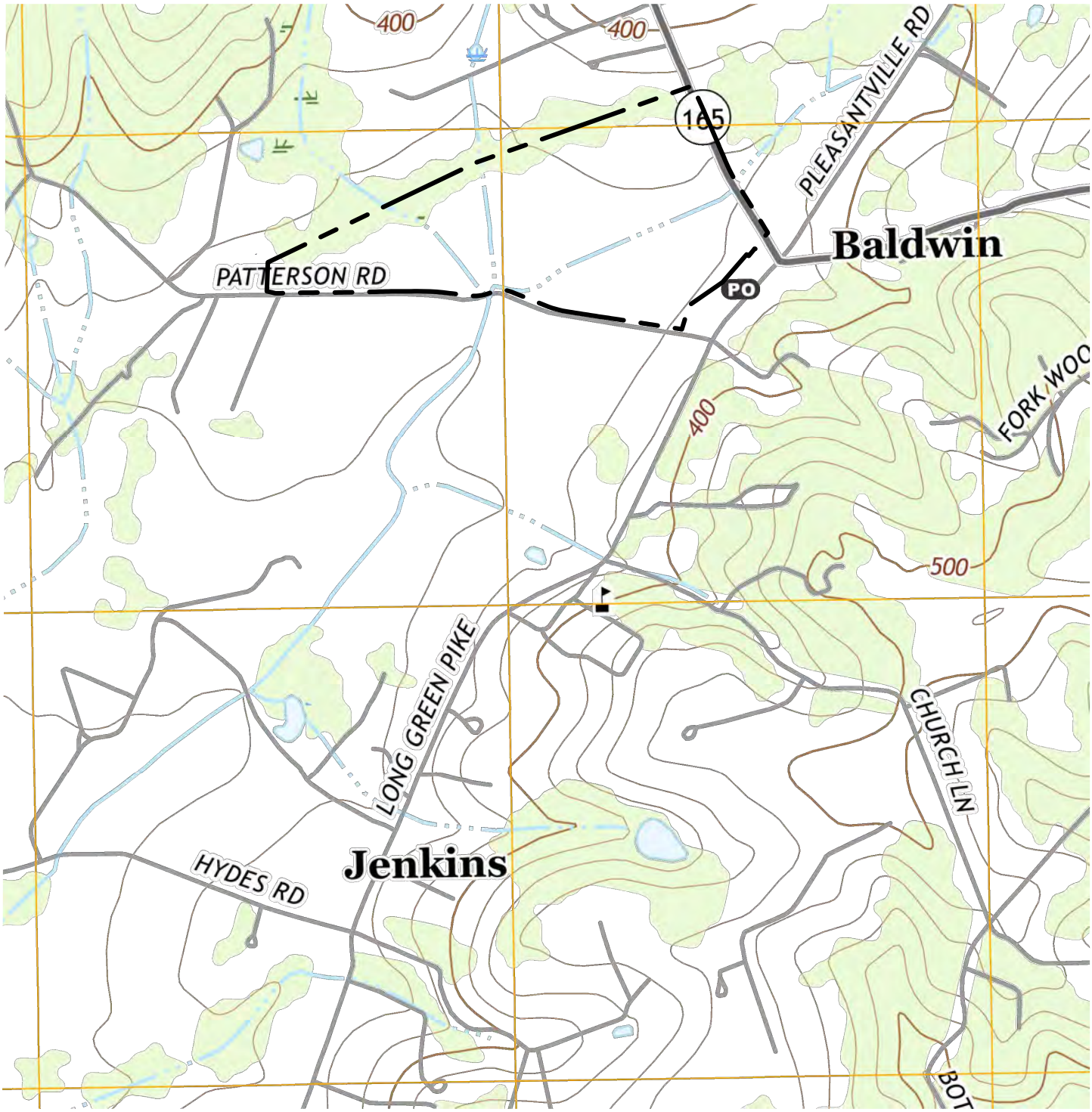


LEGEND

PROPERTY BOUNDARY

EX. STREAM CENTERLINE

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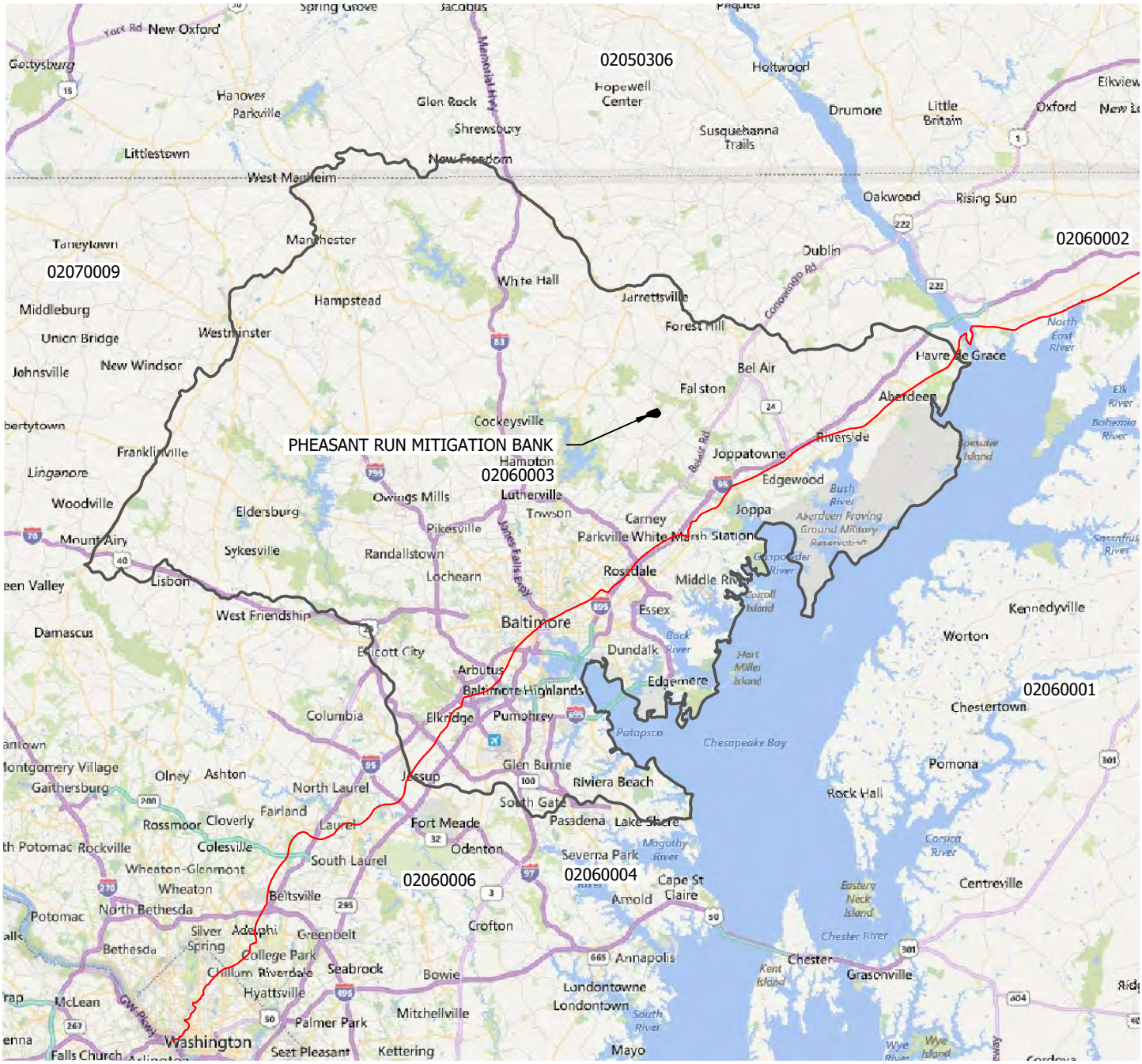
# PHEASANT RUN MITIGATION

## 7.5 MINUTE USGS TOPO MAP (HAMPSTEAD, MD)

BALDWIN MILL ROAD, BALDWIN, MD 21013

SCALE: 1" = 1,000'

| PROJECT NO: 18-15-010 | DATE:7/22/2019 | DRAWN BY: CSM | CHECKED BY: MVB |
|---|---|---|---|




## LEGEND

8-DIGIT HUC BOUNDARY

PHYSIOGRAPHIC PROVINCE BORDER

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# PHEASANT RUN MITIGATION

## 8-DIGIT HYDROLOGIC UNIT CODE

BALDWIN MILL ROAD, BALDWIN, MD 21013

SCALE: 1" = 10 mi

| PROJECT NO: 18-15-010 | DATE:7/22/2019 | DRAWN BY: CSM | CHECKED BY: SFM |
|---|---|---|---|

ecotone
ecological restoration

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***Pheasant Run – Wetland Delineation Report***

**Introduction:**

Ecotone, Inc. has completed a wetland delineation for the proposed Pheasant Run Mitigation Site. The Pheasant Run Mitigation Site will be part of the Ecotone Umbrella Mitigation Banking Instrument. This report provides location and presence information of non-tidal wetlands and waterways located within and adjacent to the project area.

**Site Description:**

The Pheasant Run Mitigation Site is in Baldwin, Maryland, a rural and mostly agricultural portion of Baltimore County. The parcel is approximately 3.3 miles southwest of Fallston and 5.5 miles southeast of Jacksonville. The property is located at S 5617 Patterson Road, east of Patterson Road and west of Baldwin Mill Road (N 39.496067 latitude, W 76.474526 longitude). The site is in the Lower Gunpowder Falls Watershed (02130802), part of the larger Gunpowder River sub-basin. The property is surrounded by family farms and rural residences with a small group of commercial properties located along the southeast boundary.

The 70.9-acre property is zoned agricultural and protected by a Rural Legacy Easement held by Baltimore County and Long Green Conservancy. In 2018, Wooly Bugger, LLC purchased the property from Pheasant Run Farm, Inc. Historically, uses for the site included agricultural crop production and a commercial nursery operation. The Pheasant Run Mitigation Site will span approximately 44 acres of the property.

**Site Investigation Methodology:**

Criteria used to conduct the wetland delineation are consistent with those procedures established by the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual and the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountain and Piedmont Region (Version 2.0). The 1987 Manual describes wetlands as those areas that have permanent or periodic inundation or saturation by surface or ground water to create anaerobic conditions in the soil to support a prevalence of vegetation typically adapted for life in saturated soil conditions. Therefore, environmental criteria for wetlands includes the following:

- Vegetation: the prevalent vegetation is hydrophytic (>50%).
- Hydrology: the area is either permanently or periodically inundated, or the soil is saturated to the surface during the growing season.
- Soils: the soils observed have been classified as hydric, and/or anaerobic conditions have developed in the soils.

As described in the above documents, the Routine Onsite Inspection Determination Method was used for this wetland delineation. This method is a combination of an off-site data review and an on-site inspection to identify wetland boundaries. Off-site sources such as the National Wetland Inventory Map and the USDA Soil Map were consulted during this wetland delineation; final wetland determinations were based field observations. The following describes the approach used to complete the on-site wetland identification and delineation effort:

1. Plant community types were observed and their dominant species identified. Wetland indicator status was obtained, if available, for each species and recorded on the field data sheet. If greater than 50 percent of the dominant species in the plant community were observed to have an indicator status of facultative (FAC) or wetter (FACW, OBL), then a hydrophytic vegetative community was determined to be present.

2. Prospective wetland areas were examined for the presence of hydrology. If wetland hydrologic indicators (surface water, high water table, saturation, etc.) were observed, then sufficient hydrology for the existence of wetlands was determined to be present.

3. Auger borings of the soil substrate in the prospective wetland areas were examined in multiple locations. The characteristics of the soil were compared to hydric soil indicators as prescribed by the 2012 Regional Supplement. If the soils were observed to have positive hydric soil indicators (depleted matrix, histosol, aquatic moisture regime, low chroma colors, etc.), then hydric soil was determined to be present.

4. If all the above characteristics (hydrophytic vegetation, hydrology, and hydric soils) were found to be present in a prospective wetland area, the area was defined and delineated as a wetland. If the any of the above characteristics were not found in a prospective wetland area, then the area is not considered a wetland. Given the farmed nature of some wetlands and their lack of hydrophytic vegetation, best professional judgement was used in determining wetland presence/absence.

***Findings:***

**Desktop Findings:** National Wetlands Inventory map indicated the presence of several linear waterways and wetland features. FEMA-mapped floodplains occur on site (Map Panel Number: 2400100280F). Soil Survey information was obtained from the USDA National Resource Conservation Service online soil survey mapping website. The following soil types were identified for the project area and are shown on the Wetland Investigation Site Plan:

- BaA: Baile silt loam, 0 to 3 percent slopes
- BcA: Baltimore gravelly loam, 0 to 3 percent slopes
- BgA: Benevola silt loam, 0 to 3 percent slopes
- ChB: Conestoga silt loam, 3 to 8 percent slopes
- LsA: Lindside silt loam, 0 to 3 percent slopes
- WhA: Wiltshire silt loam, 0 to 3 percent slopes
- WhB: Wiltshire silt loam, 3 to 8 percent slopes

**On-Site Findings:** Wetland delineation field activities were conducted on June 5, 2019 by Marie Brady and Haley Kelly, both Professional Wetland Scientists. During the site visit it was determined that nontidal wetlands and waters of the U.S. exist on the site. Within the proposed project area, wetland boundaries and stream top-of-bank were identified in the field, flagged with pink flagging labeled “Wetland Delineation,”. The locations of soil borings/data points were also flagged in the field. All points were located with a Leica GPS unit.

All resources have been located on the attached Wetland Investigation Site Plan. Data were recorded on Wetland Determination Data Forms. A color photographic log depicting the wetland habitats

observed during the field effort are included with this report. Presented below are the findings of the on-site wetland identification:

Non-tidal wetlands within or adjacent to the project area include the following:

**Wetland 1** (approximately 110,833 square feet) is in the north-west portion of the property. It is a wetland complex fed by and containing portion of Unnamed Tributary 1, an unnamed tributary to Long Green Creek. Wetland 1 is predominantly emergent (PEM) wetland with trees and shrubs along the northern edge of wetland adjacent to the tributary. The vegetative community in Wetland 1 is dominated by reed canary grass (*Phalaris arundinacea)* with smaller amounts of jewelweed (*Impatiens capensis)*, arrowleaf tearthumb (*Polygonum saggitarium)*, and various sedge and grass species. Hydrology is associated with surface saturation and runoff from the surrounding areas. Portions of Wetland 1 have standing water and appear to be semi-permanently flooded/saturated, other portions are seasonally flooded. Soils consist of Wiltshire silt loam with hydric soil indicator F3 (Depleted Matrix). The functions and values of Wetland 1 were analyzed using the concepts outlined in The Highway Methodology Workbook Supplement: Functions and Values by the U.S. Army Corps of Engineers New England District. The principal functions of this wetland are floodflow alteration, sediment/toxicant reduction, sediment/shoreline stabilization, and wildlife habitat. Most of these functions can be attributed to the dense emergent vegetation present in the wetland.

**Wetland 2** (approximately 1,036 square feet) is a linear depression located along the edge of an agriculture field in the central portion of the site. The wetland is sparsely vegetated with emergent vegetation including marsh seedbox (*Ludwigia palustris*), spotted ladysthumb (*Polygonum persicaria),* hairy buttercup (*Ranunculus sardous)*, beaked spikerush (*Eleocharis rostellata),* yellow nutsedge (*Cyperus esculentus)* prairie wedgescale (*Sphenopolis obtusata*), and lake sedge *(Carex lacustris).* Hydrology is associated with a shallow depth to groundwater and runoff from upland forest and cropland. Soils consist of mineral layers with redox concentrations typical of a F3 hydric soil indicator. The functions and values of Wetland 2 were analyzed using the concepts outlined in The Highway Methodology Workbook Supplement: Functions and Values by the U.S. Army Corps of Engineers New England District. The principal functions of this wetland are floodflow alteration and wildlife habitat. The wetland is located in a relatively flat area surrounded by uplands and therefore serves as storage for overland flow during rain events.

**Wetland 3** (approximately 19,698 square feet) is located in the southeastern portion of the site adjacent to unnamed tributary 4. Wetland 3 is a predominantly emergent wetland (PEM) with scattered black willow (*Salix nigra)*. The wetland is dominated by common reed (*Phragmites australis)*. Hydrology is derived from a shallow depth to groundwater, runoff from adjacent fields, and overbank flow from the stream. Soils consist of mineral layers with redox concentrations typical of a F3 hydric soil indicator. The soils also had a hydrogen sulfide odor, meeting criteria for A4 hydric soil indicator. The functions and values of Wetland 3 were analyzed using the concepts outlined in The Highway Methodology Workbook Supplement: Functions and Values by the U.S. Army Corps of Engineers New England District. The principal functions of this wetland are floodflow alteration, nutrient removal, sediment/shoreline stabilization, and wildlife habitat. Most of these functions can be attributed to the dense emergent vegetation present in the wetland; however, the emergent vegetation is non-native.

Waters of the U.S. include the following:

**Unnamed Tributary 1** is an approximately 841-linear foot, perennial waterway located in the western portion of the site. It flows southeast through Wetland 1 before joining with unnamed tributary 3 near Patterson Road. The tributary is heavily vegetated with reed canary and timothy grass *(Phleum pretense*) and lacks defined banks. The tributary substrate is comprised of mud and organic materials. During summer, there is little to no flow, with most water present in standing pools where iron oxidation is occurring. An abundance of sediment is present in the channel, but no defined bars are present. Cowardin's Wetlands and Deepwater Habitats Classification categorizes Tributary 1 as a R4SB6/7 system.

| Tributary 1 Dimensions | | |
|---|---|---|
| | Upstream | Downstream |
| Bank Height (ft) | 0.3 | 0.3 |
| Water Depth(ft) | 0.3 | 1.2 |
| Width (ft) | 3 | 3 |

**Unnamed Tributary 2** is an approximately 900-linear foot, perennial waterway located in the central portion of the site. It flows south within a straightened channel that separates two agricultural fields. Unnamed tributary 2 flows into unnamed tributary 3 near Patterson Road. The riparian buffer is heavily vegetated with grasses, primarily timothy grass and reed canary. The banks are eroded and bare but overhung with vegetation from the floodplain. The streambed is comprised of a few pool-riffle sequences and consists of sand, with cobble present in riffles. The downstream portion of the tributary has less slope and poorly defined banks. The bottom is sandy and there is a lack of riffle-pool sequences. Cowardin's Classification categorizes Tributary 2 as a R2UB1/2 system.

| Tributary 2 Dimensions | | |
|---|---|---|
| | Upstream | Downstream |
| Bank Height (ft) | 2.4-3.1 | 0.6 |
| Water Depth (ft) | 0.3 | 0.3 |
| Width (ft) | 3 | 3 |

**Unnamed Tributary 3** is an approximately 1,947-linear foot, perennial waterway in the central portion of the site. It enters the site via a culvert under Baldwin Mill Road and flows southwest, joining with other tributaries before flowing offsite via a culvert under Patterson Road. The box culvert at Baldwin Mill Road is a barrier to fish passage, as the culvert bottom is approximately 18-inches above the water surface. Bars, large rocks and riffles present for approximately the first hundred feet. The stream narrows downstream near the confluence with Tributary 4 and there are occasional riffle-pool sequences. Bottom material is largely silt, with some bars are present. As the tributary continues downstream it becomes more incised near Patterson Road. Here the right bank is a gradual slope while the left bank has a wide bench. The stream bed is sandy fines with gravel and small cobble. The flow is moderate, and some riffles are present. There is evidence of out of bank flow events in the field on the left bank of the stream. The narrow riparian buffer contains small trees, vines, and shrubs including many non-native species. Beyond the buffer are agricultural fields. Cowardin's Classification categorizes Tributary 3 as a R2UB1/2/3 system. The narrow riparian buffer contains small trees, vines, and shrubs including many non-native species. Beyond the buffer are agricultural fields.

| Tributary 3 Dimensions | | | |
|---|---|---|---|
| | Upstream | Confluence with Tributary 4 | Downstream |
| Bank Height (ft) | 4.3 (left). 0.8 with terrace at 3.8 (right) | 1.5 | 4 |
| Water Depth (ft) | 1 | 0.25 | 0.5 |
| Width (ft) | 11.8 | 2.8 | 2 |

**Unnamed Tributary 4** is an approximately 662-linear foot, perennial waterway located in the eastern portion of the site. It enters the site via a culvert between two commercial properties to the south and flows northwest within a narrow, forested riparian buffer to its confluence with unnamed tributary 3. Near the culvert, large, supplemented cobble and natural pebbles are mixed with fines and artificial concrete and large rock are present. Stream has a moderate flow and riffle-pool sequences. Bottom material is comprised of course small pebbles that make up riffles. A change in regimes is present here, as fast shallow flow is dominant. The buffer consists of trees, grasses, and vines with many non-native species. Cowardin's Classification categorizes Tributary 4 as a R2UB1/2 system.

| Tributary 4 Dimensions | | |
|---|---|---|
| | Upstream | Downstream |
| Bank Height (ft) | 1.8 (right), 1.6 (left) | 3 |
| Water Depth (ft) | 0.4 | 0.15 |
| Width (ft) | 4.3 | 3.6 |

**Unnamed Tributary 5** is an approximately 1,044-linear foot, perennial waterway located along Patterson Road. It flows west along the roadway to its confluence with unnamed tributary 3. Upstream of the project area the stream flows from a culvert near Long Green Pike. Here water runs through riffles of large cobble and rock present on a sandy bottom. Bank height decreases downstream and the bed lacks the large cobble present upstream and is composed entirely of sand. Near the confluence with Tributary 3, grassy vegetation is thick and the ditch is not clearly visible and less defined. The bottom is silty, and water is present in standing pools with little flow. The vegetation surrounding Tributary 5 is short, maintained grass with bare banks in some areas. Cowardin's Classification categorizes Tributary 5 as a R2UB1/2 system.

| Tributary 5 Dimensions | | |
|---|---|---|
| | Upstream | Downstream |
| Bank Height (ft) | 6.2 (right), 3.1 (left) | 1 |
| Water Depth (ft) | 0.15 | 0.15 |
| Width (ft) | 2.3 | 1.5 |

**Uplands** adjacent to these wetlands are agricultural areas. Some upland areas are used for crop production and some for former tree growing areas for a nursery operation. These areas do not contain wetland hydrology, hydric soils, or hydric vegetation.

***Conclusions:***

On-site, there are three non-tidal wetlands and five unnamed tributaries. Collectively there are approximately 3.02 acres of non-tidal wetland and 5,394 linear feet of stream. Final determination of the limits of Federal/State jurisdiction is the shared responsibility of the U.S. Army Corps of Engineers and Maryland Department of the Environment. If the proposed activities on the property require work within these jurisdictional areas and their applicable buffers, application for approvals from these agencies will be submitted.

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**Pheasant Run Wetland Delineation - Photo Log**

**Wetlands**

Wetland 1, February 14, 2019

Wetland 1, June 5, 2019

Wetland 2, June 5, 2019

Wetland 3, June 5, 2019

**Streams**

Unnamed tributary 1, February 14, 2019

Unnamed tributary 2, February 14, 2019

Unnamed tributary 3, February 14, 2019

Mainstem @ Baldwin Mill Rd fish passage barrier

Unnamed tributary 4, February 14, 2019

Unnamed tributary 5 at confluence with tributary 3.

**Adjacent Upland Areas**

Adjacent upland areas, June 5, 2019

Upland agricultural field, February 14, 2020

Upland nursery trees, February 14, 2020

# WETLAND DETERMINATION DATA FORM- Eastern Mountains and Piedmont

Project/Site: Pheasant Run Wetland Mitigation Site | City/County: Baldwin, Baltimore County | Sampling Date: 6/5/19

Applicant/Owner: Ecotone, Inc. | State: MD | Sampling Point: Wet-1

Investigator(s): HMK/MVB | Section,Township, Range:

Landform (hillslope, terrace, etc.) Plain | Local relief (concave, convex, none): Concave | Slope (%): <1%

Subregion (LRR or MLRA): LRR S | Lat: 39.494 | Long: -76.474 | Datum: WGS84

Soil Map Unit Name: Wiltshire Silt Loam, 0-3% slopes (WhA) | NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N Significantly disturbed? | Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation N, Soil N, or Hydrology N 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? Yes ☑ No ☐

Hydric Soil Present? Yes ☑ No ☐ Is the Sampled Area

Wetland Hydrology Present? Yes ☑ No ☐ within a Wetland? Yes ☑ No ☐

Remarks:

In northwestern portion of site.

## 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 ☑ Depth (inches):

Water Table Present? Yes ☐ No ☑ Depth (inches): 2"

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): surface

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gage, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION - Use scientific names of plants.**

Sampling Point: Wet-1

| Tree Stratum (Plot size: 30 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Acer rubrum* | 2 | Yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 50% total cover: 1.0% 20% total cover: 0.4% | 2% | = Total Cover | |

| Sapling Stratum (Plot size: 15 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

| Shrub Stratum (Plot size: 15 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

| Herb Stratum (Plot size: 5 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Phalaris arundinacea* | 95 | Yes | FACW |
| 2. *Impatiens capensis* | 3 | No | FACW |
| 3. *Polygonum saggitarium* | 2 | No | OBL |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| 50% total cover: 50.0% 20% total cover: 20.0% | 100% | = Total Cover | |

| Woody Vine Stratum (Plot size: 30 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

Domiance 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 Speices that are OBL, FACW, or FAC: 100.0% ( A/B )

Prevalence Index worksheet

| Total % Cover of: | | Multiply by: | | |
|---|---|---|---|---|
| OBL species | 2 | X 1 | = | 2 |
| FACW species | 98 | X 2 | = | 196 |
| FAC species | 2 | X 3 | = | 6 |
| FACU species | 0 | X 4 | = | 0 |
| UPL species | 0 | X 5 | = | 0 |
| Column Totals | 102 ( A ) | | | 204 ( B ) |

Prevalence Index = B/A = 2.00%

Hydrophytic Vegetation Indicators:

- ☐ 1. Rapid Test of Hydrophytic Vegetation
- ☑ 2. Dominance Test is >50%
- ☑ 3. Prevalence Index is ≤3.0[1]
- ☐ 4. Morphological Adaptations[1] (Provide supporting data in Remarks or on a separte sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of 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 then 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 and woody plants, except woody vines, less than approximately 3 ft (1 m) in height

Woody Vine - All woody vines, regardless of height.

Hydropytic Vegetation Present? Yes ☑ No ☐

Remarks: (If observed, list morphological adaptations below).

Soils

Sampling Point: Wet-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
| 0-4 | 2.5Y 4/1 | 100 | | | | | loam w/ muck | |
| 4-16 | 2.5Y 4/1 | 98 | 10YR 4/6 | 2 | C | M | clay loam | |
| 16-17 | 2.5Y 5/1 | 98 | 10YR 5/6 | 2 | C | M | clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (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 Surace (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)
- ☐ Red Parent Material (F21) (MLRA 127, 147)

Indicators of Problematic Hydric Soils[3]:

- ☑ 2 cm Muck (A10) (MLRA 147)
- ☐ Coast Prairie Redox (A16) (MLRA 147, 148)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks):

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ☑ No ☐

Remarks:

# WETLAND DETERMINATION DATA FORM- Eastern Mountains and Piedmont

Project/Site: Pheasant Run Wetland Mitigation Site | City/County: Baldwin, Baltimore County | Sampling Date: 6/5/19

Applicant/Owner: Ecotone, Inc. | State: MD | Sampling Point: UPL-1

Investigator(s): HMK/MVB | Section,Township, Range:

Landform (hillslope, terrace, etc.) Plain | Local relief (concave, convex, none): Concave | Slope (%): 2%

Subregion (LRR or MLRA): LRR S | Lat: 39.494 | Long: -76.474 | Datum: WGS84

Soil Map Unit Name: Baile Silt Loam, 0-3% slopes (BaA) | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N Significantly disturbed? | Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation N, Soil N, or Hydrology N 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? Yes ☑ No ☐

Hydric Soil Present? Yes ☑ No ☐ Is the Sampled Area

Wetland Hydrology Present? Yes ☐ No ☑ within a Wetland? Yes ☐ No ☑

Remarks:

In northwestern portion of site, east of Wetland 1

## 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)

***Pheasant Run – Wetland***

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches):

Water Table Present? Yes ☐ No ☑ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches):

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream gage, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION - Use scientific names of plants.**

Sampling Point: Upl-1

| Tree Stratum (Plot size: 30 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

| Sapling Stratum (Plot size: 15 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

| Shrub Stratum (Plot size: 15 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Rosa multiflora* | 5 | Yes | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 50% total cover: 2.5% 20% total cover: 1.0% | 5% | = Total Cover | |

| Herb Stratum (Plot size: 5 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Phalaris arundinacea* | 60 | Yes | FACW |
| 2. *Lonicera japonica* | 5 | No | FACU |
| 3. *Juncus effusus* | 5 | No | FACW |
| 4. *Apocynum cannibinum* | 7 | No | FACU |
| 5. *Poa pratensis* | 5 | No | FACU |
| 6. *Sphenopholis obtusata* | 10 | No | FAC |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| 50% total cover: 46.0% 20% total cover: 18.4% | 92% | = Total Cover | |

| Woody Vine Stratum (Plot size: 30 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

Domiance 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 Speices that are OBL, FACW, or FAC: 50.0% ( A/B )

Prevalence Index worksheet

| Total % Cover of: | | Multiply by: | | |
|---|---|---|---|---|
| OBL species | 0 | X 1 | = | 0 |
| FACW species | 65 | X 2 | = | 130 |
| FAC species | 10 | X 3 | = | 30 |
| FACU species | 22 | X 4 | = | 88 |
| UPL species | 0 | X 5 | = | 0 |
| Column Totals | 97 ( A ) | | | 248 ( B ) |

Prevalence Index = B/A = 2.56%

Hydrophytic Vegetation Indicators:

- ☐ 1. Rapid Test of Hydrophytic Vegetation
- ☐ 2. Dominance Test is >50%
- ☑ 3. Prevalence Index is ≤3.0[1]
- ☐ 4. Morphological Adaptations[1] (Provide supporting data in Remarks or on a separte sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of 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 then 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 and woody plants, except woody vines, less than approximately 3 ft (1 m) in height

Woody Vine - All woody vines, regardless of height.

Hydropytic Vegetation Present? Yes ☑ No ☐

Remarks: (If observed, list morphological adaptations below).

Soils

Sampling Point: Upl-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
| 0-6 | 10YR 4/2 | 98 | 10YR 3/6 | 2 | C | M | clay loam | roots |
| 6-12 | 10YR 4/1 | 98 | 10YR 4/6 | 2 | C | M | sandy loam | |
| 12-16 | 10YR 6/1 | 98 | 10YR 5/6 | 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:

- ☐ Histosol (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 Surace (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)
- ☐ Red Parent Material (F21) (MLRA 127, 147)

Indicators of Problematic Hydric Soils[3]:

- ☑ 2 cm Muck (A10) (MLRA 147)
- ☐ Coast Prairie Redox (A16) (MLRA 147, 148)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks):

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ☑ No ☐

Remarks:

# WETLAND DETERMINATION DATA FORM- Eastern Mountains and Piedmont

Project/Site: Pheasant Run Wetland Mitigation Site | City/County: Baldwin, Baltimore County | Sampling Date: 6/5/19

Applicant/Owner: Ecotone, Inc. | State: MD | Sampling Point: UPL-2

Investigator(s): HMK/MVB | Section,Township, Range:

Landform (hillslope, terrace, etc.) Plain | Local relief (concave, convex, none): Concave | Slope (%): 2%

Subregion (LRR or MLRA): LRR S | Lat: 39.494 | Long: -76.474 | Datum: WGS84

Soil Map Unit Name: Lindside Silt Loam, 0-3% slopes (LsA) | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N Significantly disturbed? | Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation N, Soil N, or Hydrology N 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? Yes ☑ No ☐

Hydric Soil Present? Yes ☐ No ☑ Is the Sampled Area

Wetland Hydrology Present? Yes ☐ No ☑ within a Wetland? Yes ☐ No ☑

Remarks:

In central portion of site, adjacent to main tributary (unnamed Tributary 3)

## 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 ☑ Depth (inches):

Water Table Present? Yes ☐ No ☑ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches):

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream gage, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION - Use scientific names of plants.** Sampling Point: Upl-2

| Tree Stratum (Plot size: 30 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

| Sapling Stratum (Plot size: 15 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

| Shrub Stratum (Plot size: 15 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Rosa multiflora* | 10 | Yes | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 50% total cover: 5.0% 20% total cover: 2.0% | 10% | = Total Cover | |

| Herb Stratum (Plot size: 5 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Juncus effusus* | 5 | No | FACW |
| 2. *Solarium carolinense* | 10 | No | FACU |
| 3. *Bohmeria cylindrica* | 5 | No | FACW |
| 4. *Carex lurida* | 20 | Yes | OBL |
| 5. *Polygonum saggitatum* | 20 | Yes | OBL |
| 6. *Sphenopholis obtusata* | 10 | No | FAC |
| 7. *Phalaris arundinacea* | 20 | Yes | FACW |
| 8. *Junus canadensis* | 10 | No | OBL |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| 50% total cover: 50.0% 20% total cover: 20.0% | 100% | = Total Cover | |

| Woody Vine Stratum (Plot size: 30 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

**Domiance Test worksheet**

Number of Dominant Species That are OBL, FACW, or FAC: 3 ( A )

Total Number of Dominant Species Across All Strata: 4 ( B )

Percent of Dominant Speices that are OBL, FACW, or FAC: 75.0% ( A/B )

**Prevalence Index worksheet**

| Total % Cover of: | | | Multiply by: | |
|---|---|---|---|---|
| OBL species | 50 | X 1 = | 50 | |
| FACW species | 30 | X 2 = | 60 | |
| FAC species | 10 | X 3 = | 30 | |
| FACU species | 20 | X 4 = | 80 | |
| UPL species | 0 | X 5 = | 0 | |
| Column Totals | 110 | ( A ) | 220 | ( B ) |

Prevalence Index = B/A = 2.00%

**Hydrophytic Vegetation Indicators:**

- ☐ 1. Rapid Test of Hydrophytic Vegetation
- ☑ 2. Dominance Test is >50%
- ☑ 3. Prevalence Index is ≤3.0[1]
- ☐ 4. Morphological Adaptations[1] (Provide supporting data in Remarks or on a separte sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of 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 then 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 and woody plants, except woody vines, less than approximately 3 ft (1 m) in height

Woody Vine - All woody vines, regardless of height.

Hydropytic Vegetation Present? Yes ☑ No ☐

Remarks: (If observed, list morphological adaptations below).

Soils

Sampling Point: Upl-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
| 0-8 | 10YR 4/4 | 100 | | | | | loam | |
| 8-13 | 10YR 4/4 | 100 | | | | | sand 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:

- ☐ Histosol (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 Surace (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)
- ☐ Red Parent Material (F21) (MLRA 127, 147)

Indicators of Problematic Hydric Soils[3]:

- ☒ 2 cm Muck (A10) (MLRA 147)
- ☐ Coast Prairie Redox (A16) (MLRA 147, 148)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks):

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ☒ No ☑

Remarks:

# WETLAND DETERMINATION DATA FORM- Eastern Mountains and Piedmont

Project/Site: Pheasant Run Wetland Mitigation Site | City/County: Baldwin, Baltimore County | Sampling Date: 6/5/19

Applicant/Owner: Ecotone, Inc. | State: MD | Sampling Point: Wet-2

Investigator(s): HMK/MVB | Section,Township, Range:

Landform (hillslope, terrace, etc.) Plain | Local relief (concave, convex, none): Concave | Slope (%): 1%

Subregion (LRR or MLRA): LRR S | Lat: 39.494 | Long: -76.474 | Datum: WGS84

Soil Map Unit Name: Lindside Silt Loam, 0-3% slopes (LsA) | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N Significantly disturbed? | Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation N, Soil N, or Hydrology N 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? Yes ☑ No ☐

Hydric Soil Present? Yes ☑ No ☐ Is the Sampled Area

Wetland Hydrology Present? Yes ☑ No ☐ within a Wetland? Yes ☑ No ☐

Remarks:

In central portion of site

## 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 ☑ Depth (inches):

Water Table Present? Yes ☐ No ☑ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches):

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gage, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION - Use scientific names of plants.**

Sampling Point: Wet-2

| Tree Stratum (Plot size: 30 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

| Sapling Stratum (Plot size: 15 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

| Shrub Stratum (Plot size: 15 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

| Herb Stratum (Plot size: 5 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Ludwigia palustris* | 1 | Yes | OBL |
| 2. *Polygonum persicaria* | 2 | Yes | FACW |
| 3. *Ranunculus sardous* | 1 | Yes | FAC |
| 4. *Eleocharis rostellata* | 1 | Yes | OBL |
| 5. *Sphenopolis obtusata* | 1 | Yes | FAC |
| 6. *Carex lacustris* | 1 | Yes | OBL |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| 50% total cover: 3.5% 20% total cover: 1.4% | 7% | = Total Cover | |

| Woody Vine Stratum (Plot size: 30 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

**Domiance Test worksheet**

Number of Dominant Species That are OBL, FACW, or FAC: 6 ( A )

Total Number of Dominant Species Across All Strata: 6 ( B )

Percent of Dominant Speices that are OBL, FACW, or FAC: 100.0% ( A/B )

**Prevalence Index worksheet**

| Total % Cover of: | | | Multiply by: | |
|---|---|---|---|---|
| OBL species | 3 | X 1 = | 3 | |
| FACW species | 2 | X 2 = | 4 | |
| FAC species | 2 | X 3 = | 6 | |
| FACU species | 0 | X 4 = | 0 | |
| UPL species | 0 | X 5 = | 0 | |
| Column Totals | 7 | ( A ) | 13 | ( B ) |

Prevalence Index = B/A = 1.86%

**Hydrophytic Vegetation Indicators:**

- ☐ 1. Rapid Test of Hydrophytic Vegetation
- ☑ 2. Dominance Test is >50%
- ☑ 3. Prevalence Index is ≤3.0[1]
- ☐ 4. Morphological Adaptations[1] (Provide supporting data in Remarks or on a separte sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of 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 then 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 and woody plants, except woody vines, less than approximately 3 ft (1 m) in height

Woody Vine - All woody vines, regardless of height.

Hydropytic Vegetation Present? Yes ☑ No ☐

Remarks: (If observed, list morphological adaptations below).
Cover much higher near edges of depression

Soils

Sampling Point: Wet-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
| 0-6 | 10YR 4/2 | 98 | 10YR 3/4 | 2 | C | M | loam | |
| 6-12 | 10YR 4/2 | 95 | 10YR 3/4 | 5 | C | M | clay loam | |
| 12-20 | 10YR 5/1 | 90 | 10YR 6/6 | 10 | 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:

- ☐ Histosol (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 Surace (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)
- ☐ Red Parent Material (F21) (MLRA 127, 147)

Indicators of Problematic Hydric Soils[3]:

- ☑ 2 cm Muck (A10) (MLRA 147)
- ☐ Coast Prairie Redox (A16) (MLRA 147, 148)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- ☐ Very Shallow Dark Surface (TF12)
- ☑ Other (Explain in Remarks):

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ☑ No ☐

Remarks:

# WETLAND DETERMINATION DATA FORM- Eastern Mountains and Piedmont

Project/Site: Pheasant Run Wetland Mitigation Site | City/County: Baldwin, Baltimore County | Sampling Date: 6/5/19

Applicant/Owner: Ecotone, Inc. | State: MD | Sampling Point: UPL-3

Investigator(s): HMK/MVB | Section,Township, Range:

Landform (hillslope, terrace, etc.) Plain | Local relief (concave, convex, none): Concave | Slope (%): 2%

Subregion (LRR or MLRA): LRR S | Lat: 39.494 | Long: -76.474 | Datum: WGS84

Soil Map Unit Name: Lindside Silt Loam, 0-3% slopes (LsA) | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N Significantly disturbed? | Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation N, Soil N, or Hydrology N 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? Yes ☑ No ☐

Hydric Soil Present? Yes ☐ No ☑ Is the Sampled Area

Wetland Hydrology Present? Yes ☐ No ☑ within a Wetland? Yes ☐ No ☑

Remarks:

Adjacent to Wetland 2

## 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 ☑ Depth (inches):

Water Table Present? Yes ☐ No ☑ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches):

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream gage, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION - Use scientific names of plants.**

Sampling Point: Upl-3

| Tree Stratum (Plot size: 30 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

| Sapling Stratum (Plot size: 15 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

| Shrub Stratum (Plot size: 15 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

| Herb Stratum (Plot size: 5 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Carex vulpinoidea* | 10 | No | OBL |
| 2. *Carex lurida* | 25 | Yes | OBL |
| 3. *Juncus canadensis* | 15 | Yes | OBL |
| 4. *Euthamia graminifolia* | 20 | Yes | FAC |
| 5. *Mimulus ringens* | 5 | No | OBL |
| 6. *Ludiwigia alternifolia* | 5 | No | FACW |
| 7. *Convolvulus arvensis* | 5 | No | NI |
| 8. *Solanum carolensis* | 5 | No | FACU |
| 9. *Ranuculus sardous* | 5 | No | FAC |
| 10. *Asclepias syriaca* | 5 | No | UPL |
| 11. | | | |
| 12. | | | |
| 50% total cover: 50.0% 20% total cover: 20.0% | 100% | = Total Cover | |

| Woody Vine Stratum (Plot size: 30 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

Remarks: (If observed, list morphological adaptations below).

**Domiance 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 Speices that are OBL, FACW, or FAC: 100.0% ( A/B )

**Prevalence Index worksheet**

| Total % Cover of: | | Multiply by: | | |
|---|---|---|---|---|
| OBL species | 55 | X 1 = | 55 | |
| FACW species | 5 | X 2 = | 10 | |
| FAC species | 25 | X 3 = | 75 | |
| FACU species | 5 | X 4 = | 20 | |
| UPL species | 5 | X 5 = | 25 | |
| Column Totals | 95 | ( A ) | 185 | ( B ) |

Prevalence Index = B/A = 1.95%

**Hydrophytic Vegetation Indicators:**

- ☐ 1. Rapid Test of Hydrophytic Vegetation
- ☑ 2. Dominance Test is >50%
- ☑ 3. Prevalence Index is ≤3.0[1]
- ☐ 4. Morphological Adaptations[1] (Provide supporting data in Remarks or on a separte sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of 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 then 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 and woody plants, except woody vines, less than approximately 3 ft (1 m) in height

Woody Vine - All woody vines, regardless of height.

Hydropytic Vegetation Present? Yes ☑ No ☐

Soils

Sampling Point: Upl-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
| 0-2 | 10YR 3/2 | 100 | | | | | loam | |
| 2-16 | 10YR 4/4 | 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:

- ☐ Histosol (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 Surace (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)
- ☐ Red Parent Material (F21) (MLRA 127, 147)

Indicators of Problematic Hydric Soils[3]:

- ☒ 2 cm Muck (A10) (MLRA 147)
- ☐ Coast Prairie Redox (A16) (MLRA 147, 148)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks):

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ☒ No ☑

Remarks:

# WETLAND DETERMINATION DATA FORM- Eastern Mountains and Piedmont

Project/Site: Pheasant Run Wetland Mitigation Site | City/County: Baldwin, Baltimore County | Sampling Date: 6/5/19

Applicant/Owner: Ecotone, Inc. | State: MD | Sampling Point: Wet-3

Investigator(s): HMK/MVB | Section,Township, Range:

Landform (hillslope, terrace, etc.) Plain | Local relief (concave, convex, none): Concave | Slope (%): 2%

Subregion (LRR or MLRA): LRR S | Lat: 39.494 | Long: -76.474 | Datum: WGS84

Soil Map Unit Name: Lindside Silt Loam, 0-3% slopes (LsA) | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N Significantly disturbed? | Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation N, Soil N, or Hydrology N 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? Yes ☑ No ☐

Hydric Soil Present? Yes ☑ No ☐ Is the Sampled Area

Wetland Hydrology Present? Yes ☑ No ☐ within a Wetland? Yes ☑ No ☐

Remarks:

In southeastern portion of site, adjacent to unnamed tributary 4

## 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 ☑ Depth (inches):

Water Table Present? Yes ☐ No ☑ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches):

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gage, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION - Use scientific names of plants.**

Sampling Point: Wet-3

| Tree Stratum (Plot size: 30 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Salix nigra* | 5 | Yes | OBL |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 50% total cover: 2.5% 20% total cover: 1.0% | 5% | = Total Cover | |

| Sapling Stratum (Plot size: 15 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Salix nigra* | 5 | Yes | OBL |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 50% total cover: 2.5% 20% total cover: 1.0% | 5% | = Total Cover | |

| Shrub Stratum (Plot size: 15 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

| Herb Stratum (Plot size: 5 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Carex lurida* | 10 | No | OBL |
| 2. *Scirpus cypernus* | 5 | No | OBL |
| 3. *Phragmites australis* | 85 | Yes | FACW |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| 50% total cover: 50.0% 20% total cover: 20.0% | 100% | = Total Cover | |

| Woody Vine Stratum (Plot size: 30 ft radius ). | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 7. | | | |
| 50% total cover: 0.0% 20% total cover: 0.0% | 0% | = Total Cover | |

Domiance 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 Speices that are OBL, FACW, or FAC: 100.0% ( A/B )

Prevalence Index worksheet

| Total % Cover of: | | Multiply by: | | |
|---|---|---|---|---|
| OBL species | 25 | X 1 | = | 25 |
| FACW species | 85 | X 2 | = | 170 |
| FAC species | 0 | X 3 | = | 0 |
| FACU species | 0 | X 4 | = | 0 |
| UPL species | 0 | X 5 | = | 0 |
| Column Totals | 110 ( A ) | | | 195 ( B ) |

Prevalence Index = B/A = 1.77%

Hydrophytic Vegetation Indicators:

- ☐ 1. Rapid Test of Hydrophytic Vegetation
- ☑ 2. Dominance Test is >50%
- ☑ 3. Prevalence Index is ≤3.0[1]
- ☐ 4. Morphological Adaptations[1] (Provide supporting data in Remarks or on a separte sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of 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 then 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 and woody plants, except woody vines, less than approximately 3 ft (1 m) in height

Woody Vine - All woody vines, regardless of height.

Hydropytic Vegetation Present? Yes ☑ No ☐

Remarks: (If observed, list morphological adaptations below).

Soils

Sampling Point: Wet-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
| 0-1 | 10YR 5/3 | 100 | | | | | loam | |
| 1-14 | 10YR 4/2 | 98 | 7.5YR 4/4 | 2 | C | M | 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:

- ☐ Histosol (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 Surace (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)
- ☐ Red Parent Material (F21) (MLRA 127, 147)

Indicators of Problematic Hydric Soils[3]:

- ☑ 2 cm Muck (A10) (MLRA 147)
- ☐ Coast Prairie Redox (A16) (MLRA 147, 148)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks):

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

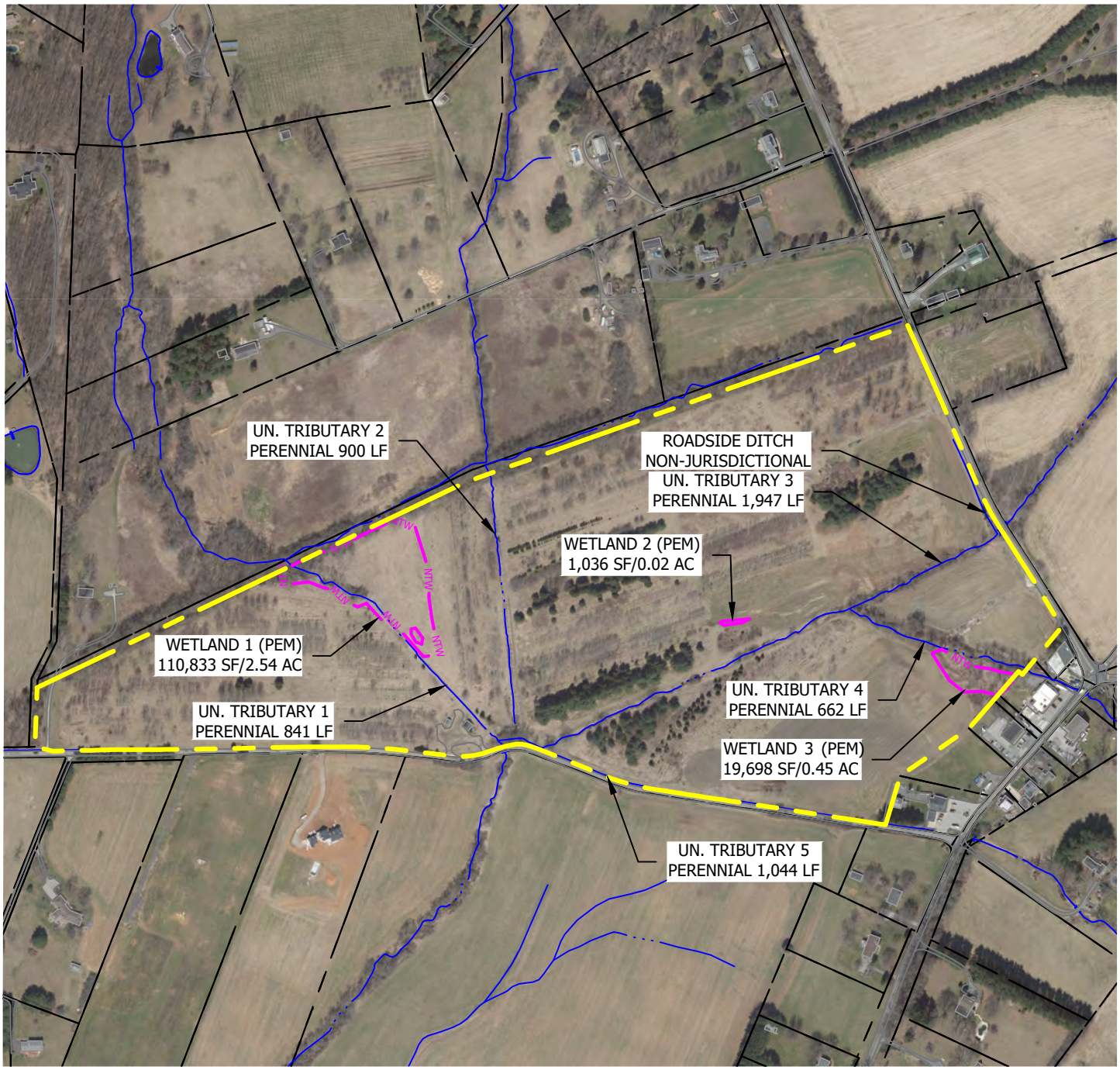
Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ☑ No ☐

Remarks:




## LEGEND

PROPERTY BOUNDARY

EX. STREAM CENTERLINE

EX. DELINEATED WETLAND

0 500 1000 Feet

ecotone
ecological restoration

129 Industry Lane · Forest Hill, Maryland 21050
(410) 420 2600 · www.ecotoneinc.com

# PHEASANT RUN MITIGATION

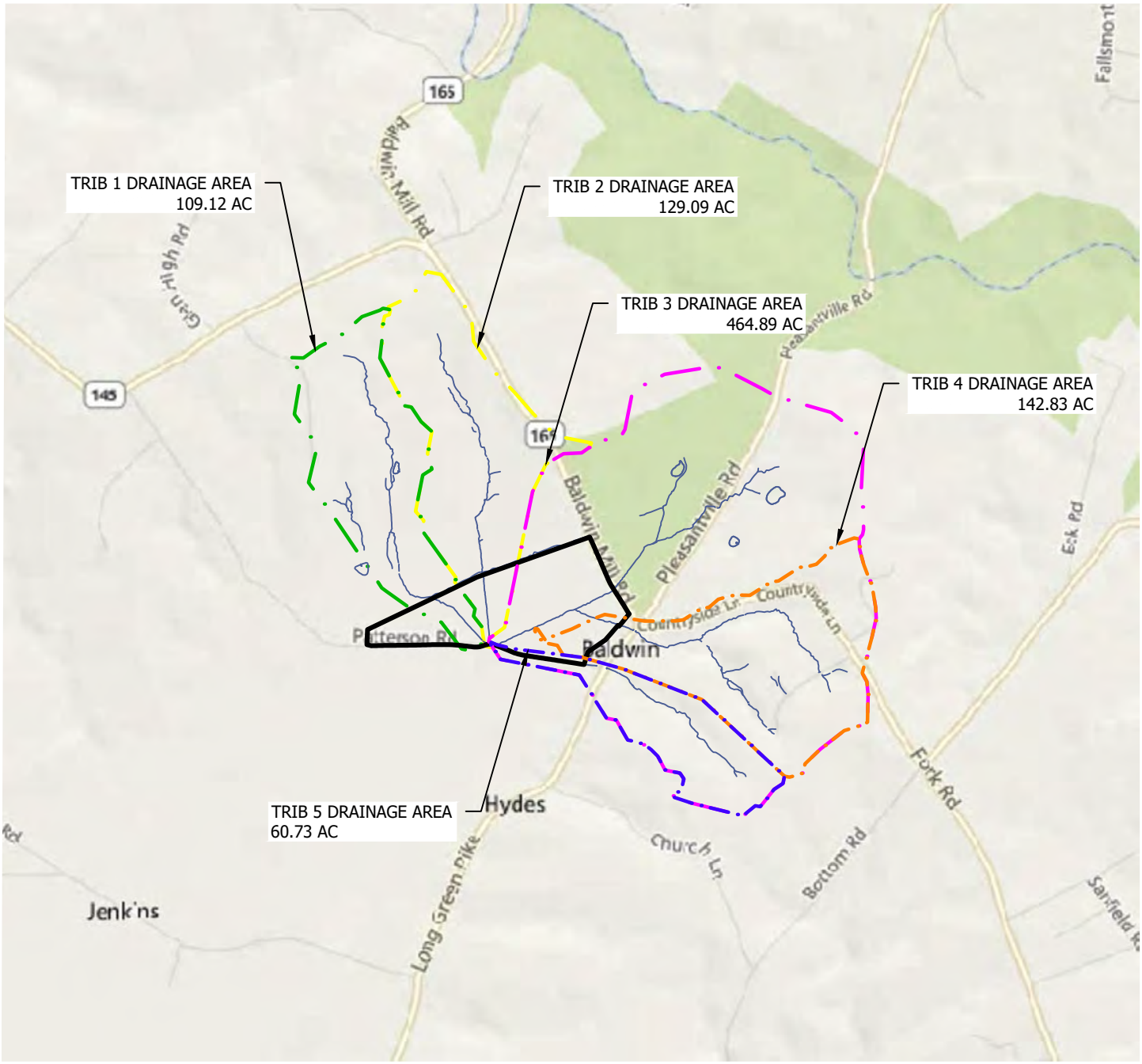
## WETLAND AND STREAM DELINEATION MAP

S 5617 PATTERSON ROAD, BALDWIN, MD 21013

SCALE: 1" = 500'

SHEET:

| PROJECT NO: 18-15-010 | DATE:7/1/2019 | DRAWN BY: CSM | CHECKED BY: MVB |
|---|---|---|---|




LEGEND

PROPERTY BOUNDARY

EX. STREAM CENTERLINE

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# PHEASANT RUN MITIGATION

## DRAINAGE AREA

BALDWIN MILL ROAD, BALDWIN, MD 21013

SCALE: 1" = 2000"

| PROJECT NO: 18-15-010 | DATE:7/23/2019 | DRAWN BY: CSM | CHECKED BY: SFM |
|---|---|---|---|