APPENDIX B

- *Endangered and Threatened Species and Present Habitat Communities* Report and Agency Coordination
- *Phase I Bog Turtle Habitat Assessment* Report and Agency Coordination

DELTA AIRPORT CONSULTANTS, INC.

RETTEW
We answer to you.
3020 Columbia Avenue, Lancaster, PA 17603 Phone: (800) 738-8395
E-mail: rettew@rettew.com ● Web site: rettew.com

MEMORANDUM

TO:	Mary Ashburn Pearson, Delta Airport Consultants, LLC		
FROM:	Mark A. Metzler		
DATE:	October 5, 2016		
PROJECT NAME:	Carroll County Regional Airport	**PROJECT NO.**	024552011
SUBJECT:	Endangered and Threatened Species and Present Habitat Communities		

INTRODUCTION

RETTEW Associates, Inc. investigated the potential presence of rare, threatened, and endangered species within the proposed Carroll County Regional Airport project area. Additionally, RETTEW identified various habitat communities while performing wetland delineations and Phase 1 bog turtle habitat assessments beginning in April of 2016. Both the Maryland Department of Natural Resources (MDNR) and the U.S. Fish and Wildlife Service (USFWS) were contacted to request their knowledge of any pre-recorded rare, threatened, or endangered species within the project area. Results of these investigations are discussed in this memorandum.

SITE DESCRIPTION

Presently, the project area is 834.94 acres in size and is located in the City of Westminster and surrounding areas in Carroll County, Maryland. The project appears on the Littlestown, MD-PA, New Windsor, MD, and Westminster, MD 7.5-minute United States Geological Survey (USGS) topographic quadrangle maps (N 39.612766, W 77.013517) in **Attachment A**. The proposed plans call for the expansion of the airport and may include construction of a new runway, extension of existing runway/taxi way, and supporting infrastructure. Generally, the site lies within a mixed-use area, being bordered by commercial, institutional, industrial, residential, and agricultural properties. Vegetative communities within the site reflect these varied land uses and include mowed lawns, agricultural fields, forests, floodplains, and wetlands. The site lies within two watersheds: the northern part of the site drains to Bear Branch, while the southern/southeastern part of the site drains to North Branch West Branch Patapsco River. All wetlands and streams are non-tidal.

METHODS

Wetland investigations were performed using delineation methodology outlined in the 1987 *Corps of Engineers Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountain and Piedmont Region (Version 2.0)*. A separate memorandum specific to the performed wetland delineation was completed and is not part of this memorandum.

Potential bog turtle habitat was investigated using the methods outlined in the USFWS Bog Turtle Habitat Evaluation Field Form (Revised June 1, 2006) for the determination of the presence or absence of potential bog turtle habitat. All delineated wetlands within the project area were examined for the three criteria necessary for bog turtle habitat (hydrology, mucky soils, and vegetation). A separate report specific to the performed Phase 1 bog turtle habitat assessment was completed and is not part of this memorandum.

In addition to specifically investigating the federally listed threatened bog turtle, RETTEW conducted an online USFWS “IPaC” search of the project area on July 25, 2016. Coordination letters and project location maps were

also mailed to both the MDNR and USFWS to further investigate the potential presence of endangered and threatened species and to relay past coordination for the same project that had been completed back in 2008 and 2009. Both agencies were provided copies of their past 2008/2009 clearances.

During wetland delineation and bog turtle habitat investigations, other habitat communities at the project site that could have potential bearing on rare, threatened, and endangered species concerns were defined.

RESULTS AND DISCUSSION

The USFWS IPaC online search resulted in an official species list that indicated that the Indiana bat (*Myotis sodalis*), a federally listed endangered species, may occur within the boundary of the proposed project (**Attachment B**). The MDNR also lists the bog turtle (*Glyptemys muhlenbergii*) as a federally threatened species in Carroll County. Coordination letters requesting a review of the project area were submitted to both the MDNR (**Attachment C**) and USFWS.

A response letter dated August 25, 2016 was received from the USFWS (**Attachment C**). The project is located within the summer habitat range of the federally endangered Indiana bat, and construction activities could impact this habitat if potential roost trees and maternity habitat are removed. Thus, potential impacts to the Indiana bat should be analyzed as part of the environmental assessment for this project. In addition, the bald eagle is protected by the Bald and Golden Eagle Act and any potential disturbance to the bald eagle should be avoided by following the National Bald Eagle Management Guidelines. No other federally proposed or listed endangered or threatened species under the jurisdiction of the USFWS are known to exist in the area.

A written response from the MDNR has not been received to date; however, coordination with Scott Smith of MDNR is on-going. As part of this coordination, a Jurisdictional Determination (JD) field view was conducted on September 23, 2016 with representatives from RETTEW, USACE, and MDNR. The USACE verbally agreed with RETTEW's wetland delineation results. Of all the wetlands located within the area of investigation, there is only one wetland (Wetland #9) located inside the limits of disturbance (LOD) for the project that contains suitable bog turtle habitat, and the MDNR concurs with this assessment. However, the MDNR has requested another bog turtle trapping effort be conducted due to the length of time since the original trapping effort; the standards for trapping have changed since that time.

At this time, both agencies are only concerned with the Indiana bat and the bog turtle. Potential habitat for these two species within the project area was investigated.

Land use within the project area includes industrial, residential, institutional, commercial, silvicultural, and agricultural. These historic and current anthropogenic activities in naturalized areas have influenced the physiognomy, resulting in largely graminoid-forb wetland communities and variously-aged upland timber stands. Many of the wetlands are adjacent to streams and occur in the floodplains of these streams. If bog turtles are present within the project area, they would be associated with these wetlands, while any present Indiana bats would be associated with forested areas typically comprised of large, rough-barked trees that serve for daily roosting during the spring, summer, and fall months.

Uplands

Many of the upland areas can be described as wooded hills and slopes, agricultural fields, and maintained lawn areas. In areas having a more mature timber stand, the canopy of the vegetation community was composed of oaks (*Quercus rubra, Q. montana*), cherries (*Prunus pensylvanica, P. serotina*), hickories (*Carya ovata, C.*

tomentosa), and tuliptree (*Liriodendron tulipifera*). In the sapling/shrub stratum of these wooded, upland areas, species such as American witch-hazel (*Hamamelis virginiana*), northern spicebush (*Lindera benzoin*), and sapling-sized specimens of cherries and hickories were observed. Much of the remainder of the project area experiences more frequent anthropogenic perturbations (e.g. mowing, planting) which is reflected in the species composition of the vegetation community. Please refer to the "Herb" section of **Table 1** below for species commonly encountered in such areas. Data forms representative of sample points completed in upland habitats can be found in **Attachment D**.

Table 1. Dominant plant species recorded in upland habitats within the AOI (2016).

Stratum	Species	Common Name	Indicator Status
Tree	*Acer negundo*	Ash-leaf maple	FAC
	Liriodendron tulipifera	Tuliptree	FACU
	Morus rubra	Red mulberry	FACU
	Prunus pensylvanica	Fire cherry	FACU
	Quercus rubra	Northern red oak	FACU
	Robinia pseudoacacia	Black locust	FACU
Sapling/Shrub	*Carya ovata*	Shagbark hickory	FACU
	Hamamelis virginiana	American witch-hazel	FACU
	Lindera benzoin	Northern spicebush	FAC
	Lonicera tatarica	Twinsisters	FACU
	Prunus pensylvanica	Fire cherry	FACU
	Rubus phoenicolasius	Wineberry	FACU
Herb	*Capsella bursa-pastoris*	Shepherd's-purse	FACU
	Dactylis glomerata	Orchard grass	FACU
	Erythronium americanum	Yellow trout-lily	NL*
	Glechoma hederacea	Ground-ivy	NL*
	Lonicera japonica	Japanese honeysuckle	FACU
	Phalaris arundinacea	Reed canary grass	FACW
	Plantago major	Great plantain	FACU
	Poa trivialis	Rough-stalk blue grass	FACW
	Podophyllum peltatum	May-apple	FACU
	Taraxacum officinale	Common dandelion	FACU
	Parathelypteris noveboracensis	New York fern	FAC
Woody Vine	*Lonicera japonica*	Japanese honeysuckle	FACU
	Parthenocissus quinquefolia	Virginia creeper	FACU

*NL: specimens could not be identified to species level or are not listed in the *USACE Eastern Mountains and Piedmont 2016 Regional Wetland Plant List.*

Upland Habitat Communities

Agricultural Mix

This includes croplands, pasturelands and agricultural buildings. This habitat community likely has little bearing on rare, threatened, and endangered species specific to this particular project.

Developed Mix

This includes residential homesteads, industrial and commercial enterprises, roadways and parking lots, and maintained lawns and athletic fields. This generalized habitat community likely has little bearing on rare, threatened, and endangered species specific to this particular project.

Forests

Red Oak-Mixed Hardwood Forest

This includes woodlands dominated by red oak. Associated trees often include white oak, chestnut oak, tuliptree, black cherry, fire cherry, and American witch-hazel in the understory. This habitat community could potentially provide adequate habitat for Indiana bats. These bats tend to roost under the bark of rough-barked trees. Throughout this habitat community, there are occasionally shagbark hickory trees which are one species of tree typically used by Indiana bats. White oak can also have rougher bark at times and can serve as roosts.

Early Successional Forest

This forested community consists mainly of red mulberry, fire cherry, shagbark hickory, and twinsisters in the understory. Most tree species in this habitat community are not typically preferred for Indiana bat roosting except for the occasional, larger shagbark hickory. However, this community appears to be outside the proposed LOD for the project at this time.

White Pine Forest

This forest stand is dominated by white pine with multi-flora rose/rambler rose and twinsisters occupying the understory. This habitat community likely has little bearing on rare, threatened, and endangered species specific to this particular project.

In summary, forested areas within the project site containing large, rough-barked trees are of concern when considering conservation of Indiana bats. As project planning and permitting progresses, it may become necessary to identify individual potential roosting trees and avoid their removal or place time restrictions on when such trees can be removed (which is typically during the winter months when the bats are hibernating).

Wetlands

Wetland habitats were mostly observed adjacent to various streams and in areas that were topographically lower than adjoining uplands. Locations of many of the wetlands coincide with mapped locations of hydric soil map units: Baile silt loam and Hatboro silt loam. Some of the larger wetlands, such as those associated with Bear Branch and an unnamed tributary (UNT) to West Branch North Branch Patapsco River, did contain some small upland inclusions; however, such inclusions serve to function ecologically within the floodplain context. Dominant herbaceous vegetation recorded at sampling points in wetlands is listed below in **Table 2**. Sampling points completed in these wetlands exhibited various combinations of the three parameters characteristic of wetlands.

Table 2. Dominant plant species recorded at sampling points in wetlands habitats within the AOI (2016).

Stratum	Latin Name	Common Name	Indicator Status
Tree	*Acer rubrum*	Red maple	FAC
Sapling/Shrub	*Lindera benzoin*	Northern spicebush	FAC
Herb	*Carex stricta*	Upright sedge	OBL
	Impatiens capensis	Spotted touch-me-not	FACW
	Phalaris arundinacea	Reed canary grass	FACW
	Symplocarpus foetidus	Skunk-cabbage	OBL

In general, surficial hydrology in the northern portion of the site drains to Bear Branch and/or several UNTs to Bear Branch. The southeastern portion of the site drains to the West Branch North Branch Patapsco River via a UNT to West Branch North Branch Patapsco River while the southern and southwestern portions drain to a UNT to Meadow Branch Big Pipe Creek. These receiving streams are all perennial in nature. Information on relative locations of streams and wetlands, flow direction of streams, and stream dimensions is illustrated on the Habitat Communities Mapping (**Attachment E**).

Wetland Habitat Communities

PEM – Palustrine Emergent Wetlands
This wetland community is dominated by herbaceous plants rather than shrubs and trees. PEM wetlands within the project area are dominated by spotted touch-me-not/jewelweed and reed canary grass.

PSS – Palustrine Scrub Shrub Wetlands
This wetland community is dominated by shrubs rather than trees or herbaceous plants. PSS wetlands within the project area are dominated by northern spicebush.

PFO – Palustrine Forested Wetlands
This wetland community is dominated by trees rather than shrubs and herbaceous plants. PFO wetlands within the project area are dominated by red maple.

Potential Bog Turtle Habitat
This wetland habitat is very species-specific and is applicable to this project. Such habitat includes the right mix of hydrology, mucky soils, and vegetation. A separate memorandum/report specific to the performed Phase 1 bog turtle habitat assessment was completed and is not part of this memorandum/report. However, the potential bog turtle habitat is depicted on the Habitat Communities Mapping in **Attachment E**.

CONCLUSION

One wetland (Wetland #9) within the project LOD contains suitable bog turtle habitat. Based on meetings and discussions with the USFWS and MDNR, the agencies concur with the current wetland delineation and bog turtle habitat survey conducted by RETTEW; however, because the original bog turtle trapping effort is over five years old, an updated trapping effort will be required and could be conducted in May/June of 2017.

The project is located within the summer habitat range of the Indiana bat. Therefore, in order to avoid impacts to the Indiana bat, it may be necessary to identify individual potential roosting trees or maternity habitat and avoid their removal, or at minimum remove trees during the winter months when the bats are not using them as seasonal roosts. If impacts may potentially occur, further consultation with the USFWS may be required.

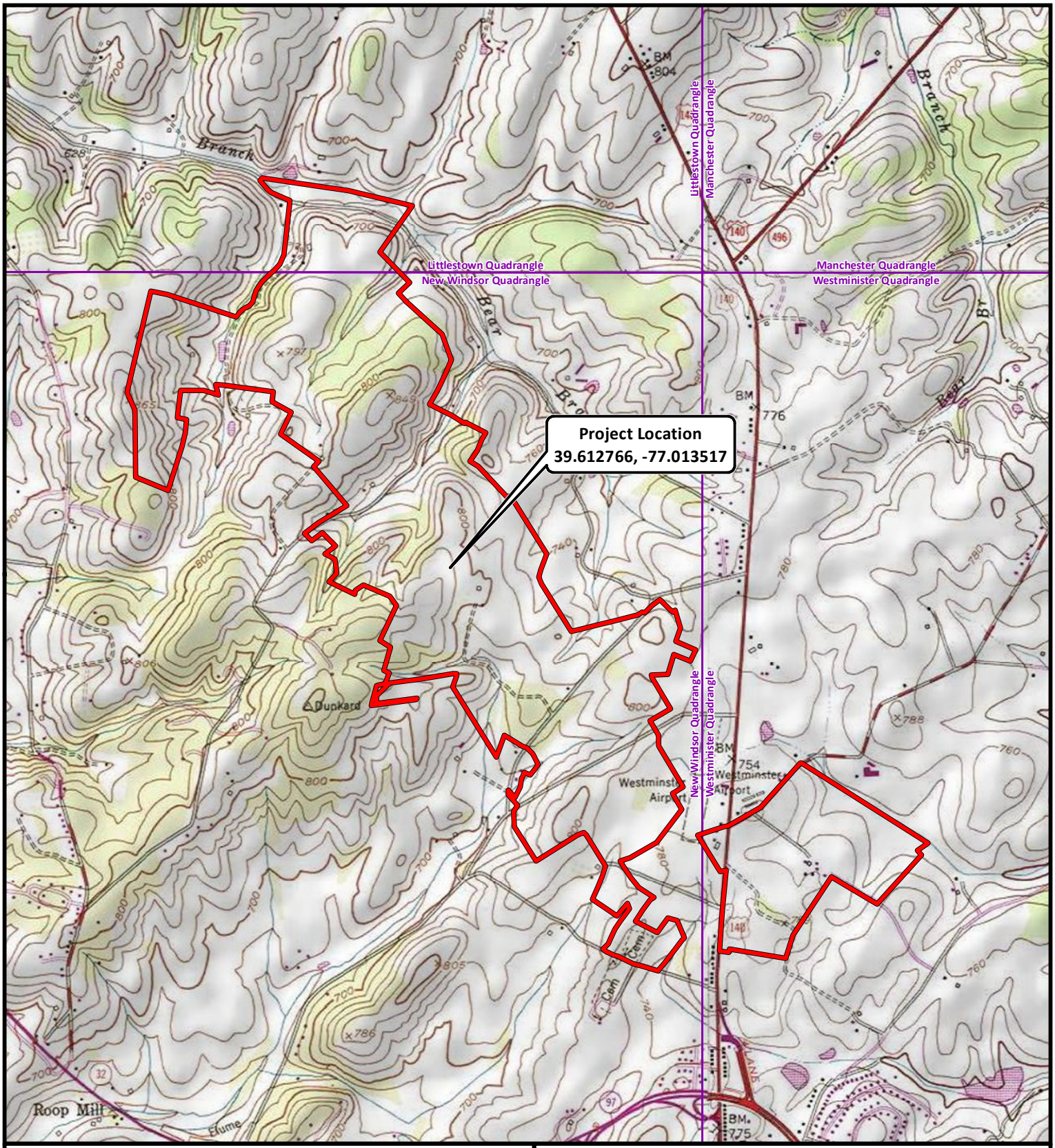
Prepared by: _____
Mark Metzler, Senior Environmental Scientist

Reviewed by: _____
Thomas J. Stich, Senior Environmental Scientist

H:\Projects\02455\024552011\NS\Endangered and Threated Species Report (ETS Report)\Rpt-T&E Species & Habitats-CCRA-10-05-16.docx

ATTACHMENT A

LOCATION MAP



Area of Investigation (834.94 Acres)

Littlestown, MD-PA;
New Windsor, MD; and Westminster, MD USGS 7.5' Topographic Quadrangles 7/25/2016

Delta Airport Consultants, Inc.

Carroll County Regional Airport

Location Map

Town of Westminster, Carroll County, Maryland
Project No. 024552011

0 1,000 2,000 Feet
1 inch = 2,000 feet

RETTEW SM

\\CHOWDER\Share\Projects\02455\024552011\GIS\MapDocs\Agency Coordination\024552011_CCRA_LocationMap_8x11.mxd

ATTACHMENT B

IPaC OFFICIAL SPECIES LIST

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Ecological Services Field Office
177 ADMIRAL COCHRANE DRIVE
ANNAPOLIS, MD 21401
PHONE: (410)573-4599 FAX: (410)266-9127
URL: www.fws.gov/chesapeakebay/;
www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html

Consultation Code: 05E2CB00-2016-SLI-1567 July 25, 2016
Event Code: 05E2CB00-2016-E-01608
Project Name: Carroll County Regional Airport

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

United States Department of Interior
Fish and Wildlife Service

Project name: Carroll County Regional Airport

Official Species List

Provided by:

Chesapeake Bay Ecological Services Field Office
177 ADMIRAL COCHRANE DRIVE
ANNAPOLIS, MD 21401
(410) 573-4599
http://www.fws.gov/chesapeakebay/
http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html

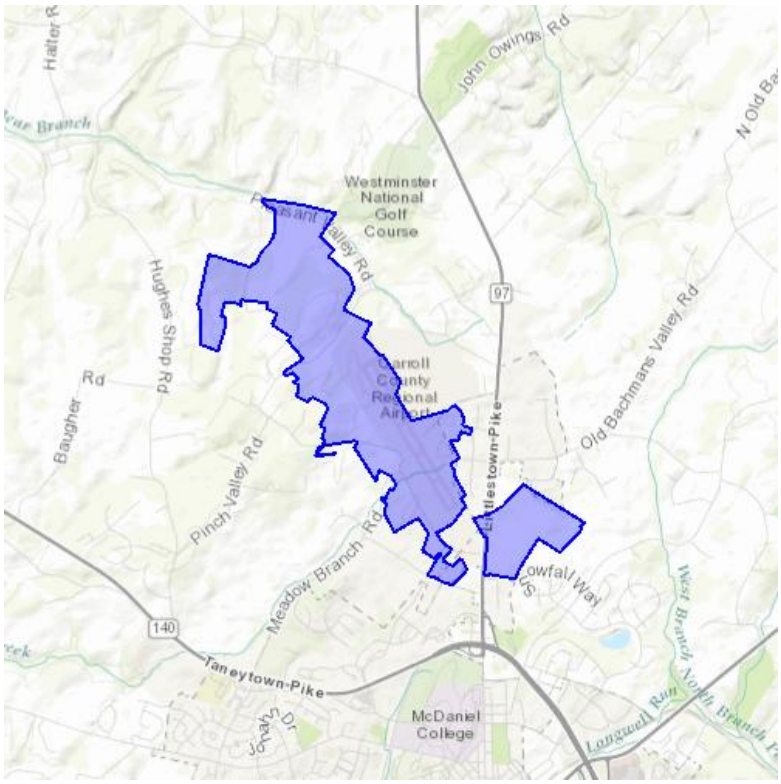
Consultation Code: 05E2CB00-2016-SLI-1567
Event Code: 05E2CB00-2016-E-01608

Project Type: DEVELOPMENT

Project Name: Carroll County Regional Airport
Project Description: The proposed airport expansion project is located in the Town of Westminster, Carroll County, Maryland and appears on the New Windsor and Westminster, Maryland U.S. Geological Survey (USGS) 7.5-minute quadrangles. The project is still in the planning stages and will include runway extensions, new hangers, commercial and industrial buildings, and supporting infrastructure. The area of investigation is approximately 835 acres, but only a portion of this area will be developed.

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Carroll, MD

United States Department of Interior
Fish and Wildlife Service

Project name: Carroll County Regional Airport

Endangered Species Act Species List

There are a total of 1 threatened or endangered species on your 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. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Mammals	Status	Has Critical Habitat	Condition(s)
Indiana bat *(Myotis sodalis)* Population: Entire	Endangered		

Critical habitats that lie within your project area

There are no critical habitats within your project area.

Appendix A: FWS National Wildlife Refuges and Fish Hatcheries

There are no refuges or fish hatcheries within your project area.

Appendix B: NWI Wetlands

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information on the extent and status of wetlands in the U.S., via the National Wetlands Inventory Program (NWI). In addition to impacts to wetlands within your immediate project area, wetlands outside of your project area may need to be considered in any evaluation of project impacts, due to the hydrologic nature of wetlands (for example, project activities may affect local hydrology within, and outside of, your immediate project area). It may be helpful to refer to the USFWS National Wetland Inventory website. The designated FWS office can also assist you. Impacts to wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes. Project Proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery and/or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Exclusions - Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Precautions - Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of

this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

The following NWI Wetland types intersect your project area in one or more locations. To understand the NWI Classification Code, see https://ecos.fws.gov/ipac/wetlands/decoder. To view the National Wetlands Inventory on a map go to http://www.fws.gov/wetlands/Data/Mapper.html.

Wetland Types	NWI Classification Code
Freshwater Emergent Wetland	PEM1A
Freshwater Emergent Wetland	PEM5A
Freshwater Forested/Shrub Wetland	PFO1A
Freshwater Forested/Shrub Wetland	PSS1/EM1A
Freshwater Forested/Shrub Wetland	PSS1A
Freshwater Pond	PUBHh
Riverine	R4SBC
Riverine	R5UBH

ATTACHMENT C

AGENCY LETTERS

MDNR COORDINATION LETTER

RETTEW

We answer to you.

3020 Columbia Avenue, Lancaster, PA 17603 ● Phone: (800) 738-8395
E-mail: rettew@rettew.com ● Website: rettew.com

Engineers
Environmental Consultants
Surveyors
Landscape Architects
Safety Consultants

July 25, 2016

Ms. Lori Byrne
Maryland Department of Natural Resources
Wildlife and Heritage Service
Tawes State Office Building, E-1
580 Taylor Avenue
Annapolis, MD 21401
(410) 260-8573

RE: Endangered and Threatened Species Coordination
Carroll County Regional Airport
Town of Westminster, Carroll County, Maryland
RETTEW Project No. 024552011
FED-EX

Dear Ms. Byrne:

This correspondence is a request for an endangered and threatened species review of a proposed airport extension project at the Carroll County Regional Airport Site. The proposed project is located in the Town of Westminster and surrounding areas, Carroll County, Maryland and appears on the New Windsor and Westminster, Maryland and Littlestown, MD-PA U.S. Geological Survey (USGS) 7.5-minute quadrangles (**attached**).

Coordination for this project was previously conducted in 2008; at that time, there were no state or federal records for rare, threatened or endangered species within the project boundary. Since then the project boundary has been expanded, and an updated review is requested. Please note our project number has changed from 07-02455-002 to 024552011.

The project is still in the planning stages; however, the overall plan remains the same with the exception of two additional areas now included within the project boundary. Expansion of the airport will include runway extensions, new hangers, commercial and industrial buildings, and supporting infrastructure. The area of investigation includes a portion of the airport property and several adjacent parcels totaling approximately 835 acres. The entire property is transected and bordered by several roads and is also bounded by commercial and private properties. The site is dominated by a mixture of vegetative communities, including mowed lawns, agricultural fields, mature woods, successional woods, and wetlands. There are several small streams on-site identified as tributaries to Bear Branch of Big Pipe Creek and Meadow Branch of Big Pipe Creek. There are also several palustrine emergent/scrub-shrub/forested wetlands within the project site. These are all non-tidal resources. Because the project is still in the planning stages, please consider the area of investigation to be the site boundary.

Please conduct a search of your database to determine the potential presence of listed endangered or threatened species or their habitat under your jurisdiction within the proposed site. We have enclosed the previous clearance letter and a location map. A Phase I Bog Turtle Habitat Assessment and coordination with Scott Smith of MDNR are in the process of being completed. Should you have any questions or need additional information, please contact me at (717) 205-2219. Thank you very much for your assistance.

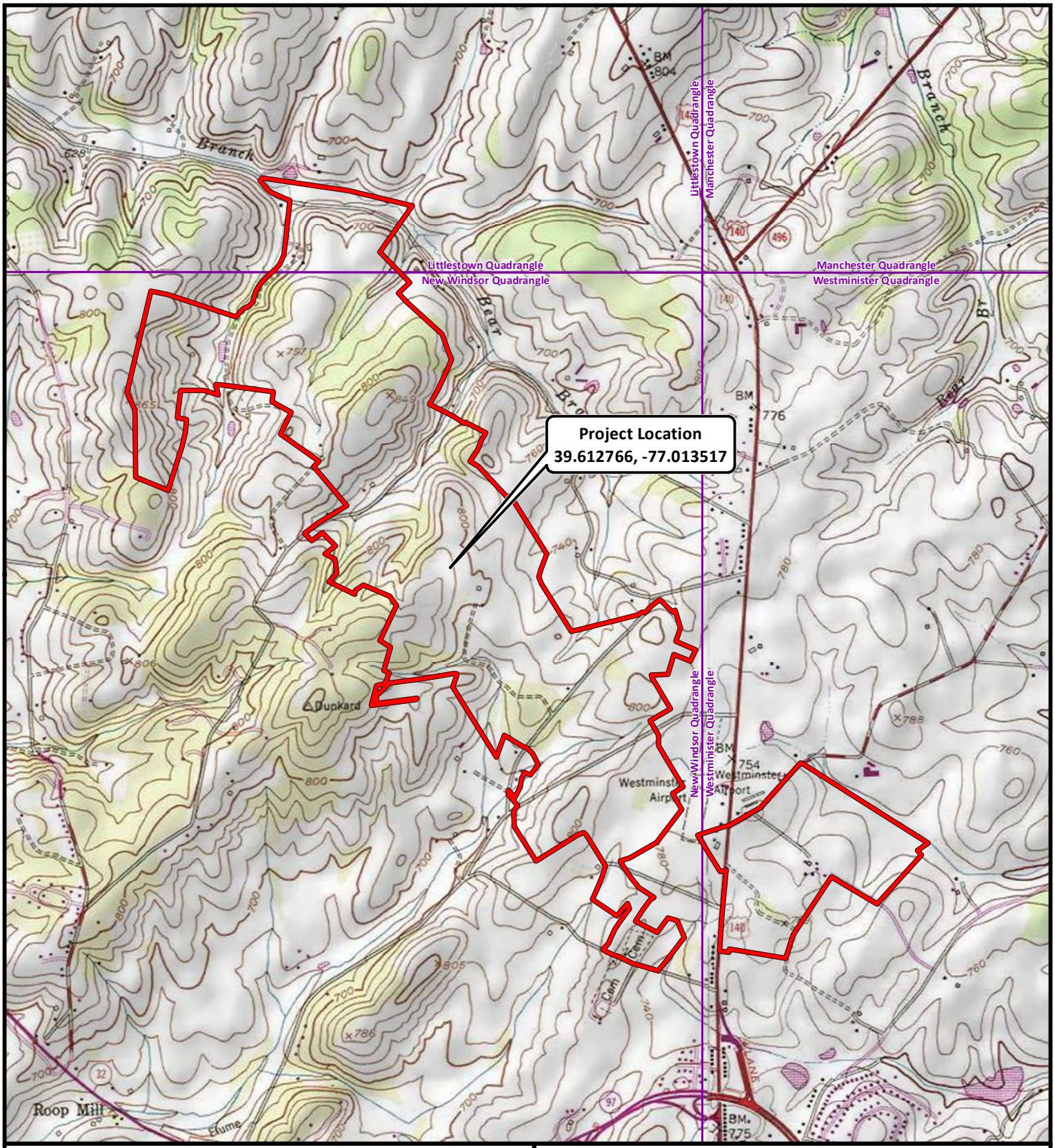
Sincerely,

Laura V. Hall
Environmental Scientist

Enclosures

copy: File

H:\Projects\02455\024552011\NS\ETS Coordination\MDNR\Ltr-MDNR-Carroll County.docx



Area of Investigation (834.94 Acres)

Littlestown, MD-PA;
New Windsor, MD; and Westminster, MD USGS 7.5' Topographic Quadrangles 7/25/2016

Delta Airport Consultants, Inc.

Carroll County Regional Airport

Location Map

Town of Westminster, Carroll County, Maryland
Project No. 024552011

0 1,000 2,000 Feet
1 inch = 2,000 feet

RETTEW SM

\\CHOWDER\Share\Projects\02455\024552011\GIS\MapDocs\Agency Coordination\024552011_CCRA_LocationMap_8x11.mxd

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
John R. Griffin, Secretary
Eric Schwaab, Deputy Secretary

July 28, 2008

Jeremy Hite
RETTEW
3020 Columbia Ave.
Lancaster, PA 17603

RE: Environmental Review for Carroll County Regional Airport, Project 07-02455-002, Westminster, Carroll County, MD.

Dear Mr. Hite:

The Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted.

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# 2008.1190

RETTEW

We answer to you.

3020 Columbia Avenue, Lancaster, PA 17603 • (717) 394-3721 • fax (717) 394-1063
E-mail: rettew@rettew.com • Web site: www.rettew.com

- Engineers
- Planners
- Surveyors
- Landscape Architects
- Environmental Consultants

June 6, 2008

Ms. Lori Byrne
Maryland Department of Natural Resources
Wildlife and Heritage Service
580 Taylor Avenue
Tawes State Office Building, E-1
Annapolis, Maryland 21401

RE: Threatened and Endangered Species Coordination
Carroll County Regional Airport
Town of Westminster,
Carroll County, Maryland
RETTEW Project No. 07-02455-002
CERTIFIED/Phase 404

Dear Lori:

Please consider this request for a threatened and endangered species review for a proposed airport extension site at the Carroll County Regional Airport Site.

The Carroll County Regional Airport Site located in the Town of Westminster, Carroll County, Maryland and appears on the New Windsor and Westminster, Maryland U.S. Geological Survey (USGS) 7.5-minute quadrangles (Latitude N 39° 36' 51.57" and Longitude W 77° 0' 41.68") (Figure 1).. The proposed plans are still in the feasibility stages; however, expansions of the airport may include runway extensions, new hangers, commercial and industrial buildings, and supporting infrastructure, etc. The area of investigation includes a portion of the airport property and several adjacent parcels totaling approximately 741.978 acres. The entire property is transected and border by several roads and is also bounded by commercial and private properties. The site is dominated by a mixture of vegetative communities, which include mowed lawns, agricultural fields, mature woods, successional woods, and wetlands. There are several small streams that are tributaries to Bear Branch Big Pipe Creek and Meadow Branch of Big Pipe Creek on site. There are several palustrine emergent/scrub-shrub/forested wetlands within the Carroll County Regional Airport Site. These are all non-tidal resources. The project is still in the preliminary planning stages, so please consider the area of disturbance to be the site boundary.

Please conduct a search of your database to determine the potential presence of listed threatened or endangered species or their habitat under your jurisdiction within the proposed site. We have enclosed a copy of the New Windsor and Westminster, MD USGS 7.5-minute quadrangle with the location of the site identified.

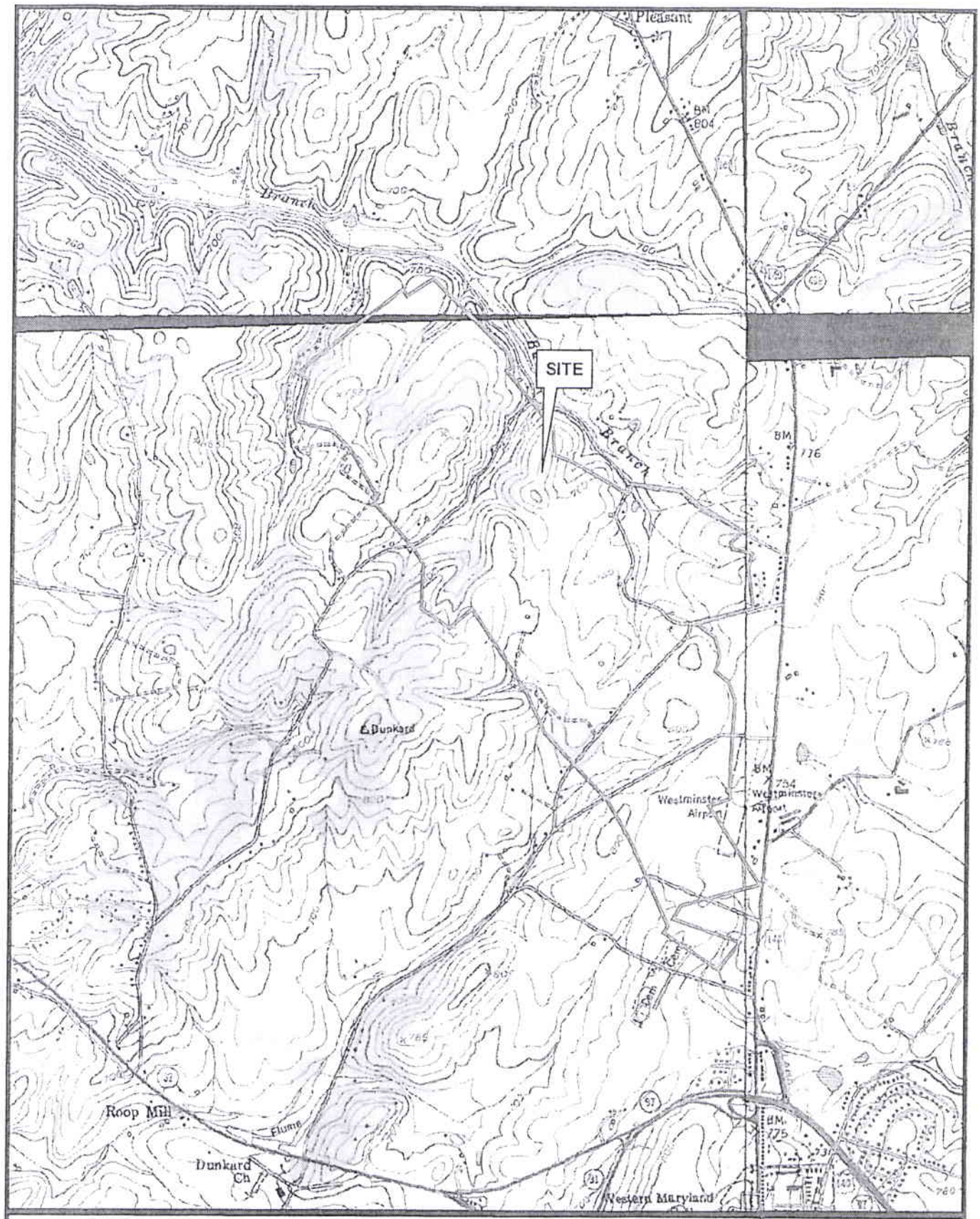
In your response, please reference the site name and job number so that we can accurately document the findings. Should you have any questions or need additional information, please contact me at (717) 394-3721. Thank you very much for your assistance.

Sincerely,

Kim A. Weiler FOR:

Jeremy Hite
Biologist

Enclosure
H:\07\07-02455-002\NS\Agency Letters\Ltr-MDNR-6-5-08.doc



Site Name: Carroll County Regional Airport Site

Quad Name: New Windsor & Westminster

Project Number: 07-02455-002

N

1 inch equals 2,000 feet

RETTEW.

USFWS RESPONSE LETTER

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401
410/573-4599

August 25, 2016

RETTEW Associates, Inc.
3020 Columbia Ave.
Lancaster, PA 17603-4011

RE: Carroll County Regional Airport

Dear Laura V. Hall:

This responds to your letter, received July 25, 2016, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened within the above referenced project area. We have reviewed the information you enclosed and are providing comments in accordance with Section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

The above referenced project is within the summer habitat range of the federally endangered Indiana bat (*Myotis sodalis*). This species may use the project area for foraging and roosting between April 1 and mid November. Indiana bat summer foraging habitats are generally defined as riparian, bottomland, or upland forest, and old fields or pastures with scattered trees. Streams, associated flood plain forests, and impounded bodies of water (e.g., ponds, wetlands and reservoirs) have also been identified as preferred foraging habitats for pregnant and lactating Indiana bats. This species feeds exclusively on flying insects. Roosting/maternity habitat consists primarily of live or dead tree species five-inches in diameter at breast height, or greater, which have exfoliating bark that provides space for bats to roost between the bark and bole of the tree. Tree cavities, crevices, splits, or hollow portions of tree boles and limbs also provide roost sites. The Indiana bat could be impacted by construction activity that involves removing potential roost trees and maternity habitat. Any potential impacts on Indiana bat habitat should be analyzed as a part of your environmental assessment. If such impacts may occur, further section 7 consultation with the U.S. Fish and Wildlife Service may be required.

Except for occasional transient individuals, no other federally proposed or listed endangered or threatened species are known to exist within the area. Should additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For information on the presence of other rare species, you should contact Lori Byrne of the Maryland Wildlife and Heritage Division at (410) 260-8573.

Effective August 8, 2007, under the authority of the Endangered Species Act of 1973, as amended, the U.S. Fish and Wildlife Service (Service) removed (delist) the bald eagle in the lower 48 States of the United States from the Federal List of Endangered and Threatened Wildlife. However, the bald eagle will still be protected by the Bald and Golden Eagle Protection Act, Lacey Act and the Migratory Bird Treaty Act. As a result, starting on August 8, 2007, if your project may cause "disturbance" to the bald eagle, please consult the "National Bald Eagle Management Guidelines" dated May 2007.
If any planned or ongoing activities cannot be conducted in compliance with the National Bald Eagle Management Guidelines (Eagle Management Guidelines), please contact the Chesapeake Bay Ecological Services Field Office at 410-573-4573 for technical assistance. The Eagle Management Guidelines can be found at:
http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf.

In the future, if your project can not avoid disturbance to the bald eagle by complying with the Eagle Management Guidelines, you will be able to apply for a permit that authorizes the take of bald and golden eagles under the Bald and Golden Eagle Protection Act, generally where the take to be authorized is associated with otherwise lawful activities. This proposed permit process will not be available until the Service issues a final rule for the issuance of these take permits under the Bald and Golden Eagle Protection Act.

An additional concern of the Service is wetlands protection. Federal and state partners of the Chesapeake Bay Program have adopted an interim goal of no overall net loss of the Basin's remaining wetlands, and the long term goal of increasing the quality and quantity of the Basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetland impacts. All wetlands within the project area should be identified, and if construction in wetlands is proposed, the U.S. Army Corps of Engineers, Baltimore District, should be contacted for permit requirements. They can be reached at (410) 962-3670.

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interest in these resources. If you have any questions or need further assistance, please contact Andy Moser at (410) 573-4537.

Sincerely,

G. LaRouche

Genevieve LaRouche
Supervisor

ATTACHMENT D

UPLAND SAMPLING POINT DATA FORMS

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: CARROLL Co. REGIONAL AIRPORT City/County: CARROLL Co. Sampling Date: 4/13/2016

Applicant/Owner: CARROLL Co. State: MD Sampling Point: SP160413-1145

Investigator(s): JTH, TJS Section, Township, Range:

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 0

Subregion (LRR or MLRA): LRR S Lat: 39.62811 Long: -77.02215 Datum:

Soil Map Unit Name: GLENVILLE SILT LOAM, 3-8% SLOPES (GhB) 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 NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation NO, Soil NO, or Hydrology NO 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 ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: THIS SP IS REPRESENTATIVE OF THE PREDOMINANTLY HERBACEOUS UPLAND AREAS NEAR STR. THERE ARE A FEW TREE + SHRUB SPECIMENS, NOTE, THESE UPLANDS AREAS ARE TOPOGRAPHICALLY HIGHER THAN WETLANDS ADJOINING THE STREAM CHANNEL

DSC05405.JPG (N)

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 gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: NO WETLAND HYDROLOGY INDICATORS OBSERVED

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: 160418-1145

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5')			
1. Phalaris arundinacea	83	Y	FACW
2. Taraxacum officinale	12	N	FACW
3. Glechoma hederacea	26	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
121/20 = 60.5	121 = Total Cover		
50% of total cover:	20% of total cover:		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	1	x 2 =	2
FAC species	0	x 3 =	0
FACU species	2	x 4 =	8
UPL species	0	x 5 =	0
Column Totals:	3 (A)		10 (B)

Prevalence Index = B/A = 3.33

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for 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 separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Phalaris arundinacea is very competitive

Juglans nigra (FACU) specimens (mostly small trees) scattered throughout crp area

SOIL

Sampling Point: 160A13-11AJ

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-17	10YR 5/4	100	—	—	—	—	SiL	
17-21	10YR 6/6	100	—	—	—	—	SiL	

[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 Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for 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: PIT 21" DEEP

NONE OBSERVED

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: CARROLL Co. REGIONAL AIRPORT City/County: CARROLL Co. Sampling Date: 4/21/2016

Applicant/Owner: CARROLL Co. State: MD Sampling Point: SP160421085

Investigator(s): JTH, TJS Section, Township, Range:

Landform (hillslope, terrace, etc.): HILLSLOPE (FROM ROAD) Local relief (concave, convex, none): CONVEX Slope (%): 10

Subregion (LRR or MLRA): LRR S Lat: 39.62735 Long: -77.016494 Datum: NAD 83

Soil Map Unit Name: Brinklow channery loam, 15-25% slopes (BrD) 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 No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation No, Soil No, or Hydrology NO 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 ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No ____	

Remarks: A ROAD BED "SLOPE", ROAD HAS BEEN IN PLACE FOR LONG PERIOD YIELDING "NORMAL" CONDITIONS

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 gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: NONE OBSERVED

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: 1604210825

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer negundo	8	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
50/20 = 4/2	8	= Total Cover	
50% of total cover: ____	20% of total cover: ____		
Sapling/Shrub Stratum (Plot size: 15')			
1. Prunus pensylvanica	67	Y	FACU
2. Carya ovata	18	N	FACU
3. Rosa multiflora	8	N	FACU
4. Juniperus virginiana	12	N	FACU
5.			
6.			
7.			
8.			
9.			
50/20 = 47.5/19	95	= Total Cover	
50% of total cover: ____	20% of total cover: ____		
Herb Stratum (Plot size: 5')			
1. Podophyllum peltatum	31	Y	FACU
2. Erythronium rostratum	46	Y	UPL
3. Claytonia virginica	2	N	FAC
4. Allium vineale	6	N	FACU
5. Carex pensylvanica	11	N	+ NL
6. Carya ovata	6	N	FACU
7. Prunus pensylvanica	6	N	FACU
8.			
9.			
10.			
11.			
50/20 = 54/21.6	108	= Total Cover	
50% of total cover: ____	20% of total cover: ____		
Woody Vine Stratum (Plot size: 30')			
1. Parthenocissus quinquefolia	1	Y	FACU
2. Lonicera japonica	2	Y	FACU
3.			
4.			
5.			
50/20 = 3/1.5	6	= Total Cover	
50% of total cover: ____	20% of total cover: ____		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Carya ovata (FACU) TREE SPECIMEN SNAG (DEAD) ALSO NEARBY

SOIL

Sampling Point: 160A210825

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/3	100	—	—	—	—	SiL	GRAVEL
3-13	7.5YR 6/4	100	—	—	—	—	SiL	GRAVEL

[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 Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for 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: VERY ROCKY, LIMITS EXCAVATION, BOULDERY SOILS

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: CARROLL CO. REGIONAL AIRPORT City/County: CARROLL CO. Sampling Date: 9/22/2016

Applicant/Owner: CARROLL CO. State: MD Sampling Point: SP160922.0940

Investigator(s): JTH, TJS Section, Township, Range:

Landform (hillslope, terrace, etc.): HILLSLOPE Local relief (concave, convex, none): CONVEX Slope (%): 6

Subregion (LRR or MLRA): LRR S Lat: 39.61363 Long: -77.01902 Datum: NAD 83

Soil Map Unit Name: Brinklow channery loam, 3-8% slopes (BrB) 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 NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation NO, Soil NO, or Hydrology NO 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 ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: - FORESTED UPLANDS
- WOOD FROG (Lithobates sylvaticus) OBSERVED NEAR THIS SP

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): 19
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 19

Wetland Hydrology Present? Yes ____ No ✓

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

Remarks: NONE OBSERVED

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: 160422-0940

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus rubra	30	Y	FACU
2. Liriodendron tulipifera	36	Y	FACU
3.			
4.			
5.			
6.			
7.			
	66 = Total Cover		
50% of total cover: 33	20% of total cover: 13.2		
Sapling/Shrub Stratum (Plot size: 15)			
1. Lindera benzoin	14	Y	FAC
2. Hamamelis virginiana	17	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	31 = Total Cover		
50% of total cover: 15.5	20% of total cover: 6.2		
Herb Stratum (Plot size: 5)			
1. Rubus phoenicolasius	2	N	FACU
2. Rosa multiflora	2	N	FACU
3. Thelypteris noveboracensis	18	Y	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	22 = Total Cover		
50% of total cover: 11	20% of total cover: 4.4		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

- Quercus montana BEYOND LIMITS OF SP

* NL : NOT LISTED IN 2016 EMP, ASSUMED UPL

SOIL

Sampling Point: 160422.0940

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/3	100	—	—	—	—	SiL	
5-18	10YR 6/6	88	7.5YR 5/8	12	C	PL	SiL	
18-20	10YR 7/2	90	7.5YR 5/8	10	C	PL	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 Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for 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: - BRIGHTLY COLORED SOILS

- NO HYDRIC SOIL INDICATORS OBSERVED

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: CARROLL CO. REGIONAL AIRPORT City/County: CARROLL CO. Sampling Date: 4/29/2016

Applicant/Owner: CARROLL CO. State: MD Sampling Point: 100 425 0850

Investigator(s): JTH, TJS Section, Township, Range:

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 2

Subregion (LRR or MLRA): LRR S Lat: 39.59819 Long: -76.99625 Datum: NAD 83

Soil Map Unit Name: MYERSVILLE SILT LOAM, 3-8% SLOPES (MyB) 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 NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation NO, Soil NO, or Hydrology NO 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 ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: CP IN SMALL DEPRESSION SURROUNDED BY NO-TILL AG FIELDS NEAR SOUTHERN END OF AOI. AIR TEMP 50s F, OVERCAST, SCATTERED SPRINKLES IN LAST 24 HRS

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 gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: NONE OBSERVED

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: 160428-0850

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Morus rubra	52	Y	*UPL
2. Prunus pensylvanica	46	Y	FACU
3.			
4.			
5.			
6.			
7.			
	98 = Total Cover		
50% of total cover: 49	20% of total cover: 29.6		

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. Carya ovata	8	Y	FACU
2. Lonicera tatarica	4	Y	FACU
3. Rubus phoenicolasius	4	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
	16 = Total Cover		
50% of total cover: 8	20% of total cover: 3.2		

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. Lonicera japonica	72	Y	FACU
2. Alliaria petiolata	17	N	FACU
3. Arisaema triphyllum	11	N	FACW
4. Allium vineale	3	N	FACU
5. Rosa multiflora	1	N	FACU
6. Geranium maculatum	19	N	FACU
7.			
8.			
9.			
10.			
11.			
	123 = Total Cover		
50% of total cover: 61.5	20% of total cover: 24.6		

Woody Vine Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Parthenocissus quinquefolia	6	Y	FACU
2. Lonicera japonica	14	Y	FACU
3.			
4.			
5.			
	20 = Total Cover		
50% of total cover: 10	20% of total cover: 4		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

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

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

[illegible]

* UPL: NOT LISTED IN NWPL, ASSUMED UPL

SOIL Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR 4/3	100	—				S:L	
12-20	7.5YR 5/1	100	—				S:L	Large gravel

[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 Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for 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 Region

Project/Site: 02455201 City/County: Carroll Sampling Date: 4/29/2016

Applicant/Owner: CCRA State: MD Sampling Point: 1009 29 - 0730

Investigator(s): JTH, TJS Section, Township, Range:

Landform (hillslope, terrace, etc.): SLIGHT SLOPE Local relief (concave, convex, none): CONCAVE Slope (%): 3

Subregion (LRR or MLRA): LRR S Lat: 39.60598 Long: -77.01144 Datum: NAD 83

Soil Map Unit Name: GLENVILLE SILT LOAM, 3-8% SLOPES (GhB) 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 No, Soil No, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation NO, Soil No, or Hydrology NO 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 ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

E700.jpg

Remarks: IN AN ACTIVE AGRICULTURAL PASTURE; GENERALLY THE LOW SPOT AT THIS AREA OF THE AOI. SP BETWEEN TWO SWM PONDS; WATER FROM PONDS IS RECYCLED

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 gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: NO PRIMARY OR SECONDARY HYDROLOGY INDICATORS OBSERVED

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: 160429-0730

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: 5')			
1. Taraxacum officinale	22	Y	FACU
2. Graminoids	88	Y	* NL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
55/22	110 = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

* NL : ASSUMED "FAC" FOR VEG. CALCULATIONS

SOIL

Sampling Point: 160429-0730

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 5/3	100	—		—	—	SiL	

[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 Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for 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: NOTE: DUE TO ROCKY/GRAVELLY SUBSTRATE, PIT 14" DEEP

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: CCRA City/County: Carroll Co. Sampling Date: 4/29/2016
Applicant/Owner: Carroll Co. State: MD Sampling Point: [illegible] 0755
Investigator(s): JTH, DS Section, Township, Range: ______
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 3
Subregion (LRR or MLRA): LRR S Lat: 39.60543 Long: -77.011384 Datum: NAD 83
Soil Map Unit Name: Glenville silt loam, 3-8% slopes (GnB) 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 No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation No, Soil No, or Hydrology No 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 ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: In a pasture, adjacent to outflow channel (very shallow) from [illegible] SWM pond
Weather: drizzle all day yesterday (4/28) and this morning

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 gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary indicators observed

Sampling Point: 160429-0755

VEGETATION (Four Strata) – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	______ = Total Cover		
50% of total cover: ______	20% of total cover: ______		

Sapling/Shrub Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	______ = Total Cover		
50% of total cover: ______	20% of total cover: ______		

Herb Stratum (Plot size: Grasses (5'))	Absolute % Cover	Dominant Species?	Indicator Status
1. Taraxacum officinale	11	Y	FACU
2. Plantago major	11	Y	FACU
3. Capsella bursa-pastoris	6	Y	FACU
4. Cerastium fontanum	2	N	FACU
5.			FACU
6.			
7.			
8.			
9.			
10.			
11.			
50/20 = 15/6	30 = Total Cover		
50% of total cover: ______	20% of total cover: ______		

Woody Vine Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	______ = Total Cover		
50% of total cover: ______	20% of total cover: ______		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	______	x 1 = ______
FACW species	______	x 2 = ______
FAC species	______	x 3 = ______
FACU species	______	x 4 = ______
UPL species	______	x 5 = ______
Column Totals:	______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

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

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ______ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

* Closely cropped grass species; grazing makes identification difficult

- Does not meet dominance test

SOIL

Sampling Point: 160129-0755

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/3	100	—	—	—	—	SiL	
4-7	10YR 6/6	75	7.5YR 5/6	25	C	M	SiL	FRIABLE
7-14	10YR 4/4	80	7.5YR 5/6	20	C	M	SiL	

[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 Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for 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): _____

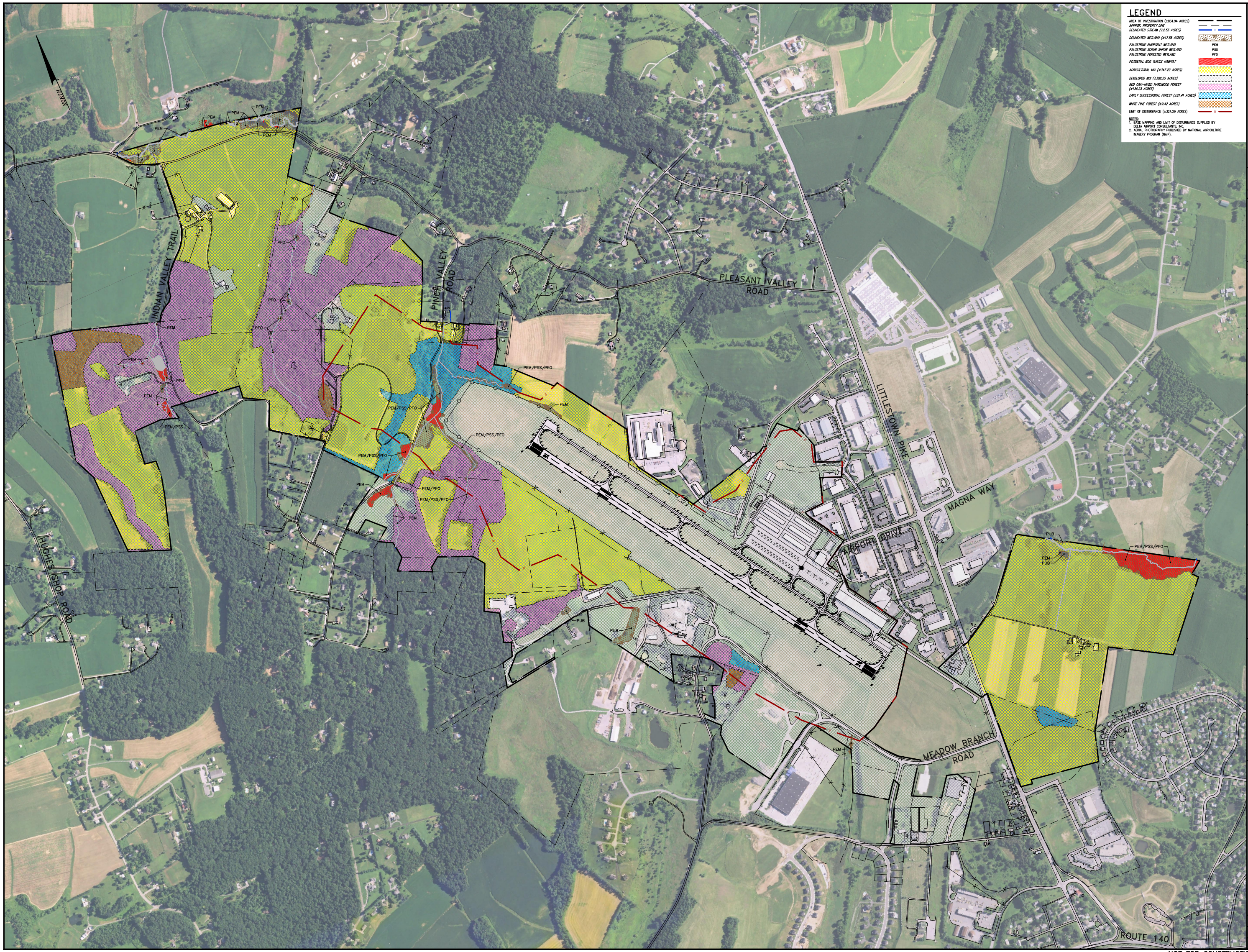
Hydric Soil Present? Yes _____ No ✓

Remarks: 14" PIT

- NONE OBSERVED

ATTACHMENT E

HABITAT COMMUNITIES MAPPING



NO.	DATE	REVISION
4	10/3/16	PER USACE FIELD REVIEW MEETING
3	9/20/16	PER CLIENT COMMENT
2	8/10/16	HABITAT REVISIONS
1	7/25/16	AOI REVISIONS

FOR RETTEW ASSOCIATES BY:

FOR RETTEW ASSOCIATES BY:

XREFS:
024552011-NS-ORTHO
13064-DMW-Airport-Layout-STRIPPED
024552011-NS-BASE
024552011-NS-HABT
13064 - LOD
024552011-NS-DLNT

MANAGER: MARK METZLER
DESIGN BY:
CHKD BY:
SURV. CHIEF: OTHERS
FIELDBOOK NO. DATA COLLECTOR
DRAWN BY: JME
CHKD BY: TJS

DRAWING REFERENCE:
C:_RettewVaultWIP\024552011-CarrollCoAirport\Sheets\NS\Habitat\024552011-HABT-PLAN.dwg

CLIENT

DELTA AIRPORT CONSULTANTS, INC.
9711 FARAR COURT, SUITE 100
RICHMOND, VA 23236

SCALE
1"=400'
0 200' 400' 800' 1200'

RETTEW
RETTEW Associates, Inc.
3020 Columbia Avenue, Lancaster, PA 17603
Phone (717) 394-3721 • Fax (717) 394-1063
Email: rettew@rettew.com
Website: www.rettew.com
Engineers • Planners • Surveyors • Landscape Architects
Environmental Consultants

HABITAT COMMUNITIES
FOR
CARROLL COUNTY REGIONAL AIRPORT
TOWN OF WESTMINSTER CARROLL COUNTY, MD

DATE: JULY 5, 2016
SHEET NO. 1 OF 1
DWG. NO. 024552011

NOT FOR CONSTRUCTION/NOT FOR BIDDING

Mary Ashburn Pearson

From: Scott A. Smith -DNR- <scott.smith@maryland.gov>
Sent: Monday, September 26, 2016 1:13 PM
To: Mary Ashburn Pearson; Thomas Stich; Jeremy Hite; Mark Metzler
Cc: Frazier, Mary A NAB; Thompson, Julie; Lori Byrne -DNR-; Greg Golden -DNR-; Dave Brinker -DNR-
Subject: Re: Carroll County Regional Airport expansion
Attachments: QUALIFIED BT Surveyors ListMD_updated2016AUG24.pdf

Categories: Filed by Newforma

And as an addendum to these comments, trapping must be conducted by a Qualified Bog Turtle Surveyor off of the attached current Maryland list (Jeremy Hite is on the list).

Regards,

Scott

On Mon, Sep 26, 2016 at 1:06 PM, Scott A. Smith -DNR- <scott.smith@maryland.gov> wrote:

> All:
>
> I met on site on Friday Sept. 23, 2016 with Thomas Stich and Jeremy Hite (QBTS) of Rettew Associates, Inc. and three Army Corp of Engineers staff (Seth Keller, Donald Bole, Cynthia Ovdenk) to visit wetlands identified by Jeremy as potential bog turtle habitat in the Rettew report, "Phase 1 Bog Turtle Habitat Assessment for Carroll County Regional Airport" dated August 2016. We visited wetland #9, which had been trapped in 2008, and some additional areas of contiguous wetland with it (160422-1120 and 160422-930), all of which will be filled or within the 300-foot Protection Zone 2 buffer (as per Bog Turtle Federal Recovery Plan) as part of the proposed runway extension/expansion. We also visited a number of other wetlands that were deemed suitable bog turtle habitat by Jeremy, though none were in areas that are currently proposed for any type of disturbance (just fall within "avigational easement" areas).
>
> I had a phone discussion today with Julie Slacum of U.S Fish & Wildlife Service about this project. In my professional opinion, the best bog turtle habitats in the study area are wetland #9 and the new additions to it noted above, and Wetland 160505-1250 on the Tansil property. Unfortunately the trapping conducted in Wetland #9 was 8 years ago, did not include the additional areas since identified, and also does not meet our current standards for trapping (20 consecutive days), though at the time Rettew was following my (DNR) instructions and I previously had accepted the results (no bog turtles captured). However, as noted by Julie Slacum in our discussion today, survey results >5 years old are no longer valid. Therefore, a trapping effort needs to be conducted in 2017 following the attached trapping protocol (during the May 1-June 15 trapping window). Trapping needs to include all of Wetland #9 plus the

additional portions of that wetland noted above. If in the future there is a possibility that Wetland 160505-1250 will be subject to earth-moving or other disturbance within the wetland or its 300-foot buffer I recommend that consideration be given to trapping it in 2017 also, following the attached trapping protocol. If it is definitely NOT going to be disturbed in the future than there is no need for trapping. I will also want to meet onsite with whomever conducts the trapping at some date during the trapping effort.

If you have any questions please feel free to contact me at our Wye Mills field office (410-827-8612 x103).

Regards,

Scott

--
Scott Smith
Wildlife Ecologist
Maryland DNR-Wildlife & Heritage Service
PO Box 68
Wye Mills, MD 21679
(O) 410-827-8612 x103

--
Scott Smith
Wildlife Ecologist
Maryland DNR-Wildlife & Heritage Service
PO Box 68
Wye Mills, MD 21679
(O) 410-827-8612 x103

Phase 1 Bog Turtle Habitat Assessment

For

Carroll County Regional Airport

Town of Westminster, Carroll County, Maryland

August 2016 (Revised October 2016)

RETTEW Project No. 024552011

Prepared for:

Delta Airport Consultants, Inc.
9711 Farrar Court, Suite 100
Richmond, VA 23236

Prepared by:

RETTEW Associates, Inc.
3020 Columbia Ave
Lancaster, PA 17603
(717) 394-3721

Prepared by: _____
Jeremy T. Hite, Biologist

Reviewed by: _____
Mark A. Metzler, Sr. Environmental Scientist

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

RETTEW Associates, Inc. has completed a Phase I Bog Turtle Habitat Assessment for the Carroll County Regional Airport Site. The following information outlines the review of published resource materials, existing site conditions, and results of the field investigation. Phase I and Phase II Bog Turtle Habitat Assessments were completed for this project in 2008 and 2009 during the previous Environmental Assessment effort. The purpose of this field study is to supplement the previous Environmental Assessment to reflect a more expansive study area.

2.0 PROPOSED PROJECT DESCRIPTION

The Commissioners of Carroll County, owner and operator of the Carroll County Regional Airport, propose airport development. Delta Airport Consultants, Inc. is facilitating expansion of the airport which will include runway extensions, new hangars, commercial and industrial buildings, and supporting infrastructure.

3.0 SITE DESCRIPTION

The project site is located in the City of Westminster and surrounding areas, Carroll County, Maryland and appears on the New Windsor and Westminster, Maryland and Littlestown, MD-PA U.S. Geological Survey (USGS) 7.5-minute quadrangles (**Appendix A**, **Figure 1**). The area of investigation includes the majority of the airport property and several adjacent parcels totaling approximately 835 acres. The entire property is transected and bordered by several roads and is also bounded by commercial and private properties. The site is dominated by a mixture of vegetative communities, including mowed lawns, agricultural fields, mature woods, successional woods, and wetlands. There are several small streams on-site identified as tributaries to Bear Branch of Big Pipe Creek and Meadow Branch of Big Pipe Creek. There are also several palustrine emergent/scrub-shrub/forested wetlands within the project site; these are all non-tidal resources.

RETTEW conducted wetland investigations for the entire expanded project area in April and May of 2008 and 2016. During the 2016 wetland investigations, a total of 27 wetlands and 25 streams were identified within the AOI. Five streams and five wetlands that were identified during the original 2008 delineation are located within the current project area and were confirmed in 2016 with minor boundary adjustments; the expanded portion of the AOI contains an additional 22 wetlands and 22 streams; however, two of the streams in the expanded portion are continuations of streams from the original delineations and are not considered separate streams. All wetlands within the current project area are listed in the Wetland Tables in **Appendix B**. In general, surficial hydrology in the northern portion of the site drains to Bear Branch and/or several unnamed tributaries (UNTs) to Bear Branch. The southeastern portion of the site drains to the West Branch North Branch Patapsco River via a UNT to West Branch North Branch Patapsco River while the southern and southwestern portions drain to an unnamed tributary to Meadow Branch Big Pipe Creek. These receiving streams are all perennial in nature.

4.0 AGENCY COORDINATION

An online U.S. Fish and Wildlife Service (USFWS) IPaC search of the project area was performed on July 25, 2016. The resulting official species list indicated that the Indiana Bat (*Myotis sodalis*), a federally endangered species, may occur within the boundary of the proposed project. The Maryland Department of Natural Resources (MDNR) also lists the Bog Turtle (*Glyptemys muhlenbergii*) as a federally threatened species; therefore, a Phase 1 Bog Turtle Habitat Assessment was conducted on the Carroll County Regional Airport Site and within a 300-foot buffer surrounding the project area. Environmental review requests

were sent to both the USFWS and the MDNR on July 25, 2016. The USFWS sent a response letter dated August 25, 2016 indicating the Indiana bat could be impacted by construction activity that involves removing potential roost trees and maternity habitat. No other federally listed endangered or threatened species are known to exist with the area. A response from MDNR has not yet been received.

5.0 METHODS

RETTEW used the methods outlined in the USFWS Bog Turtle Habitat Evaluation Field Form (Revised June 1, 2006) for the determination of the presence or absence of potential bog turtle habitat. All wetlands were examined for the three criteria necessary for bog turtle habitat (hydrology, mucky soils, and vegetation). Data on hydrology, soils, and vegetation was collected in April and May, 2016 by Jeremy T. Hite, a USFWS Certified Bog Turtle Surveyor of RETTEW. Data on hydrology, soils, and vegetation for the wetlands originally delineated in 2008 was collected in April and May, 2008 by Jeremy T. Hite; further details are included in the 2009 Phase II/III Bog Turtle Report in **Appendix F**.

6.0 RESULTS AND DISCUSSION

6.1 Wetlands

Qualified RETTEW wetland biologists conducted wetland investigations of the Carroll County Regional Airport Site in April and May of 2008 and in April and May of 2016. RETTEW's Phase 1 Bog Turtle Habitat Assessment Survey was conducted in April and May of 2016 and verified that five wetlands from the original 2008 delineation and 22 additional wetlands exist within the current project AOI. See **Tables 1** and **2** in **Appendix B** for wetland locations and a summary of the Bog Turtle Phase 1 Habitat Assessment Survey for all wetlands within the current project area. Complete wetland descriptions for the wetlands originally delineated in 2008 are included in the 2009 Phase II/III Bog Turtle Report in **Appendix F**.

Wetland 160413-1130 was identified as a palustrine emergent (PEM) wetland located on the north side of Pleasant Valley Road in a riparian area. The wetland was 1.07 acres in size. Bear Branch flows east to west through the wetland and a UNT to Bear Branch flows south to north through the southeastern end of the wetland. Vegetation in the wetland was dominated by a monoculture of reed canary grass (*Phalaris arundinacea*). Other species within the wetland were jewelweed (*Impatiens capensis*) and sweet flag (*Acorus calamus*). Wetland hydrology is derived mostly from floodwaters of Bear Branch. There was one spring/seep located in a small swale along the southwestern end of the wetland near Pleasant Valley Road. The soils within the spring seep area of the wetland had a mucky substrate that could be probed 3 to 8 inches. The other portions of wetland 160413-1130 contained soils that were mostly dry and lacking a mucky substrate. Wetland 160413-1130 did contain a small pocket that meets the three criteria necessary for bog turtle habitat and therefore was considered bog turtle habitat.

Wetland 160420-1630 was identified as a large PEM wetland located in a riparian area near the northern portion of the AOI. The wetland is located north of Pleasant Valley Road and continues to the north and east outside the AOI. The wetland was 1.05 acres in size within the AOI and was bounded by Pleasant Valley Road to the south, Bear Branch to the North, an agricultural field to the west, and riparian area to the east. Vegetation in the wetland was dominated by a monoculture of reed canary grass. Other species within the wetland were skunk cabbage (*Symplocarpus foetidus*) and jewelweed. Wetland hydrology is derived from floodwaters of Bear Branch, overland drainage, and seep pockets along Bear Branch. The soils of the wetland were mostly dry except for the areas around the seeps which had substrate that could be probed 3 to 8 inches. Wetland 160420-1630 does meet the three criteria necessary for bog turtle

habitat and therefore was considered bog turtle habitat. The off-site portion of Wetland 160420-1630 was surveyed and there was a small pocket of suitable habitat just north of the AOI.

Wetland 160414-0830 was identified as a fringe PEM wetland located north of Bear Branch on the northern end of the AOI and was 0.24 acres in size within the AOI. The wetland was bounded by Bear Branch to the south, Conservation Reserve Program (CRP) area to the north, and riparian area on all other sides. Vegetation in the wetland was dominated by sweet flag and reed canary grass, and jewelweed was also present. Wetland hydrology is derived from floodwaters of Bear Branch and a small seep. The soils within the seep area of the wetland had a mucky substrate that could be probed 3 to 8 inches. Wetland 160414-0830 does meet the three criteria necessary for bog turtle habitat and therefore was considered bog turtle habitat. Wetland 160414-0830 continued to the north outside the AOI and this area did not contain suitable bog turtle habitat.

Wetland 160421-1010 was identified as a large PEM wetland located in a riparian area in the northern portion of the AOI. The wetland is located north of Bear Branch and continues to the north outside the AOI. The wetland was 1.04 acres in size and was bounded by Bear Branch to the south, woods to the north, and riparian area to the east and west. Vegetation in the wetland was dominated by a monoculture of reed canary grass. Other species within the wetland were skunk cabbage and jewelweed. Wetland hydrology is derived from floodwaters of Bear Branch and overland drainage. The soils of the wetland were dry and lacking a mucky substrate that could be probed to 3 inches. Wetland 160421-1010 does not meet the three criteria necessary for bog turtle habitat and therefore was not considered bog turtle habitat. The off-site portion of Wetland 160421-1010 was recently planted with trees.

Wetland 160421-1220 was identified as a fringe PEM wetland located along a UNT to Bear Branch near the northern end of the AOI and was 0.08 acres in size. The wetland was bounded by an old cow pasture on all sides. Vegetation in the wetland was dominated by sedges (*Carex* spp) and grasses (*Poa* spp). Other species within Wetland 160421-1220 were jewelweed and elderberry (*Sambucus canadensis*). Wetland hydrology is derived from seeps and the UNT to Bear Branch. Approximately 40% of the wetland soils had a mucky substrate that could be probed 3 to 10 inches. Wetland 160421-1220 does meet the three criteria necessary for bog turtle habitat and therefore was considered bog turtle habitat. Wetland 160421-1220 continued to the north outside the AOI.

Wetland 160429-1300 was identified as a palustrine emergent/scrub-shrub (PEM/PSS) wetland located at the northwestern end of the AOI. The wetland was located in a dense scrub-shrub area and was 0.27 acres in size. Vegetation in the wetland was dominated by sedges, skunk cabbage, tussock sedge (*Carex stricta*), and spicebush (*Lindera benzoin*). Other species within Wetland 160421-1300 were jewelweed, sweet flag, sensitive fern (*Onoclea sensibilis*), reed canary grass, speckled alder (*Alnus incana*), golden rod (*Solidago* spp), and pin cherry (*Prunus pensylvanica*). Wetland hydrology is derived from springs/seeps and headwaters to a UNT to Bear Branch. Approximately 30% of the wetland soils had a mucky substrate that could be probed 3 to 10 inches. Wetland 160429-1300 does meet the three criteria necessary for bog turtle habitat and therefore was considered bog turtle habitat. This description for Wetland 160429-1300 is also representative of Wetlands 160429-1030 (0.005 ac) and 160505-1220 (0.01 ac).

Wetland 160505-1230 was identified as a PEM wetland located at the northwestern end of the AOI and was 0.09 acres in size. The wetland was bounded by a driveway to the north, a UNT to Bear Branch to the northeast, and a scrub-shrub area on all other sides. Vegetation in the wetland was dominated by sedges and grasses. Other vegetation within the wetland were skunk cabbage, tussock sedge, and jewelweed. Wetland hydrology is derived from flood waters of a UNT to Bear Branch and it was completely dry.

Wetland 160505-1230 does not meet the three criteria necessary for bog turtle habitat and therefore was not considered bog turtle habitat.

Wetland 160505-1250 was identified as a palustrine emergent/palustrine open water (PEM/POW) wetland located at the northwestern end of the AOI. The wetland is a manmade pond where portions of the dam have failed; the PEM portion of the wetland is 0.28 acres in size. Vegetation in the wetland was dominated grasses. Other species of vegetation within Wetland 160505-1250 were sedges, tussock sedge, and jewelweed. Wetland hydrology is derived from springs/seeps, a UNT to Bear Branch, and pond water. There were rivulets in the PEM portion of the wetland. Approximately 60% of the wetland soils had a mucky substrate that could be probed 3 to 20 inches in the PEM portion of the wetland. Wetland 160505-1250 does meet the three criteria necessary for bog turtle habitat and therefore was considered bog turtle habitat.

Wetland 160505-1515 was identified as a fringe PEM wetland located at the northwestern end of the AOI and was 0.03 acres in size. The wetland was bounded by a fallow field to the south and a dense scrub-shrub area on all other sides. Vegetation in the wetland was dominated by sedges and grasses. Other species within Wetland 160505-1515 were skunk cabbage, tussock sedge, and jewelweed. Wetland hydrology is derived from springs/seeps and headwaters to a UNT to Bear Branch. Approximately 25% of the wetland soils had a mucky substrate that could be probed 3 to 5 inches. Wetland 160505-1515 does meet the three criteria necessary for bog turtle habitat and therefore was considered bog turtle habitat. This description for Wetland 160505-1515 is also representative of Wetland 160505-1420 (0.02 ac).

Wetland 160506-0835 was identified as a fringe PEM wetland located at the northwestern end of the AOI and was 0.01 acres in size within the AOI. The wetland continued to the north outside the AOI and was bounded by Indian Valley Trail to the east, an agricultural field to the west, and a dense scrub-shrub area on all other sides. Vegetation in the wetland was dominated by sedges and jewelweed. Wetland hydrology is derived from springs/seeps and a UNT to Bear Branch. Approximately 25% of the wetland soils had a mucky substrate that could be probed 3 to 5 inches. Wetland 160506-0835 does meet the three criteria necessary for bog turtle habitat and therefore was considered bog turtle habitat. Only a small portion of Wetland 160506-0835 was located in the AOI and only a small portion of the off-site portion was surveyed on foot due to lack of property access by the landowner. The off-site portion of the wetland contained suitable bog turtle habitat.

Wetland 160506-0920 was identified as a small PEM wetland associated with a UNT to Bear Branch and was located at the northwestern end of the AOI. The wetland was 0.002 acres in size and was bounded by Indian Valley Trail to the west and upland woods on all other sides. The wetland was sparsely vegetated with elderberry. Soil substrate consisted of gravel and lacked a mucky substrate that could be probed to 3 inches. Wetland 160506-0920 does not meet the three criteria necessary for bog turtle habitat and therefore was not considered bog turtle habitat.

Wetland 160422-1120/160422-0930 was identified as a PEM wetland located near the mid-northern end of the AOI and was 0.70 acres in size. The wetland was bounded by Pinch Valley Road to the north and a mown meadow on all other sides. Vegetation in the wetland was dominated by sedges, rushes, and grasses. Other species within Wetland 160422-1120/160422-0930 were skunk cabbage, rice cut grass, and jewelweed. Wetland hydrology is derived from springs/seeps and a UNT to Bear Branch. There were subterranean rivulets within the northern portion of the wetland. Approximately 30% of the wetland soils had a mucky substrate that could be probed 3 to 8 inches. Wetland 160422-1120/160422-0930 does meet the three criteria necessary for bog turtle habitat and therefore was considered bog turtle habitat.

Wetland 160428-1425 was identified as a large palustrine emergent/palustrine scrub-shrub/palustrine forested (PEM/PSS/PFO) wetland complex located at the southern end of the AOI. The wetland continued to the north and east outside the AOI and was 5.63 acres in size within the AOI. The wetland was bounded by agricultural fields to the north and south and riparian areas to the east and west. Vegetation in the wetland was dominated by sedges, rushes, skunk cabbage, speckled alder, and red maple (*Acer rubrum*). Other species within Wetland 160428-1425 were rice cut grass, jewelweed, reed canary grass, spice bush, and white pine (*Pinus strobus*). Wetland hydrology is derived from springs/seeps and a UNT to West Branch North Branch Patapsco River. There were rivulets within the wetland. Approximately 40% of the wetland soils had a mucky substrate that could be probed 3 to 14 inches. Wetland 160428-1425 does meet the three criteria necessary for bog turtle habitat and therefore was considered bog turtle habitat.

Wetland 160428-1245/160428-1250 was identified as a PEM/PUB wetland located at the southern end of the AOI. The wetland was excavated into a pond. The wetland was 0.16 acres in size and was bounded by wooded riparian area on all sides. Vegetation within the wetland was dominated by jewelweed. Other vegetation within the wetland were sedges and garlic mustard. Wetland hydrology was derived from spring/seep and ponded water. Soils lacked a mucky substrate that could be probed to 3 inches. Wetland 160428-1245/160428-1250 does not meet the three criteria necessary for bog turtle habitat and therefore was not considered bog turtle habitat.

Wetlands 160428-1240, 160428-1105, and 160428-1600 were all man made ponds that were identified as palustrine unconsolidated bottom (PUB) wetlands located within the AOI. Phase 1 Bog Turtle Habitat Evaluation Forms weren't filled out for these wetlands and they were not considered suitable bog turtle habitat.

7.0 SUMMARY/CONCLUSIONS

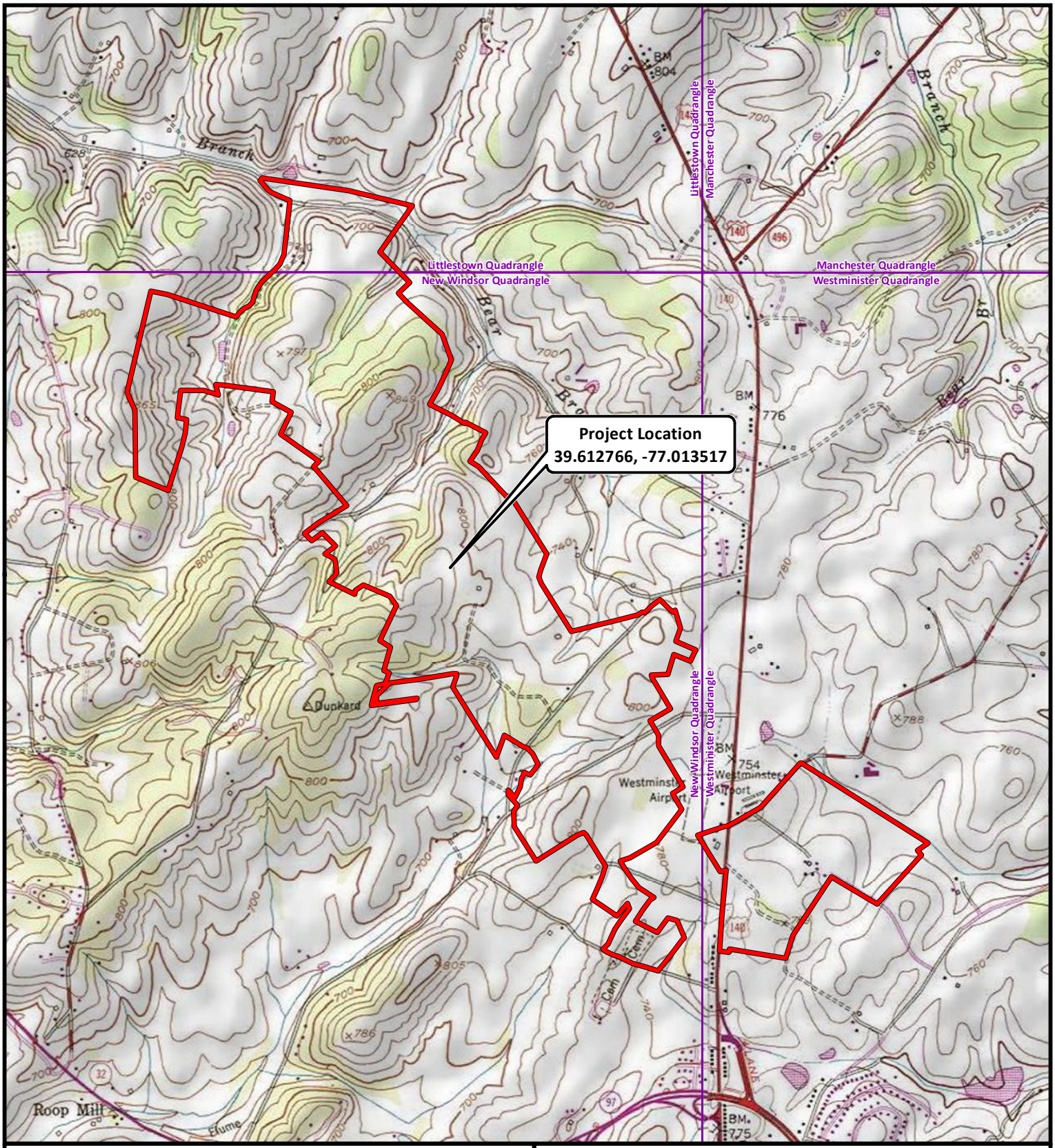
RETTEW has completed this Phase I Bog Turtle Habitat Assessment for the Carroll County Regional Airport Site located in Carroll County, Maryland. RETTEW's review of existing documentation and the field investigations revealed that there is potential bog turtle habitat situated within Wetlands 160413-1130, 160420-1630, 160414-0830, 160421-1220, 160429-1300, 160429-1030, 160505-1220, 160505-1250, 160505-1515, 160505-1420, 160506-0835, 160422-1120/160422-0930, and 160428-1425 within the expanded portion of the AOI.

However, Wetland #9 from the previous 2009 Phase II/III Bog Turtle Report is the only wetland containing bog turtle habitat within the proposed limit of disturbance (LOD) where actual earthwork is planned at this time. The wetlands containing bog turtle habitat from the expanded 2016 investigation are all outside of the LOD. All wetlands from the original investigations were verified during the 2016 investigations. Refer to **Appendix F** for a description of Wetland #9 within the 2009 Phase II/III Bog Turtle Report, as well as the original clearance letter.

Data on which this report is based are on file at the RETTEW Associates' Lancaster Office.

APPENDIX A

SITE MAPS



Area of Investigation (834.94 Acres)

Littlestown, MD-PA;
New Windsor, MD; and Westminster, MD USGS 7.5' Topographic Quadrangles 7/25/2016

Delta Airport Consultants, Inc.

Carroll County Regional Airport

Location Map

Town of Westminster, Carroll County, Maryland
Project No. 024552011

0 1,000 2,000 Feet
1 inch = 2,000 feet

RETTEW SM

\\CHOWDER\Share\Projects\02455\024552011\GIS\MapDocs\Agency Coordination\024552011_CCRA_LocationMap_8x11.mxd

Area of Investigation (834.94 Acres)

Grid Sheet

Delta Airport Consultants, Inc.

Carroll County Regional Airport

2015 Aerial Map: Index Sheet

Town of Westminster & Carroll County, Maryland

Project No. 024552011

N W E S

0 1,000 2,000 Feet

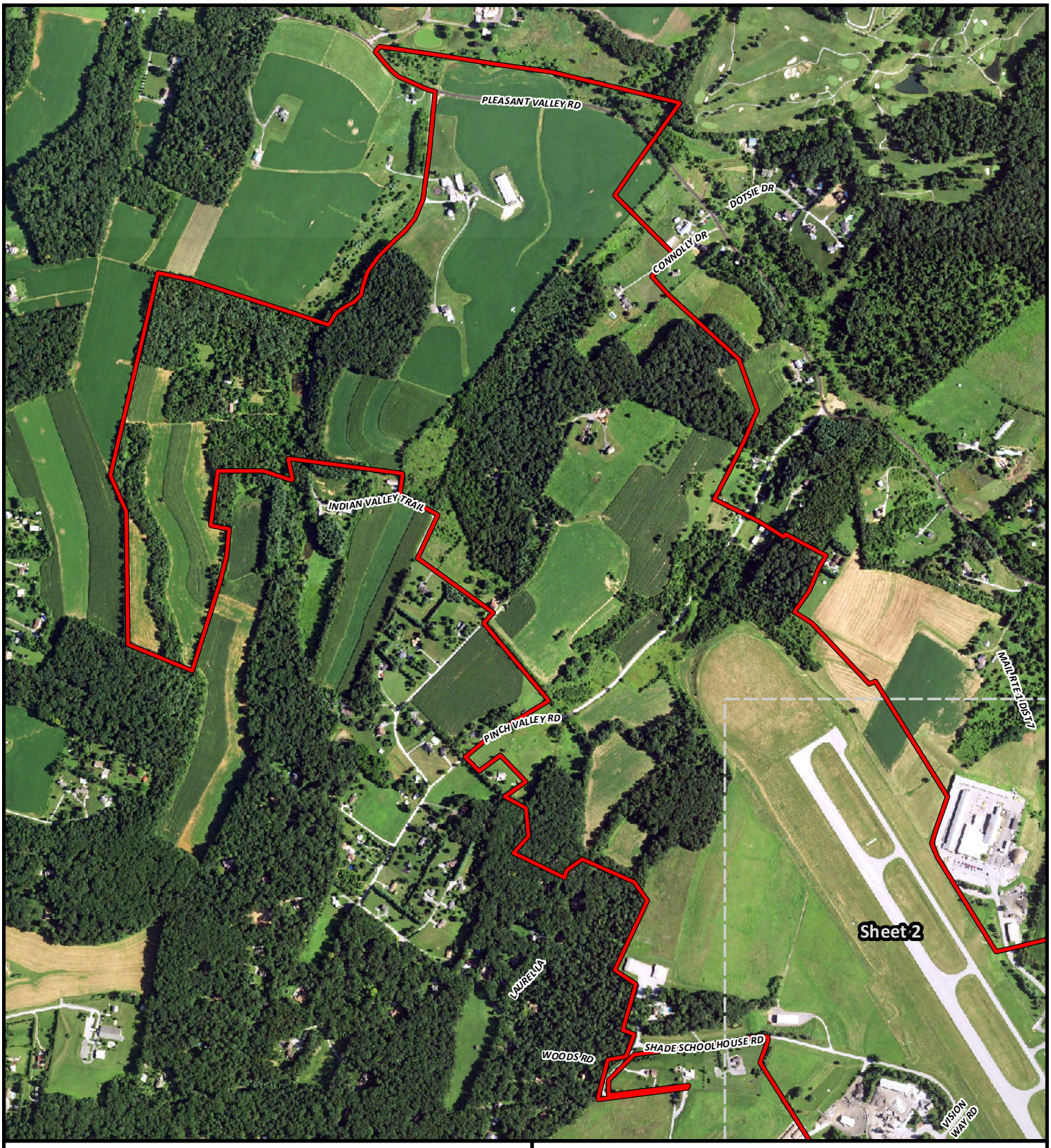
1 inch = 2,000 feet

RETTEW

Imagery Source: National Agriculture Imagery Program
Imagery Date: July 2015

9/16/2016

H:\Projects\02455\024552011\GIS\MapDocs\Agency Coordination\024552011_CCRA_2015_AerialMap_8x11.mxd



Area of Investigation (834.94 Acres)

Grid Sheet

Imagery Source: National Agriculture Imagery Program
Imagery Date: July 2015

9/16/2016

Delta Airport Consultants, Inc.

Carroll County Regional Airport

2015 Aerial Map: Sheet 1 of 2

Town of Westminster & Carroll County, Maryland

Project No. 024552011

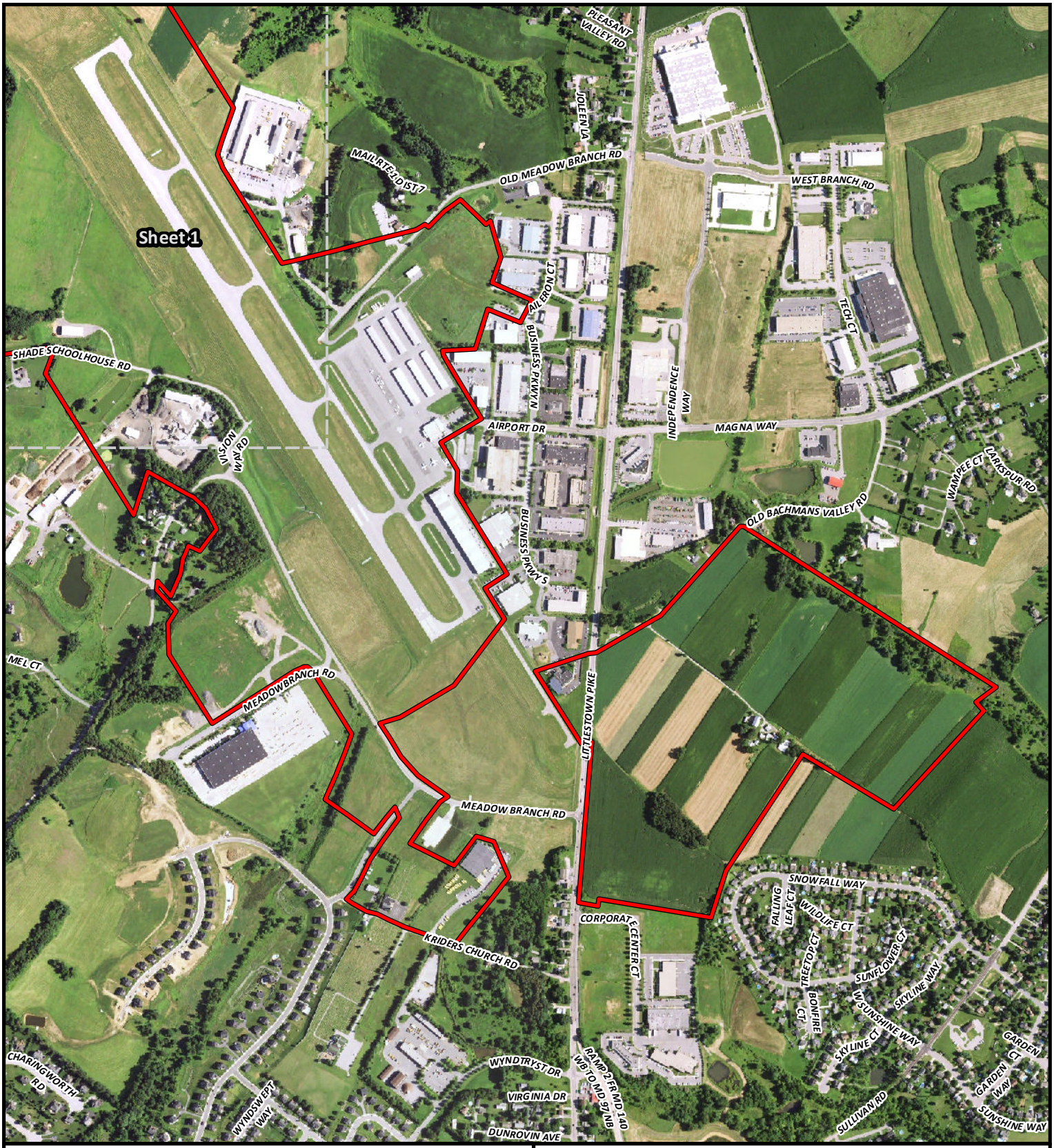
N
W E
S

0 500 1,000 Feet

1 inch = 1,000 feet

RETTEW

H:\Projects\02455\024552011\GIS\MapDocs\Agency Coordination\024552011_CCRA_2015_AerialMap_8x11.mxd



Area of Investigation (834.94 Acres)

Grid Sheet

Delta Airport Consultants, Inc.

Carroll County Regional Airport

2015 Aerial Map: Sheet 2 of 2

Town of Westminster & Carroll County, Maryland

Project No. 024552011

N W E S

0 500 1,000 Feet

1 inch = 1,000 feet

RETTEW

Imagery Source: National Agriculture Imagery Program
Imagery Date: July 2015

9/16/2016

H:\Projects\02455\024552011\GIS\MapDocs\Agency Coordination\024552011_CCRA_2015_AerialMap_8x11.mxd

APPENDIX B

WETLAND TABLES

Table 1. Wetland Size and Location for the Carroll County Regional Airport in the Town of Westminster, Carroll County, MD

Wetland ID	Wetland Size (acres)	Latitude/Longitude	Is the entire wetland on-site?	Year of Original Delineation*
160413-1130	1.07	39.628513, -77.023638	Yes	2016
160420-1630	1.05	39.628360, -77.018750	No	2016
160414-0830	0.24	39.628160, -77.017750	No	2016
160421-1010	1.04	39.627791, -77.016830	No	2016
160421-1220	0.08	39.625110, -77.016530	No	2016
160429-1300	0.27	39.620464, -77.026302	Yes	2016
160429-1030	0.005	39.620511, -77.026444	Yes	2016
160505-1220	0.01	39.620588, -77.025978	Yes	2016
160505-1230	0.09	39.620988, -77.020166	Yes	2016
160505-1250	0.28	39.621472, -77.025833	Yes	2016
160505-1515	0.03	39.622116, -77.026347	YES	2016
160505-1420	0.02	39.622731, -77.027020	Yes	2016
160506-0835	0.01	39.623280, -77.025240	No	2016
160506-0920	0.002	39.621433, -77.025469	Yes	2016
160422-1120	0.64	39.614744, -77.019000	Yes	2016
160422-0930	0.06	39.614300, -77.018800	Yes	2016
160428-1425	5.63	39.601864, -76.989658	No	2016
160428-1245	0.04	39.603533, -76.993340	Yes	2016
160428-1250	0.12	39.603533, -76.993340	Yes	2016
160428-1240	0.04	39.603780, -76.992895	No	2016
160428-1105	0.06	39.608563, -77.013966	Yes	2016
160428-1600	1.18	39.607125, -77.011806	Yes	2016
9	4.09	39.617261, -77.014989	No	2008
10	0.30	39.616481, -77.012594	Yes	2008
11	0.27	39.614975, -77.010978	Yes	2008
12	0.08	39.614994, -77.018372	Yes	2008
14	0.06	39.600514, -77.004972	No	2008
Total Wetland Acres:	**16.767**			

*Further details regarding wetlands originally delineated in 2008 can be found in the 2009 Phase II/III Bog Turtle Report in **Appendix F**. Acreages listed in this table have been updated where applicable based on the 2016 investigation.

Table 2. Summary of Phase I Bog Turtle Survey Results for the wetlands at the Carroll County Regional Airport in the Town of Westminster, Carroll County, MD

Wetland ID	Wetland Size (acres)	Wetland Type & Amount (% or acres)	Extent of Mucky Soils (by Wetland Type)	Survey Effort (person-hours)	Bog Turtle Habitat?	Bog Turtles Found?	Year of Original Delineation*
160413-1130	1.07	PEM – 100%	PEM – <10%	0.5	Yes	No	2016
160420-1630	1.05	PEM – 100%	PEM – <10%	0.42	Yes	No	2016
160414-0830	0.24	PEM – 100%	PEM – <10%	033	Yes	No	2016
160421-1010	1.04	PEM – 100%	PEM – 0%	0.5	No	No	2016
160421-1220	0.08	PEM –100%	PEM – 40%	0.5	Yes	No	2016
160429-1300	0.27	PEM – 80% PSS – 20%	PEM – 30% PSS – 30%	0.66	Yes	No	2016
160429-1030	0.005	PEM – 100%	PEM – 30%	0.66	Yes	No	2016
160505-1220	0.01	PEM – 100%	PEM – 30%	0.66	Yes	No	2016
160505-1230	0.09	PEM – 100%	PEM – 0%	0.25	No	No	2016
160505-1250	0.28	PEM – 50% PUB – 50%	PEM – 60% PSS – 0%	0.5	Yes	No	2016
160505-1515	0.03	PEM – 100%	PEM – 25%	0.42	Yes	N0	2016
160505-1420	0.02	PEM – 100%	PEM – 25%	0.42	Yes	No	2016
160506-0835	0.01	PEM – 100%	PEM – 20%	0.25	Yes	No	2016
160506-0920	0.002	PEM – 100%	PEM – 0%	0.16	No	No	2016
160422-1120	0.64	PEM – 100%	PEM – 30%	0.75	Yes	No	2016
160422-0930	0.06	PEM – 100%	PEM – 30%	0.75	Yes	No	2016
160428-1425	5.63	PEM – 55% PSS – 35% PFO – 10%	PEM – 40% PSS – 50% PFO – 50%	1	Yes	No	2016
160428-1245	0.04	PEM – 100%	PEM – 0%	0.25	No	No	2016
160428-1250	0.12	PUB – 100%	PUB – 0%	0.25	No	No	2016
160428-1240	0.04	PUB – 100%	PUB – 0%	-	No	No	2016
160428-1105	0.06	PUB – 100%	PUB – 0%	-	No	No	2016
160428-1600	1.18	PUB – 100%	PUB – 0%	-	No	No	2016
9	4.09	PEM – 75% PSS – 5% PFO – 20%	PEM – 30% PSS – 0% PFO – 5%	1	Yes	No	2008
10	0.30	PEM – 20% PSS – 15% PFO – 65%	PEM – 5% PSS – 0% PFO – 0%	0.5	No	No	2008
11	0.27	PEM – 100%	PEM – 0%	0.5	No	No	2008
12	0.08	PEM – 50% PFO – 50%	PEM – 0% PFO – 0%	0.5	No	No	2008
14	0.06	PEM – 100%	PEM – 0%	0.5	No	No	2008

*Further details regarding wetlands originally delineated in 2008 can be found in the 2009 Phase II/III Bog Turtle Report in **Appendix F**. Acreages listed in this table have been updated where applicable based on the 2016 investigation.

APPENDIX C

USFWS BOG TURTLE HABITAT EVALUATION FIELD FORMS

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Carroll County Regional Airport

Project type: Airport Expansion

Applicant/Landowner Name: Delta Airport Consultants Littlestown, MD-PA

County: Carroll, MD Quad: New Windsor, Westminster Township/Municipality: Town of Westminster

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 814.23 **Does the Phase 1 survey include all wetlands in the action area?** ☑ Y ☐ N[3]

WETLAND ID: 1604B-1B0 **PHOTOS TAKEN:** ☑ Yes ☐ No **WETLAND SIZE:** 1.07 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 39.628513 Long 77.023638

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☑ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 4/20/16 Time In: 1:05 Time Out: 1:35

Last precipitation: ☐ < 24 hours ☑ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☑ N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☑ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☐ part of it (_____% or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☐ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Pleasant Valley, Stream wetland, reparian area

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☑ PEM 100 ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☑ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

Culvert drains in it, Possible Ditching from Rd

☑ Y ☐ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

STR Mowing

Flag 417

Project Name Carroll County Regional Airport ***Wetland*** 160413-1136 ***(con't)***

Hydrology

☒ Y ☐ N Springs or seeps ☐ visible or ☒ likely ? Watercress present? ☐ Yes ☒ No

☐ Y ☒ N Spring houses in or adjacent to wetland?

☒ Y ☐ N Saturated soils present? If yes, year-round? ☒ Likely ☐ Unlikely ☐ Unknown

☒ Y ☐ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ rivulets (___" deep) ☒ larger pools/ponds (6" deep)

☒ Y ☐ N Evidence of flooding? If yes, describe indicators downed vegetation

Soils Mapping Unit (optional): _____

Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]? ☐ YES ☐ NO	How much of it (PEM) is **mucky**? ☒ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: 3 to 8"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky[6]? ☒ YES ☐ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]? ☐ YES ☐ NO	How much of it is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: _____ to _____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☒ sweet flag ☒ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☒ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____
Additional dominant species: _____

Herptiles

Were any bog turtles observed? ☐ YES[7] ☒ NO If yes, how many? _____
Other herptiles ☒ observed ☐ previously observed: green frog

Additional Comments/Observations: (use additional sheets if necessary)

Small seeple along Pleasant Valley Road, Possible ditching from Road Maintenance

INVESTIGATOR'S OPINION

☒ YES ☐ NO ☐ UNSURE The hydrology criterion[8] for bog turtle habitat is met.
☒ YES ☐ NO ☐ UNSURE The soils criterion[8] for bog turtle habitat is met.
☒ YES ☐ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.
☒ YES ☐ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Jeremy Hite	Jeremy Hite	9/2019
Investigator's Name (print)	Investigator's Signature	Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Carroll County Regional Airport

Project type: Airport Expansion

Applicant/Landowner Name: Delta Airport Consultants

County: Carroll, MD Quad: New Windsor, Westminster Township/Municipality: Town of Westminster

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 814.33 **Does the Phase 1 survey include all wetlands in the action area?** ☐ Y ☐ N[3]

WETLAND ID: 1604-1630 **PHOTOS TAKEN:** ☑ Yes ☐ No **WETLAND SIZE:** 1.05 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 39.62836 Long 77.01875

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☑ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 4-26-16 Time In: 1:45 Time Out: 2:10

Last precipitation: ☐ < 24 hours ☑ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☑ N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☑ some of it – _____ acres or 20 % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☑ part of it (10 % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☑ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☑ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☑ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Field Stream Riparian Area, Pleasant Valley Road

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☑ PEM 100 ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☑ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

_____

☐ Y ☑ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

_____

Project Name Carroll County Regional Airport **Wetland** ______ **(con't)** 1600120-1630

Hydrology

☑ Y ☐ N	Springs or seeps ☐ visible or ☑ likely ? Watercress present? ☐ Yes ☑ No
☐ Y ☑ N	Spring houses in or adjacent to wetland?
☑ Y ☐ N	Saturated soils present? If yes, year-round? ☑ Likely ☐ Unlikely ☐ Unknown
☑ Y ☐ N	Water visible on surface? Check all that apply: ☑ small puddles/depressions (1-2" deep) ☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
☐ Y ☐ N	Evidence of flooding? If yes, describe indicators ______

Soils Mapping Unit (optional): ______

Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]? ☑ YES ☐ NO	How much of it (PEM) is **mucky**? ☑ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: 3 to 8 "	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☑ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky[6]? ☐ YES ☐ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☑ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]? ☐ YES ☐ NO	How much of it is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: ____ to ____ "	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation **(characterize the wetland as a whole)**

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☐ sedges ☐ rushes ☑ skunk cabbage ☐ cattail ☐ sweet flag ☑ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☑ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ ______
Additional dominant species: ______

Herptiles

Were any bog turtles observed? ☐ YES[7] ☐ NO If yes, how many? ______
Other herptiles ☐ observed ☐ previously observed: ______

Additional Comments/Observations: (use additional sheets if necessary)

Small spring fed flat along stream that has ground water influence, There was also suitable bog turtle habitat in old oxbow just outside of AOI wetland was mostly dry

INVESTIGATOR'S OPINION

☑ YES ☐ NO ☐ UNSURE The hydrology criterion[8] for bog turtle habitat is met.
☑ YES ☐ NO ☐ UNSURE The soils criterion[8] for bog turtle habitat is met.
☑ YES ☐ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.
☑ YES ☐ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Jeremy [illegible]	[signature]	4-28-16
Investigator's Name (print)	Investigator's Signature	Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Carroll County Regional Airport

Project type: Airport Expansion

Applicant/Landowner Name: Delta Airport Consultants, Inc

County: Carroll, MD Quad: Littlestown PA, MD / New Windsor, Westminster Township/Municipality: Town of Westminster

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 814.33 **Does the Phase 1 survey include all wetlands in the action area?** ☑ Y ☐ N[3]

WETLAND ID: 1604 14-83 **PHOTOS TAKEN:** ☑ Yes ☐ No **WETLAND SIZE:** 0.24 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 39.62816 Long 77.01775

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☑ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 4-20-16 Time In: 2:40 Time Out: 3:00

Last precipitation: ☐ < 24 hours ☑ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☑ some of it – _____ acres or 10 % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☑ all of it ☐ part of it (_____% or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☑ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐Y ☑ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐Y ☑ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Stream Riparian Area, and CRP

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☑ PEM 100 ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☑ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

_____

☐ Y ☑ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

_____

WL 04-14-83 2018

160414-830

Project Name Carroll County Regional Airport *Wetland* _____ *(con't)*

Hydrology

☒Y ☐N Springs or seeps ☐visible or ☒likely ? Watercress present? ☐Yes ☒No

☐Y ☒N Spring houses in or adjacent to wetland?

☒Y ☐N Saturated soils present? If yes, year-round? ☒Likely ☐Unlikely ☐Unknown

☐Y ☐N Water visible on surface? Check all that apply: ☒small puddles/depressions (1" deep)
☐rivulets (___" deep) ☐larger pools/ponds (___" deep)

☒Y ☐N Evidence of flooding? If yes, describe indicators drainage

Soils Mapping Unit (optional): _____

Field observations confirm mapped type? ☐YES ☐NO ☐Unknown

Soils – PEM Portion of Wetland			
Mucky[4]*?* ☒YES ☐NO	How much of it (PEM) is **mucky**? ☒<10% ☐10-29% ☐30-49% ☐50-70% ☐>70%	**Mucky** soils range in depth from: 3 to 8"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☒3-5" ☐6-8" ☐9-11" ☐≥12"
Non-mucky[6]*?* ☒YES ☐NO	How much of it (PEM) is **non-mucky**? ☐<10% ☐10-29% ☐30-49% ☐50-70% ☒>70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]*?* ☐YES ☐NO	How much of it is **mucky**? ☐<10% ☐10-29% ☐30-49% ☐50-70% ☐>70%	**Mucky** soils range in depth from: ____ to ____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐3-5" ☐6-8" ☐9-11" ☐≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☐sedges ☐rushes ☐skunk cabbage ☐cattail ☒sweet flag ☒jewelweed ☐sphagnum moss
☐sensitive fern ☐rice cutgrass ☐tearthumb ☒reed canary grass ☐*Phragmites* ☐purple loosestrife
☐alder ☐dogwood ☐red maple ☐willow ☐poison sumac ☐multiflora rose ☐_____
Additional dominant species: _____

Herptiles

Were any bog turtles observed? ☐YES[7] ☒NO If yes, how many? _____
Other herptiles ☐observed ☐previously observed: green frog

Additional Comments/Observations: (use additional sheets if necessary)

Small pocket of marsh along stream

INVESTIGATOR'S OPINION

☒YES ☐NO ☐UNSURE The hydrology criterion[8] for bog turtle habitat is met.
☒YES ☐NO ☐UNSURE The soils criterion[8] for bog turtle habitat is met.
☒YES ☐NO ☐UNSURE The vegetation criterion[8] for bog turtle habitat is met.
☒YES ☐NO ☐UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Jeremy Hyte		4-20-16
Investigator's Name (print)	Investigator's Signature	Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Carroll County Regional Airport

Project type: Airport Expansion

Applicant/Landowner Name: Delta Airport Consultants Inc

County: Carroll MD Quad: Littlestown PA-MD New Windsor, Westminster Township/Municipality: Town of Westminster

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 814.33 **Does the Phase 1 survey include all wetlands in the action area?** ☐ Y ☐ N[3]

WETLAND ID: 160421-1010 **PHOTOS TAKEN:** ☑ Yes ☐ No **WETLAND SIZE:** 6.04 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 39.627791 Long 77.016185

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☑ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 4-21-16 Time In: 10:20 Time Out: 10:50

Last precipitation: ☐ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☑ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☑ some of it – _____ acres or 30 % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☑ part of it (40 % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☐ all of it ☑ part of it (at least 50% acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☑ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Stream to south, wood north, riparian area

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☑ PEM 100 ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☑ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

_____

☐ Y ☑ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

_____

160421-1010

Project Name Carroll County Regional Airport *Wetland* _____ *(con't)*

Hydrology

☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely ? Watercress present? ☐ Yes ☒ No

☐ Y ☒ N Spring houses in or adjacent to wetland?

☐ Y ☒ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown

☐ Y ☒ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)

☒ Y ☐ N Evidence of flooding? If yes, describe indicators Down Veg

Soils Mapping Unit (optional): _____

Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]*?* ☐ YES ☒ NO	How much of it (PEM) is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: _____ to _____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky[6]*?* ☒ YES ☐ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]*?* ☐ YES ☐ NO	How much of it is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: _____ to _____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☐ sedges ☐ rushes ☒ skunk cabbage ☐ cattail ☐ sweet flag ☒ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☒ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐ _____
Additional dominant species: _____

Herptiles

Were any bog turtles observed? ☐ YES[7] ☒ NO If yes, how many? _____
Other herptiles ☐ observed ☐ previously observed: None

Additional Comments/Observations: (use additional sheets if necessary)

offsite portion planted with trees

INVESTIGATOR'S OPINION

☐ YES ☒ NO ☐ UNSURE The hydrology criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Jeremy Hite — Investigator's Name (print)

Jeremy Hite — Investigator's Signature

4-21-16 — Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Carroll County Regional Airport

Project type: Airport Expansion

Applicant/Landowner Name: Delta Airport Consultants Inc

County: Carroll, MD Quad: Kittleston MD-PA Kenmore Westminster Township/Municipality: Town of Westminster

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 814.33 **Does the Phase 1 survey include all wetlands in the action area?** ☑ Y ☐ N[3]

WETLAND ID: 160421-1220 **PHOTOS TAKEN:** ☑ Yes ☐ No **WETLAND SIZE:** .36 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 39.6250 Long -77.0165

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☑ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 4-21-16 Time In: 12:30 Time Out: 1:00

Last precipitation: ☐ < 24 hours ☑ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☑ N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☑ some of it – _____ acres or 10 % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☑ all of it ☐ part of it (_____% or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☑ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☑ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☑ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Compost Fore, Located in compost fore

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☑ PEM 100 ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☑ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

_____

☐ Y ☑ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

_____

160421-1220

Project Name Carroll County Regional Airport *Wetland* ______ *(con't)* 1604211120

Hydrology

- ☑Y ☐N — Springs or seeps ☑visible or ☐likely? Watercress present? ☐Yes ☑No
- ☐Y ☐N — Spring houses in or adjacent to wetland?
- ☑Y ☐N — Saturated soils present? If yes, year-round? ☑Likely ☐Unlikely ☐Unknown
- ☑Y ☐N — Water visible on surface? Check all that apply: ☑small puddles/depressions (1" deep) ☑rivulets (1" deep) ☐larger pools/ponds (___" deep)
- ☑Y ☐N — Evidence of flooding? If yes, describe indicators: down vegetation

Soils Mapping Unit (optional): ______
Field observations confirm mapped type? ☐YES ☐NO ☐Unknown

Soils – PEM Portion of Wetland			
Mucky[4]? ☑YES ☐NO	How much of it (PEM) is **mucky**? ☐<10% ☐10-29% ☑30-49% ☐50-70% ☐>70%	**Mucky** soils range in depth from: 3 to 10"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☑3-5" ☐6-8" ☐9-11" ☐≥12"
Non-mucky[6]? ☑YES ☐NO	How much of it (PEM) is **non-mucky**? ☐<10% ☐10-29% ☑30-49% ☐50-70% ☐>70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]? ☐YES ☐NO	How much of it is **mucky**? ☐<10% ☐10-29% ☐30-49% ☐50-70% ☐>70%	**Mucky** soils range in depth from: ___ to ___"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐3-5" ☐6-8" ☐9-11" ☐≥12"

Wetland Vegetation (characterize the wetland as a whole)
Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☑(sedges) ☐rushes ☐skunk cabbage ☐cattail ☐sweet flag ☑jewelweed ☐sphagnum moss
☐sensitive fern ☐rice cutgrass ☐tearthumb ☐reed canary grass ☐*Phragmites* ☐purple loosestrife
☐alder ☐dogwood ☐red maple ☐willow ☐poison sumac ☐multiflora rose ☑(grass)
Additional dominant species: elder berry

Herptiles
Were any bog turtles observed? ☐YES[7] ☑NO If yes, how many? ______
Other herptiles ☐observed ☐previously observed: None

Additional Comments/Observations: (use additional sheets if necessary)
Located along stream. There are a lot springs and seeps

INVESTIGATOR'S OPINION

- ☑YES ☐NO ☐UNSURE — The hydrology criterion[8] for bog turtle habitat is met.
- ☑YES ☐NO ☐UNSURE — The soils criterion[8] for bog turtle habitat is met.
- ☑YES ☐NO ☐UNSURE — The vegetation criterion[8] for bog turtle habitat is met.
- ☑YES ☐NO ☐UNSURE — This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Jeremy Hite — Investigator's Name (print)
[signature] — Investigator's Signature
4-21-16 — Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Carroll County Regional Airport

Project type: Airport Expansion

Applicant/Landowner Name: Delta Airport Consultants Littleton MA-MA

County: Carroll, MD Quad: New Windsor, Westminster Township/Municipality: Town of Westminster

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 814.33 **Does the Phase 1 survey include all wetlands in the action area?** ☑ Y ☐ N[3]

WETLAND ID: 160429-1300 **PHOTOS TAKEN:** ☑ Yes ☐ No **WETLAND SIZE:** .27 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 39.620464 Long 77.026302

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☑ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 4-29-16 / 5-5-16 Time In: 1:10 Time Out: 1:50

Last precipitation: ☑ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☑ N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☑ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☐ part of it (_____% or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☑ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☑ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Located in a scrub-shrub area

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☑ PEM 80 ☑ PSS 20 ☐ PFO ____ ☐ POW ____

☐ Y ☑ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

_____

☐ Y ☑ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

_____

160429-1300

Project Name Carroll County Regional Airport *Wetland* _____ *(con't)*

Hydrology

☑ Y ☐ N Springs or seeps ☑ visible or ☐ likely ? Watercress present? ☐ Yes ☐ No

☐ Y ☑ N Spring houses in or adjacent to wetland?

☑ Y ☐ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown

☑ Y ☐ N Water visible on surface? Check all that apply: ☑ small puddles/depressions (1 " deep)
☑ rivulets (1-2 " deep) ☐ larger pools/ponds (___ " deep)

☐ Y ☐ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): _____

Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]? ☑ YES ☐ NO	How much of it (PEM) is **mucky**? ☐ <10% ☐ 10-29% ☑ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: 3 to 10 "	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☑ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky[6]? ☑ YES ☐ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☑ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]? ☑ YES ☐ NO	How much of it is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: 3 to 10 "	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☑ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☐ sedges ☐ rushes ☑ skunk cabbage ☐ cattail ☑ sweet flag ☑ jewelweed ☐ sphagnum moss
☑ sensitive fern ☐ rice cutgrass ☐ tearthumb ☑ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☑ Tussock sedge
Additional dominant species: Grasses, goldenrod, Spice bush, nanberry

Herptiles

Were any bog turtles observed? ☐ YES[7] ☑ NO If yes, how many? _____

Other herptiles ☑ observed ☐ previously observed: Green frog,

Additional Comments/Observations: (use additional sheets if necessary)

Small pocket of habitat, wetland is located in dense shrubbery, Evaluation included Wetland 160429-1300 (Crain) and 160505-1220

INVESTIGATOR'S OPINION

☑ YES ☐ NO ☐ UNSURE The hydrology criterion[8] for bog turtle habitat is met.

☑ YES ☐ NO ☐ UNSURE The soils criterion[8] for bog turtle habitat is met.

☐ YES ☐ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.

☑ YES ☐ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Jeremy Hite — Investigator's Name (print)

Jeremy Hite — Investigator's Signature

4-29-16 — Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Carroll County Regional Airport

Project type: Airport Expansion

Applicant/Landowner Name: Delta Airport Consultants, Inc

County: Carroll, MD Quad: Littlestown MD-PA Township/Municipality: Town of Westminster

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 814.33 **Does the Phase 1 survey include all wetlands in the action area?** ☑ **Y** ☐ **N[3]**

WETLAND ID: 160505-1230 **PHOTOS TAKEN:** ☑ **Yes** ☐ **No** **WETLAND SIZE:** 0.09 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 39.620988 Long -77.020166

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☐ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 5-5-16 Time In: 12:30 Time Out: 12:45

Last precipitation: ☑ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☑ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☑ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☐ part of it (_____% or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☐ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Driveway to North Stream East, Scrub shrub

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☑ PEM 100 ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☑ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

_____

☐ Y ☑ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

_____

Project Name Carroll County Regional Airport *Wetland* 160505-1230 *(con't)*

Hydrology

☐ Y ☒ N Springs or seeps ☐ visible or ☐ likely ? Watercress present? ☐ Yes ☒ No
☐ Y ☒ N Spring houses in or adjacent to wetland?
☐ Y ☒ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
☐ Y ☒ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
☐ Y ☒ N Evidence of flooding? If yes, describe indicators_____

Soils Mapping Unit (optional):_____
Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]*?* ☐ YES ☒ NO	How much of it (PEM) is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: _____ to _____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky[6]*?* ☒ YES ☐ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☒ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]*?* ☐ YES ☐ NO	How much of it is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: _____ to _____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)
Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☐ sedges ☐ rushes ☒ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☒ Tussock sedge
Additional dominant species: grass

Herptiles
Were any bog turtles observed? ☐ YES[7] ☒ NO If yes, how many? _____
Other herptiles ☐ observed ☐ previously observed: None

Additional Comments/Observations: (use additional sheets if necessary)
Wetland was completely Dry on day of survey

INVESTIGATOR'S OPINION

☐ YES ☒ NO ☐ UNSURE The hydrology criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE The soils criterion[8] for bog turtle habitat is met.
☒ YES ☐ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.
☐ YES ☒ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Jeremy Wike — Investigator's Name (print)
Jeremy Wike — Investigator's Signature
5-5-16 — Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Carroll County Regional Airport

Project type: Airport Expansion

Applicant/Landowner Name: Delta Airport Consultants, Inc

County: Carroll, MD Quad: Littlestown NORA / New Windsor, Westminster Township/Municipality: Town of Westminster

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 314.33 **Does the Phase 1 survey include all wetlands in the action area?** ☑ Y ☐ N[3]

WETLAND ID: 160505-1250 **PHOTOS TAKEN:** ☑ Yes ☐ No **WETLAND SIZE:** 0.28 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 39.621477 Long 77.025833

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☑ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 5-5-16 Time In: 1250 Time Out: 1320

Last precipitation: ☑ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☑ N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☑ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☐ part of it (_____% or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☐ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Driveway South, Indian Valley Road East, Scrub-Shrub all others

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☑ PEM 50 ☐ PSS _____ ☐ PFO _____ ☑ POW 50

☑ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

Pond / Excavating

☐ Y ☑ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

_____

Project Name Carroll County Regional Airport **Wetland** 160505-1250 **(con't)**

Hydrology

☑ Y ☐ N Springs or seeps ☑ visible or ☐ likely ? Watercress present? ☐ Yes ☑ No
☐ Y ☑ N Spring houses in or adjacent to wetland?
☑ Y ☐ N Saturated soils present? If yes, year-round? ☑ Likely ☐ Unlikely ☐ Unknown
☑ Y ☐ N Water visible on surface? Check all that apply: ☑ small puddles/depressions (2 " deep) ☑ rivulets (2 " deep) ☑ larger pools/ponds (12 " deep)
☐ Y ☐ N Evidence of flooding? If yes, describe indicators ______

Soils Mapping Unit (optional): ______
Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]? ☑ YES ☐ NO	How much of it (PEM) is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☑ 50-70% ☐ >70%	**Mucky** soils range in depth from: 3 to 20 "	Most of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☑ 9-11" ☐ ≥12"
Non-mucky[6]? ☑ YES ☐ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☑ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]? ☐ YES ☐ NO	How much of it is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: ___ to ___ "	Most of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation **(characterize the wetland as a whole)**
Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☑ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☑ (jewelweed) ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☑ (grasses)
Additional dominant species: Tussock Sedg

Herptiles

Were any bog turtles observed? ☐ YES[7] ☑ NO If yes, how many? ______
Other herptiles ☐ observed ☐ previously observed: green frogs, American toad

Additional Comments/Observations: (use additional sheets if necessary)
Wetland is part of a man made pond that portions of a dam failed. there are springs that flow into it, A stream also flows into the Pond

INVESTIGATOR'S OPINION

☑ YES ☐ NO ☐ UNSURE The hydrology criterion[8] for bog turtle habitat is met.
☑ YES ☐ NO ☐ UNSURE The soils criterion[8] for bog turtle habitat is met.
☑ YES ☐ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.
☑ YES ☐ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Jeremy Ate — Investigator's Name (print)
[signature] — Investigator's Signature
5/5/16 — Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Carroll County Regional Airport

Project type: Airport Expansion

Applicant/Landowner Name: Delta Airport Consultants, Inc

County: Carroll, MD Quad: Littleston MD-PA New Windsor, Westminster Township/Municipality: Town of Westminster

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 8/4.33 **Does the Phase 1 survey include all wetlands in the action area?** ☑ Y ☐ N[3]

WETLAND ID: 160505-1515 **PHOTOS TAKEN:** ☑ Yes ☐ No **WETLAND SIZE:** .03 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 39.622116 Long 77.026347

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☑ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 5-5-16 Time In: 3:15 Time Out: 3:40

Last precipitation: ☑ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☑ N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☑ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☐ part of it (_____% or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☑ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☑ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

fallow field and dense brush

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☑ PEM 100 ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☑ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

_____

☐ Y ☑ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

_____

Project Name Carroll County Regional Airport *Wetland* 160505-1575 *(con't)*

Hydrology

☑ Y ☐ N Springs or seeps ☑ visible or ☐ likely ? Watercress present? ☑ Yes ☐ No
☑ Y ☐ N Spring houses in or adjacent to wetland?
☑ Y ☐ N Saturated soils present? If yes, year-round? ☑ Likely ☐ Unlikely ☐ Unknown
☑ Y ☐ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☑ rivulets (1" deep) ☐ larger pools/ponds (___" deep)
☐ Y ☑ N Evidence of flooding? If yes, describe indicators_____

Soils Mapping Unit (optional):_____
Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]*?* ☑ YES ☐ NO	How much of it (PEM) is **mucky**? ☐ <10% ☑ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: 3 to 5"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☑ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky[6]*?* ☑ YES ☐ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☑ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]*?* ☐ YES ☐ NO	How much of it is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: _____ to _____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)
Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☑ sedges ☐ rushes ☑ skunk cabbage ☐ cattail ☐ sweet flag ☑ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ ~~poison sumac~~ ☐ multiflora rose ☑ Tussock Sedge
Additional dominant species: grass

Herptiles
Were any bog turtles observed? ☐ YES[7] ☑ NO If yes, how many? _____
Other herptiles ☐ observed ☐ previously observed: None

Additional Comments/Observations: (use additional sheets if necessary)
Small fringe pocket wetlands, wetland contained small amount of mucky substrate that meet criteria for BT habitat, Evaluation also contains

INVESTIGATOR'S OPINION

☑ YES ☐ NO ☐ UNSURE The hydrology criterion[8] for bog turtle habitat is met.
☑ YES ☐ NO ☐ UNSURE The soils criterion[8] for bog turtle habitat is met.
☑ YES ☐ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.
☑ YES ☐ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Jeremy White — Investigator's Name (print)
Jeremy White — Investigator's Signature
5-5-16 — Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Carroll County Regional Airport

Project type: Airport Expansion

Applicant/Landowner Name: Delta Airport Consultants, INC

County: Carroll MD Quad: Littlestown MD-PA New Windsor, Westminster Township/Municipality: Town of Westminster

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 814.33 **Does the Phase 1 survey include all wetlands in the action area?** ☑ Y ☐ N[3]

WETLAND ID: ~~WB050~~ 830 **PHOTOS TAKEN:** ☑ Yes ☐ No **WETLAND SIZE:** 0.01 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 39.623280 Long 77.025240

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☑ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 5-6-16 Time In: 8:30 Time Out: 8:45

Last precipitation: ☑ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐Y ☑N ☐Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☑ some of it – _____ acres or 98 % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☑ part of it (10 % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☑ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐Y ☐N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐Y ☐N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Indvalley road East, Agfield/woods/North, Scrub shrubeast

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☑ PEM 100 ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☐ Y ☑ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

_____

☐ Y ☑ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

_____

Project Name Carroll County Regional Airport *Wetland* 160506-830 *(con't)*

Hydrology

☑ Y ☐ N Springs or seeps ☑ visible or ☐ likely ? Watercress present? ☐ Yes ☑ No
☐ Y ☑ N Spring houses in or adjacent to wetland?
☑ Y ☐ N Saturated soils present? If yes, year-round? ☑ Likely ☐ Unlikely ☐ Unknown
☑ Y ☐ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☑ rivulets (1" deep) ☐ larger pools/ponds (___" deep)
☐ Y ☑ N Evidence of flooding? If yes, describe indicators_____

Soils Mapping Unit (optional):_____
Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]*?* ☑ YES ☐ NO	How much of it (PEM) is **mucky**? ☐ <10% ☑ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: 3 to 5"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☑ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky[6]*?* ☑ YES ☐ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☐ 10-29% ☑ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]*?* ☐ YES ☐ NO	How much of it is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: _____ to _____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)
Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☑ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☑ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐_____
Additional dominant species: _____

Herptiles
Were any bog turtles observed? ☐ YES[7] ☑ NO If yes, how many? _____
Other herptiles ☐ observed ☐ previously observed: None

Additional Comments/Observations: (use additional sheets if necessary)
Only areal small portion of wetland is located onsite, about 10% of offsite was surveyed. Offsite appeared to contain good B-E habitat

INVESTIGATOR'S OPINION

☑ YES ☐ NO ☐ UNSURE The hydrology criterion[8] for bog turtle habitat is met.
☑ YES ☐ NO ☐ UNSURE The soils criterion[8] for bog turtle habitat is met.
☑ YES ☐ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.
☑ YES ☐ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Jeremy Hite — Investigator's Name (print)
Jeremy Hite — Investigator's Signature
5-6-16 — Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Carroll County Regional Airport

Project type: Airport Expansion

Applicant/Landowner Name: Delta Airport Consultants, Inc

County: Carroll, MD Quad: Littlestown MD-PA New Windsor, Westminster Township/Municipality: Town of Westminster

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 814.83 **Does the Phase 1 survey include all wetlands in the action area?** ☑ Y ☐ N[3]

WETLAND ID: 1605a-920 **PHOTOS TAKEN:** ☑ Yes ☐ No **WETLAND SIZE:** 0.002 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 39.621433 Long 77.025469

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☑ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 5-16-16 Time In: 9:20 Time Out: 9:20

Last precipitation: ☑ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☑ N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☑ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☐ part of it (_____% or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☐ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Indian Valley Road and Upland Woods

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☑ PEM 100 ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☑ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

ditching from Road

☐ Y ☑ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

_____

Project Name Carroll County Regional Airport *Wetland* 160506-920 *(con't)*

Hydrology

☑ Y ☐ N Springs or seeps ☑ visible or ☐ likely ? Watercress present? ☐ Yes ☑ No
☐ Y ☑ N Spring houses in or adjacent to wetland?
☐ Y ☑ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown
☐ Y ☑ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ rivulets (___" deep) ☐ larger pools/ponds (___" deep)
☐ Y ☐ N Evidence of flooding? If yes, describe indicators_____

Soils Mapping Unit (optional):_____
Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]? ☐ YES ☑ NO	How much of it (PEM) is **mucky**? ☐ <10% ☐10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: _____ to _____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky[6]? ☑ YES ☐ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☐10-29% ☐ 30-49% ☐ 50-70% ☑ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]? ☐ YES ☐ NO	How much of it is **mucky**? ☐ <10% ☐10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: _____ to _____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)
Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☐ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐_____
Additional dominant species: Elderry

Herptiles
Were any bog turtles observed? ☐ YES[7] ☑ NO If yes, how many? _____
Other herptiles ☐ observed ☐ previously observed: None

Additional Comments/Observations: (use additional sheets if necessary)
wetland had a gravel bottom and was a spring It was sparsely vegetated
JO

INVESTIGATOR'S OPINION

☑ YES ☐ NO ☐ UNSURE The hydrology criterion[8] for bog turtle habitat is met.
☐ YES ☑ NO ☐ UNSURE The soils criterion[8] for bog turtle habitat is met.
☐ YES ☑ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.
☐ YES ☑ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Jeremy Hilts — Investigator's Name (print)
Jeremy Hilts — Investigator's Signature
5-16-16 — Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Carroll County Regional Airport

Project type: Airport Expansion

Applicant/Landowner Name: Delta Airport Consultants

County: Carroll, MD Quad: New Windsor, Westminster Township/Municipality: Town of Westminster

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 814.33 **Does the Phase 1 survey include all wetlands in the action area?** ☑ Y ☐ N[3]

160422-1120

WETLAND ID: 160422-930 **PHOTOS TAKEN:** ☑ Yes ☐ No **WETLAND SIZE:** 0.64 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☑ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 39.614744 Long 77.019

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☑ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 4-22-16 Time In: 11:00 Time Out: 11:45

Last precipitation: ☑ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☐ part of it (_____ % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☐ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Pinch Valley Road, Main Meadow

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☑ PEM 100 ☐ PSS _____ ☐ PFO _____ ☐ POW _____

☑ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

ruttng

☑ Y ☐ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Portions are mowed

160422-1130-930

Project Name Carroll County Regional Airport *Wetland* _____ *(con't)*

Hydrology

☑ Y ☐ N Springs or seeps ☑ visible or ☐ likely ? Watercress present? ☐ Yes ☑ No

☐ Y ☑ N Spring houses in or adjacent to wetland?

☑ Y ☐ N Saturated soils present? If yes, year-round? ☑ Likely ☐ Unlikely ☐ Unknown

☑ Y ☐ N Water visible on surface? Check all that apply: ☑ small puddles/depressions (1 " deep)

☑ rivulets (1-2 " deep) ☐ larger pools/ponds (___ " deep)

☐ Y ☑ N Evidence of flooding? If yes, describe indicators _____

Soils Mapping Unit (optional): _____

Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]*?* ☑ YES ☐ NO	How much of it (PEM) is **mucky**? ☐ <10% ☐ 10-29% ☑ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: 3 to 12 "	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☑ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky[6]*?* ☐ YES ☐ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]*?* ☐ YES ☐ NO	How much of it is **mucky**? ☐ <10% ☐ 10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: _____ to _____ "	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☑ sedges ☑ rushes ☑ skunk cabbage ☐ cattail ☐ sweet flag ☑ jewelweed ☐ sphagnum moss

☐ sensitive fern ☑ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife

☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☑ grass

Additional dominant species: _____

Herptiles

Were any bog turtles observed? ☐ YES[7] ☑ NO If yes, how many? _____

Other herptiles ☑ observed ☐ previously observed: wood frogs

Additional Comments/Observations: (use additional sheets if necessary)

Most of the wetland's muck was less than 3" but contain ground water and some underground rivulets

INVESTIGATOR'S OPINION

☐ YES ☐ NO ☐ UNSURE The hydrology criterion[8] for bog turtle habitat is met.

☐ YES ☐ NO ☐ UNSURE The soils criterion[8] for bog turtle habitat is met.

☐ YES ☐ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.

☐ YES ☐ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Jeremy Artz	Jeremy Artz	4-27-16
Investigator's Name (print)	Investigator's Signature	Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Carroll County Regional Airport

Project type: Airport Expansion

Applicant/Landowner Name: Delta Airport Consultants, Inc

County: Carroll, MD Quad: New Windsor, Westminster, Littlestown MD PA Township/Municipality: Town of Westminster

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 814.3 **Does the Phase 1 survey include all wetlands in the action area?** ☑ Y ☐ N[3]

WETLAND ID: 160428-1425 **PHOTOS TAKEN:** ☑ Yes ☐ No **WETLAND SIZE:** 5.63 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 39.6018638 Long 76.9896583

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☑ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 4-28-16 Time In: 2:30 Time Out: 3:30

Last precipitation: ☑ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☐ N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☐ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☑ some of it – _____ acres or 40 % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☑ part of it (10 % or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☐ all of it ☑ part of it (at least 20 acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☑ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Ag field North and South, Rapacum Area

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☑ PEM 55 ☑ PSS 35 ☑ PFO 10 ☐ POW ____

☑ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

Farming

☑ Y ☐ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

Spray from field

Project Name Carroll County Regional Airport *Wetland* 160428-1425 *(con't)*

Hydrology

☑Y ☐N Springs or seeps ☑visible or ☐likely ? Watercress present? ☑Yes ☐No
☐Y ☑N Spring houses in or adjacent to wetland?
☑Y ☐N Saturated soils present? If yes, year-round? ☑Likely ☐Unlikely ☐Unknown
☑Y ☐N Water visible on surface? Check all that apply: ☑small puddles/depressions (2-4" deep)
☑rivulets (3" deep) ☐larger pools/ponds (___" deep)
☑Y ☐N Evidence of flooding? If yes, describe indicators drainage

Soils Mapping Unit (optional): _____
Field observations confirm mapped type? ☐YES ☐NO ☐Unknown

Soils – PEM Portion of Wetland			
Mucky[4]? ☑YES ☐NO	How much of it (PEM) is **mucky**? ☐<10% ☐10-29% ☑30-49% ☐50-70% ☐>70%	**Mucky** soils range in depth from: 3 to 14"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☑3-5" ☐6-8" ☐9-11" ☐≥12"
Non-mucky[6]? ☑YES ☐NO	How much of it (PEM) is **non-mucky**? ☐<10% ☐10-29% ☐30-49% ☑50-70% ☐>70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]? ☑YES ☐NO	How much of it is **mucky**? ☐<10% ☐10-29% ☐30-49% ☑50-70% ☐>70%	**Mucky** soils range in depth from: 3 to 14"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☑3-5" ☐6-8" ☐9-11" ☐≥12"

Wetland Vegetation (characterize the wetland as a whole)
Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☑sedges ☑rushes ☑skunk cabbage ☐cattail ☐sweet flag ☑jewelweed ☐sphagnum moss
☑sensitive fern ☑rice cutgrass ☐tearthumb ☑reed canary grass ☐*Phragmites* ☐purple loosestrife
☑alder ☐dogwood ☐red maple ☐willow ☐poison sumac ☐multiflora rose ☐_____
Additional dominant species: Spice bush, white pine, red maple

Herptiles
Were any bog turtles observed? ☐YES[7] ☑NO If yes, how many? _____
Other herptiles ☐observed ☐previously observed: Green frog

Additional Comments/Observations: (use additional sheets if necessary)
Large wetland complex, has many areas of bog turtle habitat
The area around stream has stake along it for stream gauging
Portions off site also contained bog turtle habitat

INVESTIGATOR'S OPINION

☑YES ☐NO ☐UNSURE The hydrology criterion[8] for bog turtle habitat is met.
☑YES ☐NO ☐UNSURE The soils criterion[8] for bog turtle habitat is met.
☑YES ☐NO ☐UNSURE The vegetation criterion[8] for bog turtle habitat is met.
☑YES ☐NO ☐UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Jeremy Hite — Investigator's Name (print)
Jeremy Hite — Investigator's Signature
4-28-16 — Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form[1]

(revised 06/01/2006)

Project/Property Name: Carroll County Regional Airport

Project type: Airport Expansion

Applicant/Landowner Name: Delta Airport Consultants, INC

County: Carroll, MD Quad: Littleton MD-PA Township/Municipality: Town of Westminster

PNDI # _____ Potential conflict with USFWS species? ☐ Y ☐ N

ACTION AREA[2]

Action area size: 81433 **Does the Phase 1 survey include all wetlands in the action area?** ☑ Y ☐ N[3]

WETLAND ID: 160128-1215 **PHOTOS TAKEN:** ☑ Yes ☐ No **WETLAND SIZE:** 0.46 **acres**

Wetland size estimation – If actual acreage is not known at time of investigation, check one:

☐ < 0.1 acre ☐ 0.1-0.5 acre ☐ >0.5 to <1 acre ☐ 1-2 acres ☐ 2-4 acres ☐ 5+ acres ☐ 10+ acres

WETLAND LOCATION: Lat 39.603533 Long 76.99334

(approximate center of wetland) GPS Datum (check one): ☐ NAD 27 ☑ NAD 83 ☐ WGS 84

SURVEY CONDITIONS & LIMITATIONS

Date of survey: 4-28-16 Time In: 12:45 Time Out: 1:00

Last precipitation: ☑ < 24 hours ☐ 1-7 days ☐ > 1 week ☐ unknown Drought conditions? ☐ Y ☑ N ☐ Unknown

How much of this wetland is located *off-site* (*i.e.*, outside the property boundaries or right-of-way)?

☑ none of it – the entire wetland is within the property boundaries (skip next 2 questions)

☐ some of it – _____ acres or _____ % of the wetland appears to be located off-site

If part of this wetland continues off-site, how much of the *off-site portion* was surveyed (on foot)?

☐ none of it ☐ all of it ☐ part of it (_____% or _____ acres of the off-site portion)

How much of the *off-site portion* of this wetland is visible (*e.g.*, from the subject property or from a public road)?

☐ all of it ☐ part of it (at least _____ acres) ☐ none of it

Are there any wetlands located off-site and close enough to be affected by this project? ☐ Y ☐ N ☐ Unknown

If yes, *could* they be potential bog turtle habitat? ☐ Y ☐ N ☐ Unknown

Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):

Wooded riparian Area

WETLAND CHARACTERISTICS

Wetland type(s) present and % cover: ☑ PEM 20 ☐ PSS _____ ☐ PFO _____ ☑ POW 80

☑ Y ☐ N Are there any signs of disturbance to *hydrology* (ditching, filling, ponds, roads, etc.)? If yes, describe

Wetland has been Excaved for pond

☐ Y ☑ N Are there any signs of disturbance to *vegetation* (mowing, pasturing, burning, etc.)? If yes, describe

_____

160428-1245

Project Name Carson County Regional Airport *Wetland* _____ *(con't)*

Hydrology

☐ Y ☐ N Springs or seeps ☑ visible or ☐ likely ? Watercress present? ☐ Yes ☐ No

☐ Y ☐ N Spring houses in or adjacent to wetland?

☐ Y ☐ N Saturated soils present? If yes, year-round? ☐ Likely ☐ Unlikely ☐ Unknown

☐ Y ☐ N Water visible on surface? Check all that apply: ☐ small puddles/depressions (___" deep)
☐ rivulets (___" deep) ☑ larger pools/ponds (24" deep)

☐ Y ☐ N Evidence of flooding? If yes, describe indicators_____

Soils Mapping Unit (optional):_____

Field observations confirm mapped type? ☐ YES ☐ NO ☐ Unknown

Soils – PEM Portion of Wetland			
Mucky[4]*?* ☐ YES ☑ NO	How much of it (PEM) is **mucky**? ☐ <10% ☐10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: _____ to _____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"
Non-mucky[6]*?* ☐ YES ☐ NO	How much of it (PEM) is **non-mucky**? ☐ <10% ☐10-29% ☐ 30-49% ☐ 50-70% ☐ >70%		

Soils – PSS and PFO Portions of Wetland			
Mucky[4]*?* ☐ YES ☐ NO	How much of it is **mucky**? ☐ <10% ☐10-29% ☐ 30-49% ☐ 50-70% ☐ >70%	**Mucky** soils range in depth from: _____ to _____"	**Most** of the **mucky part(s)** of the wetland can be probed[5]: ☐ 3-5" ☐ 6-8" ☐ 9-11" ☐ ≥12"

Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).

☑ sedges ☐ rushes ☐ skunk cabbage ☐ cattail ☐ sweet flag ☐ jewelweed ☐ sphagnum moss
☐ sensitive fern ☐ rice cutgrass ☐ tearthumb ☐ reed canary grass ☐ *Phragmites* ☐ purple loosestrife
☐ alder ☐ dogwood ☐ red maple ☐ willow ☐ poison sumac ☐ multiflora rose ☐_____

Additional dominant species: garlic mustard

Herptiles

Were any bog turtles observed? ☐ YES[7] ☑ NO If yes, how many? _____

Other herptiles ☐ observed ☐ previously observed: green frog

Additional Comments/Observations: (use additional sheets if necessary)

wetland was a man made pond with PEM on another portion
wetland was also labeled 160428-1250 on map

INVESTIGATOR'S OPINION

☐ YES ☐ NO ☐ UNSURE The hydrology criterion[8] for bog turtle habitat is met.

☐ YES ☑ NO ☐ UNSURE The soils criterion[8] for bog turtle habitat is met.

☐ YES ☑ NO ☐ UNSURE The vegetation criterion[8] for bog turtle habitat is met.

☐ YES ☑ NO ☐ UNSURE This wetland is potential bog turtle habitat.

I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.

Jeremy White — Investigator's Name (print)

Jeremy White — Investigator's Signature

4-28-16 — Date

APPENDIX D

SITE PHOTOS

RETTEW Associates, Inc.
Photo Documentation

Client: Delta Airport Consultants, Inc.

Site Location: Town of Westminster, Carroll County, MD

Site Name: Carroll County Regional Airport

Project Number: 024552011

DATE:
April 20, 2016

DIRECTION:
South

COMMENTS:
PHOTO 1
View of PEM Wetland 160413-1130 and a UNT to Bear Branch. This section of Wetland 160413-1130 was not considered to be bog turtle habitat.

DATE:
April 20, 2016

DIRECTION:
Southeast

COMMENTS:
PHOTO 2
View of a small swale located within Wetland 160413-1130 that contained suitable bog turtle habitat.

RETTEW Associates, Inc.
Photo Documentation

Client: Delta Airport Consultants, Inc.

Site Location: Town of Westminster, Carroll County, MD

Site Name: Carroll County Regional Airport

Project Number: 024552011

DATE:
April 20, 2016

DIRECTION:
Northeast

COMMENTS:
PHOTO 3
View of Wetland 160413-1130 and Bear Branch.

DATE:
April 20, 2016

DIRECTION:
Southeast

COMMENTS:
PHOTO 4
View of Wetland 160420-1630 located in the northeastern portion of the AOI. This portion of Wetland 160420-1630 did not contain bog turtle habitat.

RETTEW Associates, Inc.
Photo Documentation

Client: Delta Airport Consultants, Inc.

Site Location: Town of Westminster, Carrol County, MD

Site Name: Carroll County Regional Airport

Project Number: 024552011

DATE:
April 20, 2016

DIRECTION:
South

COMMENTS:
PHOTO 5
View of a small seep area within Wetland 160420-1630 that contained suitable bog turtle habitat.

DATE:
April 20, 2016

DIRECTION:
Southeast

COMMENTS:
PHOTO 6
Another view of Wetland 160420-1630.

RETTEW Associates, Inc.
Photo Documentation

Client: Delta Airport Consultants, Inc.

Site Location: Town of Westminster, Carroll County, MD

Site Name: Carroll County Regional Airport

Project Number: 024552011

DATE:
April 20, 2016

DIRECTION:
Southwest

COMMENTS:
PHOTO 7
View of a small pocket of suitable bog turtle habitat located outside the AOI within Wetland 160420-1630.

DATE:
April 20, 2016

DIRECTION:
West

COMMENTS:
PHOTO 8
View of PEM Wetland 160414-0830 that contained a small pocket of suitable bog turtle habitat.

RETTEW Associates, Inc.
Photo Documentation

Client: Delta Airport Consultants, Inc.

Site Location: Town of Westminster, Carroll County, MD

Site Name: Carroll County Regional Airport

Project Number: 024552011

DATE:
April 21, 2016

DIRECTION:
West

COMMENTS:
PHOTO 9
View of PEM Wetland 160421-1010 that did not contain suitable bog turtle habitat.

DATE:
April 21, 2016

DIRECTION:
Southwest

COMMENTS:
PHOTO 10
View of PEM Wetland 160421-1220 that contained suitable bog turtle habitat.

RETTEW Associates, Inc.
Photo Documentation

Client: Delta Airport Consultants, Inc.

Site Location: Town of Westminster, Carroll County, MD

Site Name: Carroll County Regional Airport

Project Number: 024552011

DATE:
April 29, 2016

DIRECTION:
Southwest

COMMENTS:
PHOTO 11
View of a PEM portion of Wetland 160429-1300 that was considered suitable bog turtle habitat.

DATE:
April 29, 2016

DIRECTION:
West

COMMENTS:
PHOTO 12
View of a PSS portion of Wetland 160429-1300 that was considered suitable bog turtle habitat.

RETTEW Associates, Inc.
Photo Documentation

Client: Delta Airport Consultants, Inc.

Site Location: Town of Westminster, Carroll County, MD

Site Name: Carroll County Regional Airport

Project Number: 024552011

DATE:
April 29, 2016

DIRECTION:
West

COMMENTS:
PHOTO 13
View of PEM Wetland 160429-1030 that did contain suitable bog turtle habitat.

DATE:
May 5, 2016

DIRECTION:
South

COMMENTS:
PHOTO 14
View of PEM Wetland 160505-1220 that did contain suitable bog turtle habitat.

RETTEW Associates, Inc.
Photo Documentation

Client: Delta Airport Consultants, Inc.

Site Location: Town of Westminster, Carroll County, MD

Site Name: Carroll County Regional Airport

Project Number: 024552011

DATE:
May 5, 2016

DIRECTION:
South

COMMENTS:
PHOTO 15
View of PEM Wetland 160505-1230 that did not contain suitable bog turtle habitat.

DATE:
May 5, 2016

DIRECTION:
North

COMMENTS:
PHOTO 16
View of PEM/POW Wetland 160505-1250 that was considered suitable bog turtle habitat.

RETTEW Associates, Inc.
Photo Documentation

Client: Delta Airport Consultants, Inc.

Site Location: Town of Westminster, Carroll County, MD

Site Name: Carroll County Regional Airport

Project Number: 024552011

DATE:
May 5, 2016

DIRECTION:
South

COMMENTS:
PHOTO 17
View of PEM portion of Wetland 160505-1250 and a UNT to Bear Branch.

DATE:
May 5, 2016

DIRECTION:
South

COMMENTS:
PHOTO 18
View of PEM Wetland 160505-1515 that was considered suitable bog turtle habitat.

RETTEW Associates, Inc.
Photo Documentation

Client: Delta Airport Consultants, Inc.

Site Location: Town of Westminster, Carroll County, MD

Site Name: Carroll County Regional Airport

Project Number: 024552011

DATE:
May 5, 2016

DIRECTION:
West

COMMENTS:
PHOTO 19
Another view of PEM Wetland 160505-1515 that did contain suitable bog turtle habitat.

DATE:
May 6, 2016

DIRECTION:
Southwest

COMMENTS:
PHOTO 20
View of on-site portion of PEM Wetland 160506-0835 that was considered suitable bog turtle habitat.

RETTEW Associates, Inc.
Photo Documentation

Client: Delta Airport Consultants, Inc.

Site Location: Town of Westminster, Carroll County, MD

Site Name: Carroll County Regional Airport

Project Number: 024552011

DATE:
May 6, 2016

DIRECTION:
North

COMMENTS:
PHOTO 21
View of off-site portion of Wetland 160506-0835 that contained suitable bog turtle habitat.

DATE:
May 6, 2016

DIRECTION:
East

COMMENTS:
PHOTO 22
View of PEM Wetland 160506-0920 that was not considered to be suitable bog turtle habitat.

RETTEW Associates, Inc.
Photo Documentation

Client: Delta Airport Consultants, Inc.

Site Location: Town of Westminster, Carroll County, MD

Site Name: Carroll County Regional Airport

Project Number: 024552011

DATE:
April 22, 2016

DIRECTION:
West

COMMENTS:
PHOTO 23
View of PEM Wetland 160422-1120/160422-0930 that did contain suitable bog turtle habitat.

DATE:
April 22, 2016

DIRECTION:
West

COMMENTS:
PHOTO 24
Another view of Wetland 160422-1120/160422-0930 that was considered suitable bog turtle habitat.

RETTEW Associates, Inc.
Photo Documentation

Client: Delta Airport Consultants, Inc.

Site Location: Town of Westminster, Carroll County, MD

Site Name: Carroll County Regional Airport

Project Number: 024552011

DATE:
April 22, 2016

DIRECTION:
South

COMMENTS:
PHOTO 25
Another view of Wetland 160422-1120/160422-0930 and a UNT to Bear Branch.

DATE:
April 28, 2016

DIRECTION:
Southeast

COMMENTS:
PHOTO 26
View of PEM/PSS portion of Wetland 160428-1425 that was considered to be suitable bog turtle habitat.

RETTEW Associates, Inc.
Photo Documentation

Client: Delta Airport Consultants, Inc.

Site Location: Town of Westminster, Carroll County, MD

Site Name: Carroll County Regional Airport

Project Number: 024552011

DATE:
April 28, 2016

DIRECTION:
Southeast

COMMENTS:
PHOTO 27
Another view of Wetland 160428-1425 that contained suitable bog turtle habitat.

DATE:
April 28, 2016

DIRECTION:
Southeast

COMMENTS:
PHOTO 28
Another view of an on-site PEM portion of Wetland 160428-1425.

RETTEW Associates, Inc.
Photo Documentation

Client: Delta Airport Consultants, Inc.

Site Location: Town of Westminster, Carroll County, MD

Site Name: Carroll County Regional Airport

Project Number: 024552011

DATE:
April 28, 2016

DIRECTION:
South

COMMENTS:
PHOTO 29
View of PEM portion of Wetland 160428-1245/160428-1250 that did not contain suitable bog turtle habitat.

DATE:
April 28, 2016

DIRECTION:
Southeast

COMMENTS:
PHOTO 30
View of PUB portion of Wetland 160428-1245/160428-1250.

RETTEW Associates, Inc.
Photo Documentation

Client: Delta Airport Consultants, Inc.

Site Location: Town of Westminster, Carroll County, MD

Site Name: Carroll County Regional Airport

Project Number: 024552011

DATE:
April 28, 2016

DIRECTION:
North

COMMENTS:
PHOTO 31
View of PUB Wetland 160428-1240 that did not contain suitable bog turtle habitat.

DATE:
April 28, 2016

DIRECTION:
West

COMMENTS:
PHOTO 32
View of PUB Wetland 160428-1105 that did not contain suitable bog turtle habitat.

RETTEW Associates, Inc.
Photo Documentation

Client: Delta Airport Consultants, Inc.

Site Location: Town of Westminster, Carroll County, MD

Site Name: Carroll County Regional Airport

Project Number: 024552011

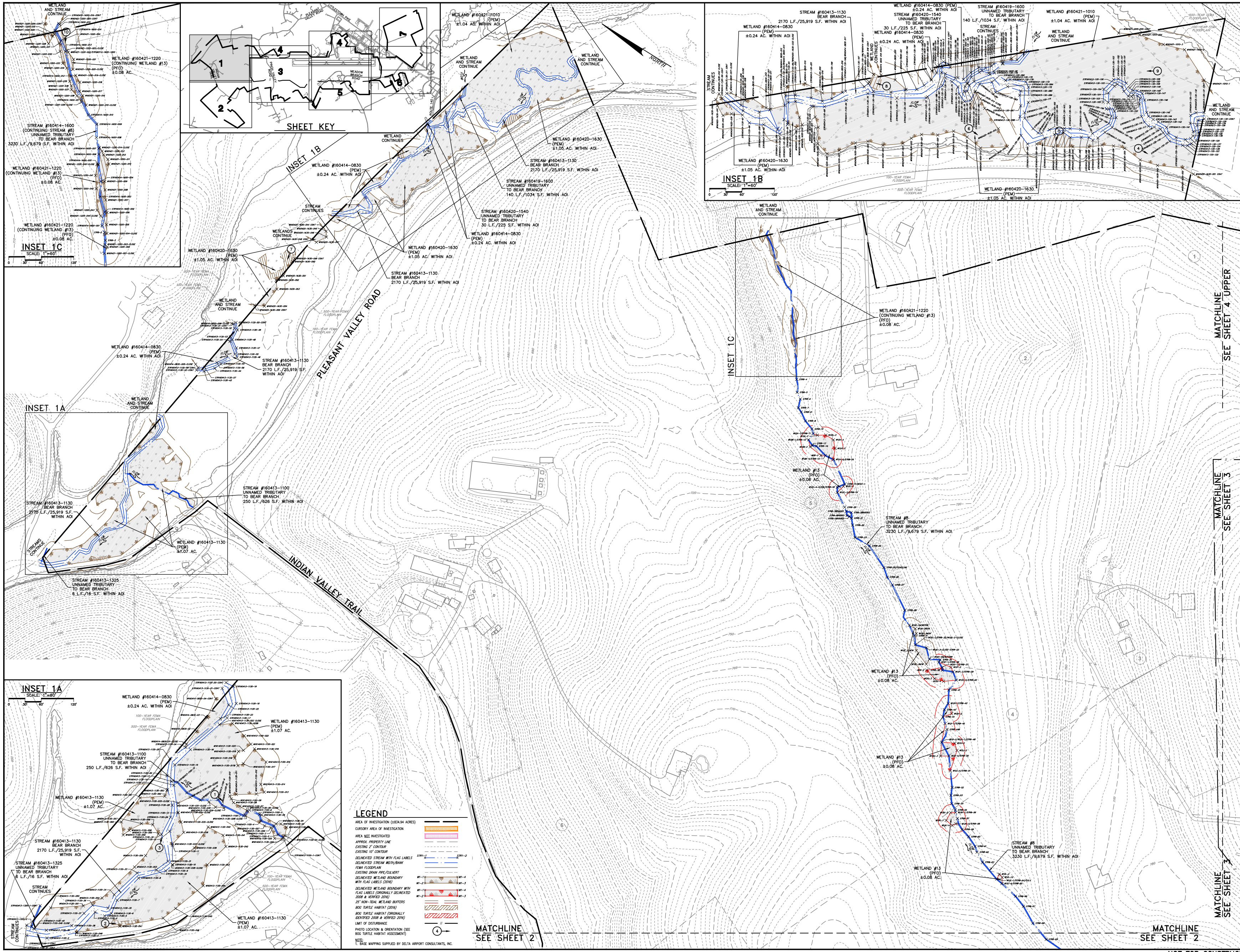
DATE:
April 28, 2016

DIRECTION:
Northeast

COMMENTS:
PHOTO 33
View of PUB Wetland 160428-1600 that did not contain suitable bog turtle habitat.

APPENDIX E

PHASE 1 BOG TURTLE ASSESSMENT SITE PLAN



NO.	DATE	REVISION
1	9/16/16	PER CLIENT COMMENT
2	9/30/16	PER USACE FIELD REVIEW MEETING

FOR RETTEW ASSOCIATES BY:

FOR RETTEW ASSOCIATES BY:

MANAGER: MARK METZLER
DESIGN BY:
CHKD BY:
SURV. CHIEF: OTHERS
FIELDBOOK NO. DATA COLLECTOR
DRAWN BY: JME
CHKD BY: JTH
DRAWING REFERENCE:

CLIENT
DELTA AIRPORT CONSULTANTS, INC.
9711 FARAR COURT, SUITE 100
RICHMOND, VA 23236

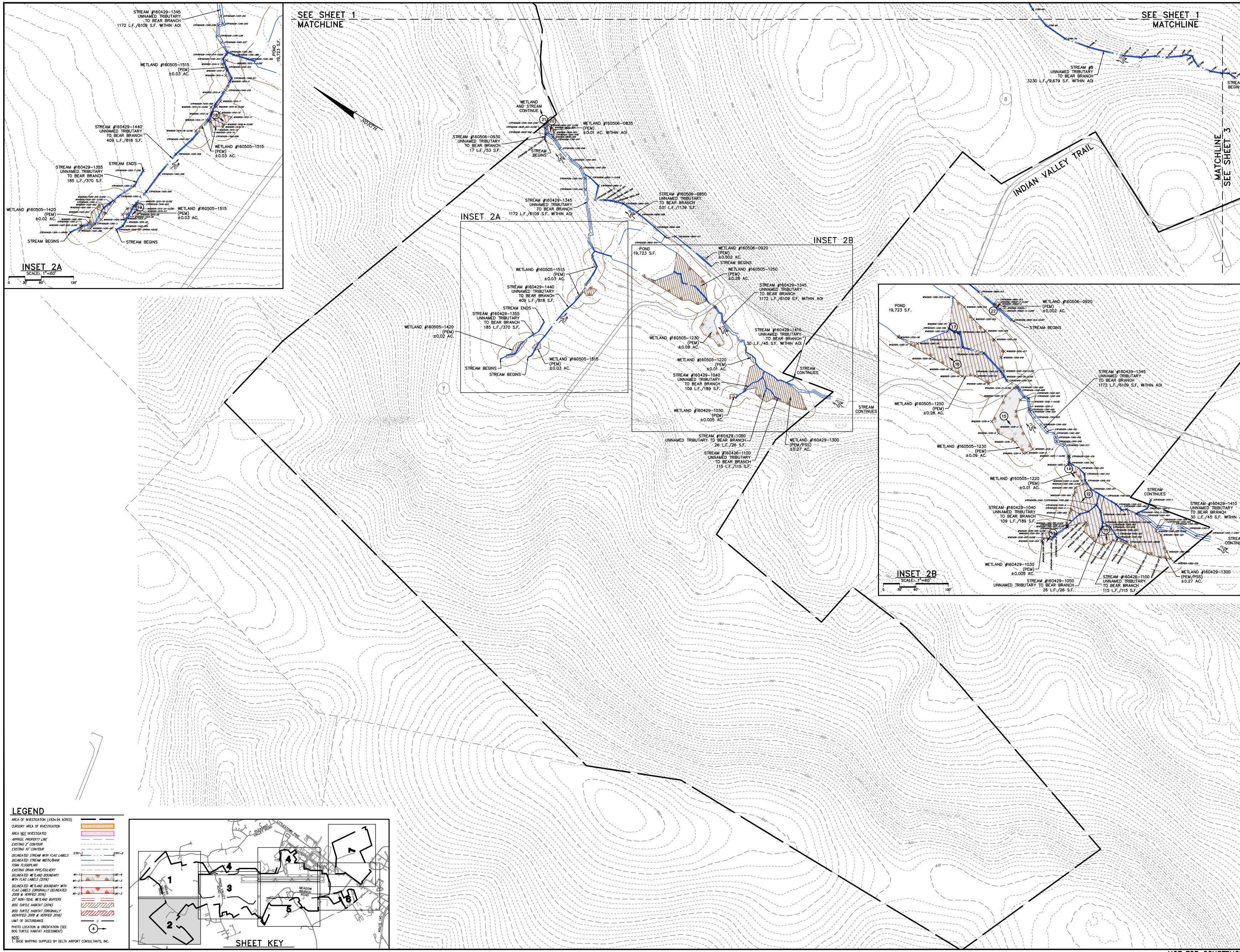
SCALE 1"=100'
0 50' 100' 200' 300'

RETTEW
RETTEW Associates, Inc.
3020 Columbia Avenue, Lancaster, PA 17603
Phone (717) 394-3721 . Fax (717) 394-1063
Email: rettew@rettew.com
Website: www.rettew.com
Engineers • Planners • Surveyors • Landscape Architects
Environmental Consultants

PHASE 1 BOG TURTLE ASSESSMENT SITE PLAN
FOR
CARROLL COUNTY REGIONAL AIRPORT
TOWN OF WESTMINSTER CARROLL CO., MD

DATE: AUGUST 2, 2016
SHEET NO. 1 OF 7
DWG. NO. 024552011

NOT FOR CONSTRUCTION/NOT FOR BIDDING



NO.	DATE	REVISION
2	9/20/16	PER USACE FIELD REVIEW MEETING
1	9/16/16	PER CLIENT COMMENT

FOR RETTEW ASSOCIATES BY: | FOR RETTEW ASSOCIATES BY:

XREFS: -NS-TOPO, 13064-DMW-Airport-Layout-STRIPPED, -NS-BASE, -NS-DLNT, -NS-KMAP, 13064 - LOD

MANAGER: MARK METZLER
DESIGN BY: | CHKD BY:
SURV. CHIEF: OTHERS | FIELDBOOK NO. DATA COLLECTOR
DRAWN BY: JME | CHKD BY: JTH
DRAWING REFERENCE: C:_RettewVault\WIP\024552011-CarrollCoAirport\Sheets\NS\BogTurtle\024552011-BTHB-PLAN.dwg

CLIENT
DELTA AIRPORT CONSULTANTS, INC.
9711 FARAR COURT, SUITE 100
RICHMOND, VA 23236

SCALE 1"=100'
0 50' 100' 200' 300'

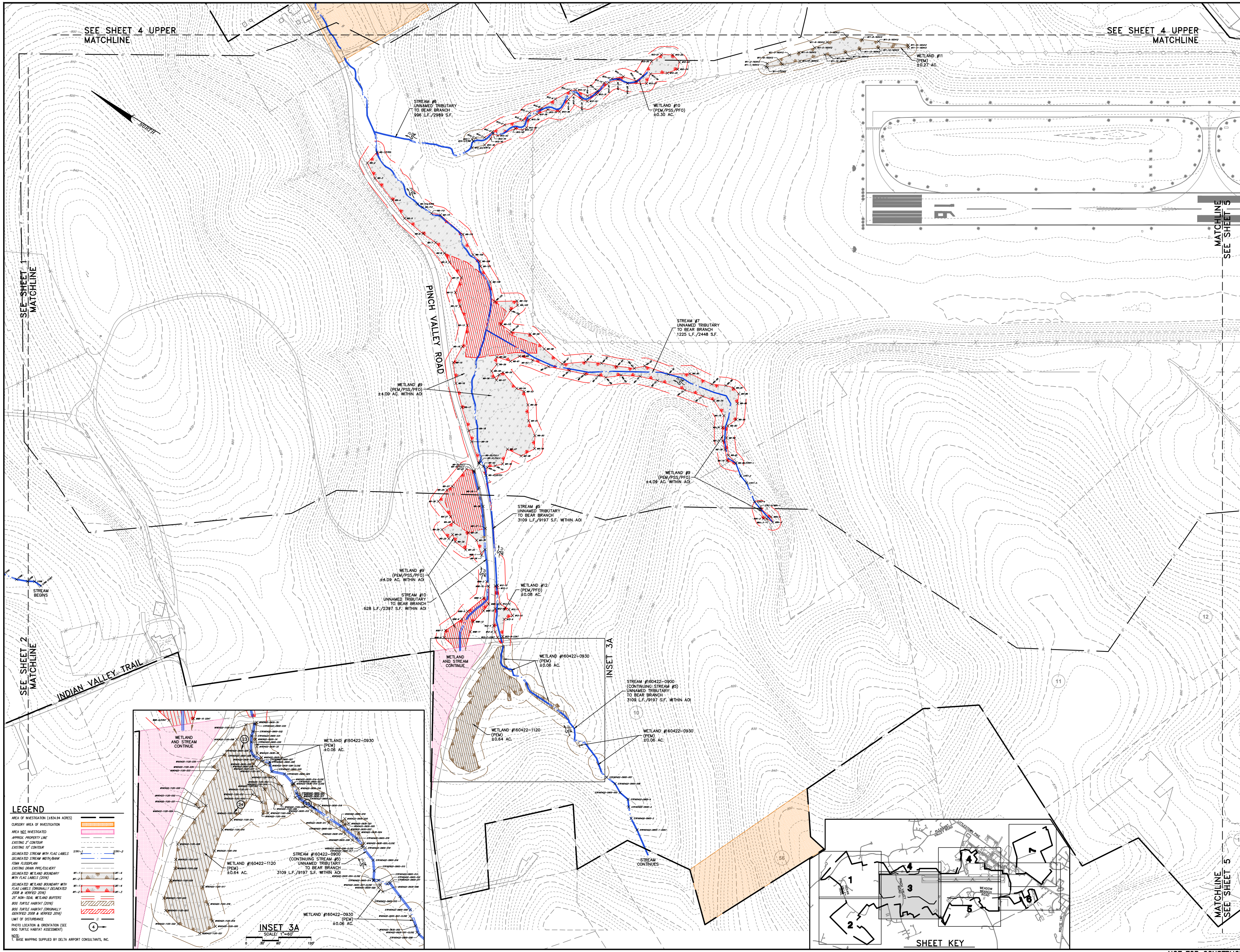
RETTEW
RETTEW Associates, Inc.
3020 Columbia Avenue, Lancaster, PA 17603
Phone (717) 394-3721, Fax (717) 394-1063
Email: rettew@rettew.com
Website: www.rettew.com
Engineers • Planners • Surveyors • Landscape Architects
Environmental Consultants

PHASE 1 BOG TURTLE ASSESSMENT SITE PLAN
FOR
CARROLL COUNTY REGIONAL AIRPORT

TOWN OF WESTMINSTER — CARROLL CO., MD

DATE: AUGUST 2, 2016
SHEET NO. 2 OF 7
DWG. NO. 024552011

NOT FOR CONSTRUCTION/NOT FOR BIDDING



NO.	DATE	REVISION
1	9/16/16	PER CLIENT COMMENT
2	9/30/16	PER USACE FIELD REVIEW MEETING

FOR RETTEW ASSOCIATES BY: | FOR RETTEW ASSOCIATES BY:

XREFS: -NS-TOPO, 13064-DMW-Airport-Layout-STRIPPED, -NS-BASE, -NS-DLNT, -NS-KMAP, 13064 - LOD

MANAGER: MARK METZLER
DESIGN BY: | CHKD BY:
SURV. CHIEF: OTHERS | FIELDBOOK NO. DATA COLLECTOR
DRAWN BY: JME | CHKD BY: JTH
DRAWING REFERENCE: C:_RettewVault\WIP\024552011-CarrollCoAirport\Sheets\NS\BogTurtle\024552011-BTHB-PLAN.dwg

CLIENT
DELTA AIRPORT CONSULTANTS, INC.
9711 FARAR COURT, SUITE 100
RICHMOND, VA 23236

SCALE 1"=100' (0, 50', 100', 200', 300')

RETTEW
RETTEW Associates, Inc.
3020 Columbia Avenue, Lancaster, PA 17603
Phone (717) 394-3721 , Fax (717) 394-1063
Email: rettew@rettew.com
Website: www.rettew.com
Engineers • Planners • Surveyors • Landscape Architects
Environmental Consultants

PHASE 1 BOG TURTLE ASSESSMENT SITE PLAN FOR CARROLL COUNTY REGIONAL AIRPORT

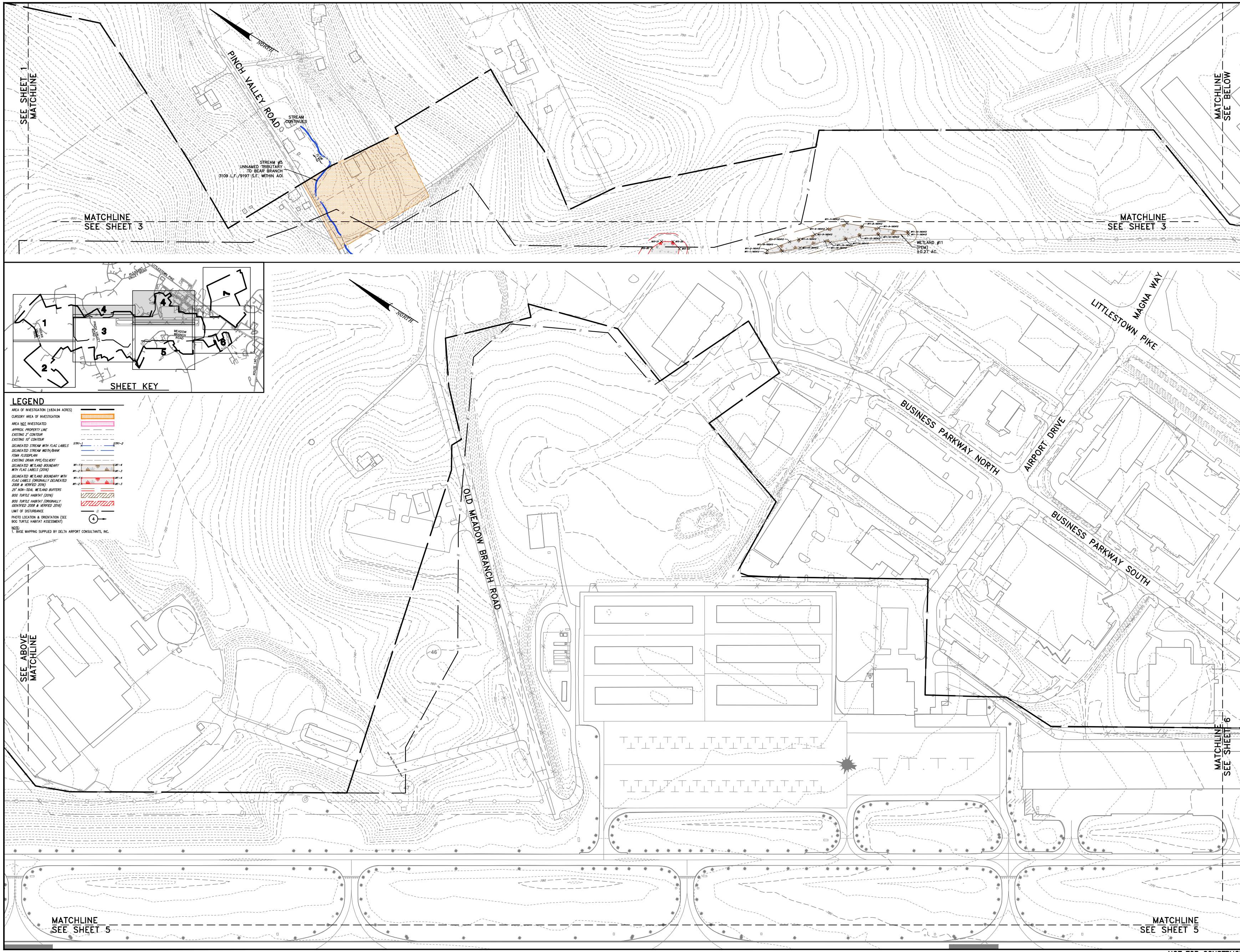
TOWN OF WESTMINSTER | CARROLL CO., MD

DATE: AUGUST 2, 2016

SHEET NO. 3 OF 7

DWG. NO. 024552011

NOT FOR CONSTRUCTION/NOT FOR BIDDING



NO.	DATE	REVISION
2	9/30/16	PER USACE FIELD REVIEW MEETING
1	9/16/16	PER CLIENT COMMENT

FOR RETTEW ASSOCIATES BY:

FOR RETTEW ASSOCIATES BY:

MANAGER: MARK METZLER
DESIGN BY: | CHKD BY:
SURV. CHIEF: OTHERS | FIELDBOOK NO. DATA COLLECTOR
DRAWN BY: JME | CHKD BY: JTH

XREFS:
-NS-TOPO
1306-DMW-Airport-Layout-STRIPPED
-NS-BASE
-NS-DLNT
-NS-KMAP
13064 - LOD

DRAWING REFERENCE:
C:_RettewVault\WIP\024552011-CarrollCoAirport\Sheets\NS\BogTurtle\024552011-BTHB-PLAN.dwg

CLIENT
DELTA AIRPORT CONSULTANTS, INC.
9711 FARAR COURT, SUITE 100
RICHMOND, VA 23236

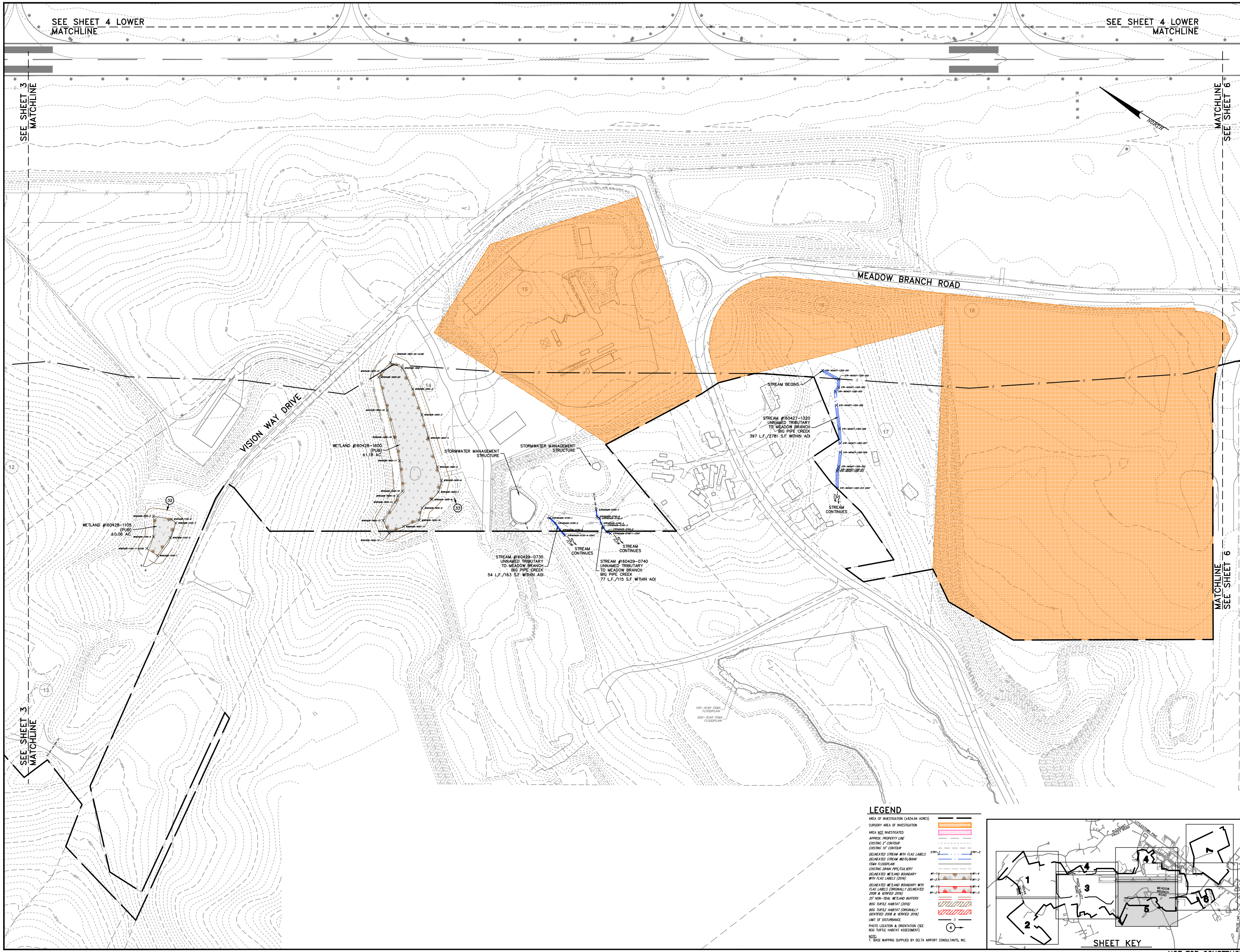
SCALE 1"=100'
0 50' 100' 200' 300'

RETTEW
RETTEW Associates, Inc.
3020 Columbia Avenue, Lancaster, PA 17603
Phone (717) 394-3721 • Fax (717) 394-1063
Email: rettew@rettew.com
Website: www.rettew.com
Engineers • Planners • Surveyors • Landscape Architects
Environmental Consultants

PHASE 1 BOG TURTLE ASSESSMENT SITE PLAN
FOR
CARROLL COUNTY REGIONAL AIRPORT
TOWN OF WESTMINSTER CARROLL CO., MD

DATE: AUGUST 2, 2016
SHEET NO. 4 OF 7
DWG. NO. 024552011

NOT FOR CONSTRUCTION/NOT FOR BIDDING



NO.	DATE	REVISION
2	9/30/16	PER USACE FIELD REVIEW MEETING
1	9/16/16	PER CLIENT COMMENT

FOR RETTEW ASSOCIATES BY:

FOR RETTEW ASSOCIATES BY:

MANAGER: MARK METZLER
DESIGN BY:
CHKD BY:
SURV. CHIEF: OTHERS
FIELDBOOK NO. DATA COLLECTOR
DRAWN BY: JME
CHKD BY: JTH
XREFS: -NS-TOPO 13064-DMW-Airport-Layout-STRIPPED -NS-BASE -NS-DLNT -NS-KMAP 13064 - LOD
DRAWING REFERENCE: C:_RettewVault\WIP\024552011-CarrollCoAirport\Sheets\NS\BogTurtle\024552011-BTHB-PLAN.dwg

CLIENT
DELTA AIRPORT CONSULTANTS, INC.
9711 FARAR COURT, SUITE 100
RICHMOND, VA 23236

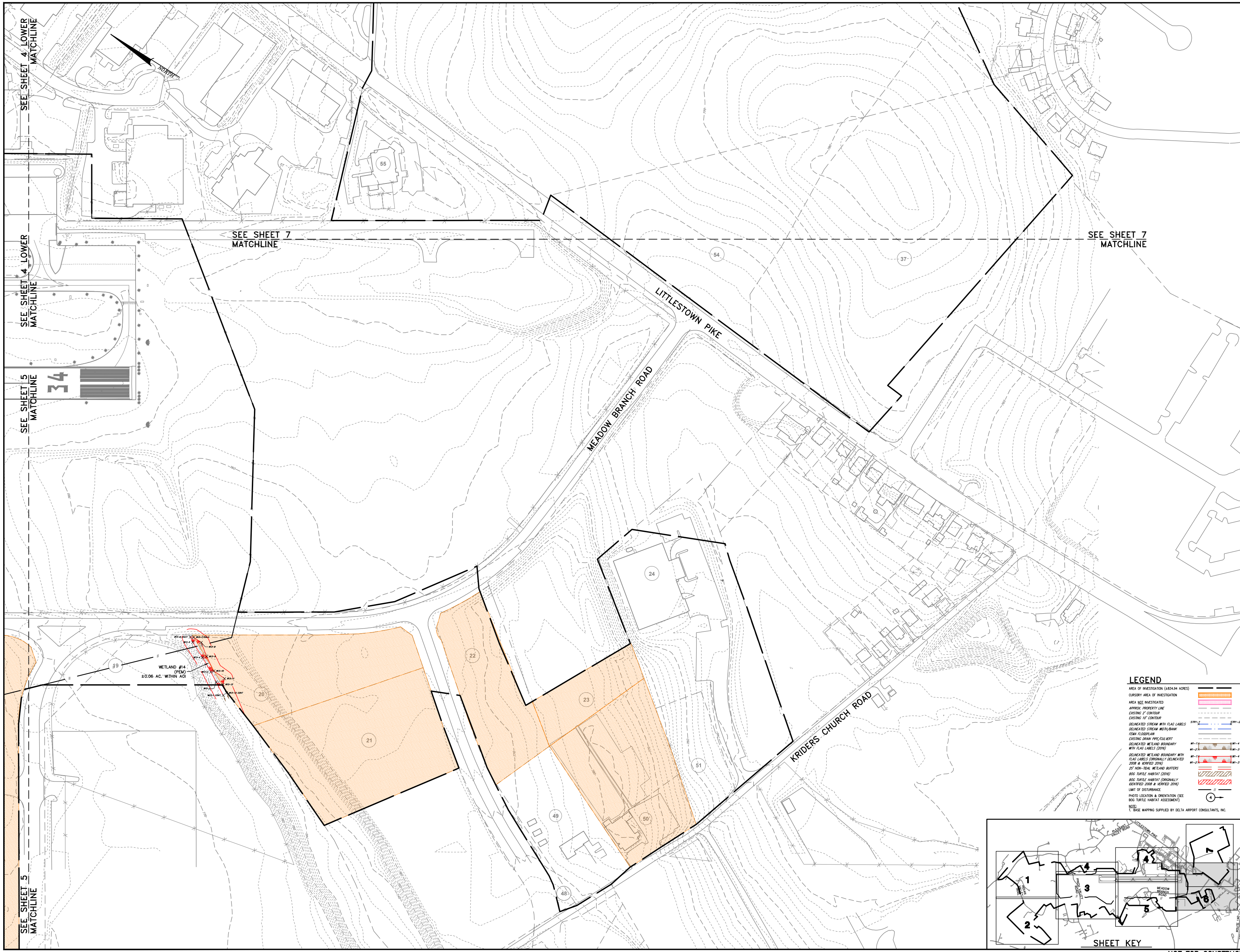
SCALE 1"=100'
0 50' 100' 200' 300'

RETTEW
RETTEW Associates, Inc.
3020 Columbia Avenue, Lancaster, PA 17603
Phone (717) 394-3721 • Fax (717) 394-1063
Email: rettew@rettew.com
Website: www.rettew.com
Engineers • Planners • Surveyors • Landscape Architects Environmental Consultants

PHASE 1 BOG TURTLE ASSESSMENT SITE PLAN
FOR
CARROLL COUNTY REGIONAL AIRPORT
TOWN OF WESTMINSTER CARROLL CO., MD

DATE: AUGUST 2, 2016
SHEET NO. 5 OF 7
DWG. NO. 024552011

NOT FOR CONSTRUCTION/NOT FOR BIDDING



NO.	DATE	REVISION
2	9/30/16	PER USACE FIELD REVIEW MEETING
1	9/16/16	PER CLIENT COMMENT

FOR RETTEW ASSOCIATES BY: FOR RETTEW ASSOCIATES BY:

XREFS: -NS-TOPO 13064-DMW-Airport-Layout-STRIPPED -NS-BASE -NS-DLNT -NS-KMAP 13064 - LOD

MANAGER: MARK METZLER
DESIGN BY: | CHKD BY:
SURV. CHIEF: OTHERS | FIELDBOOK NO. DATA COLLECTOR
DRAWN BY: JME | CHKD BY: JTH

DRAWING REFERENCE: C:_RettewVaultWP\024552011-CarrollCoAirport\Sheets\NS\BogTurtle\024552011-BTHB-PLAN.dwg

CLIENT
DELTA AIRPORT CONSULTANTS, INC.
9711 FARAR COURT, SUITE 100
RICHMOND, VA 23236

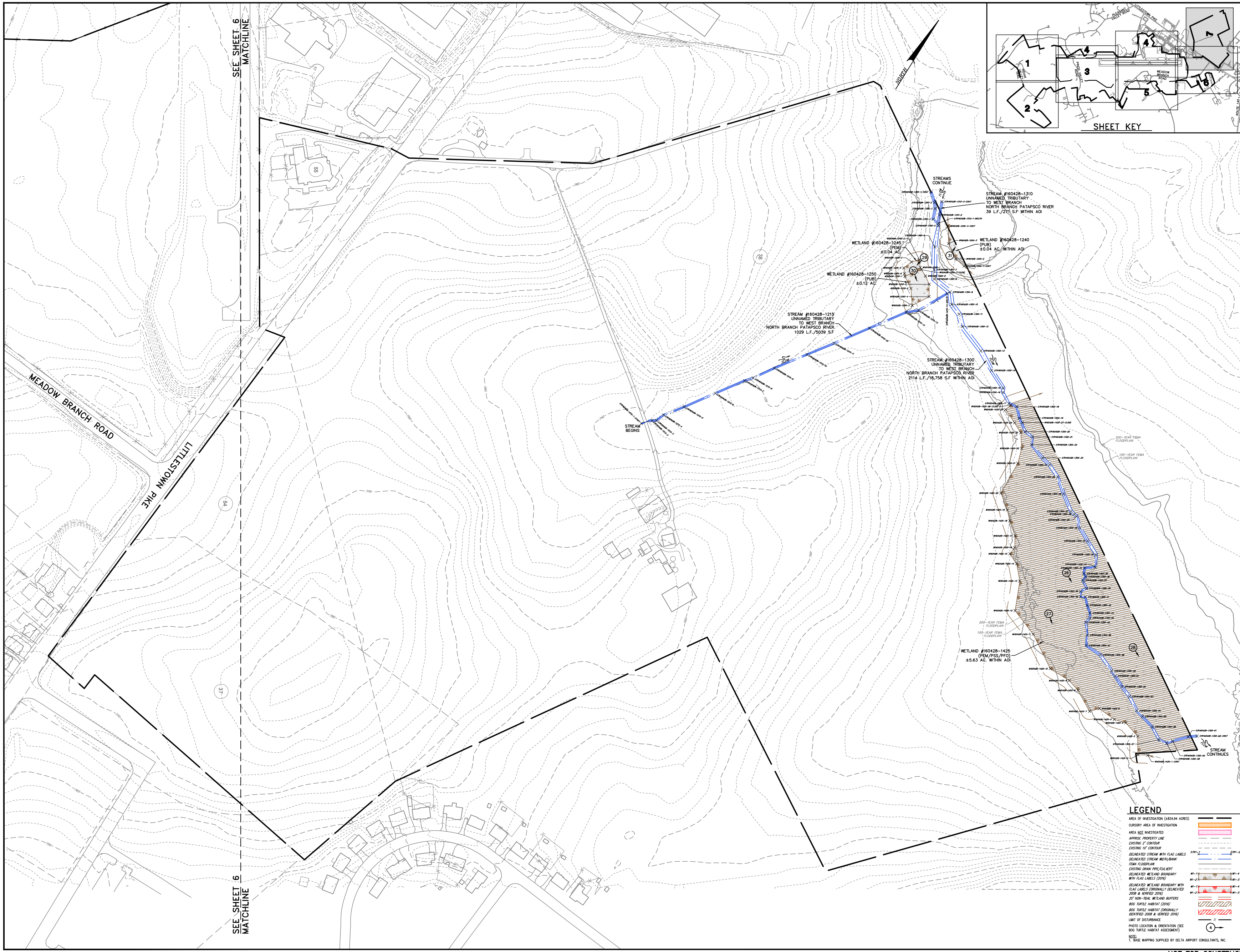
SCALE 1"=100' (0, 50', 100', 200', 300')

RETTEW
RETTEW Associates, Inc.
3020 Columbia Avenue, Lancaster, PA 17603
Phone (717) 394-3721 • Fax (717) 394-1063
Email: rettew@rettew.com
Website: www.rettew.com
Engineers • Planners • Surveyors • Landscape Architects
Environmental Consultants

PHASE 1 BOG TURTLE ASSESSMENT SITE PLAN
FOR
CARROLL COUNTY REGIONAL AIRPORT
TOWN OF WESTMINSTER — CARROLL CO., MD

DATE: AUGUST 2, 2016
SHEET NO. 6 OF 7
DWG. NO. 024552011

NOT FOR CONSTRUCTION/NOT FOR BIDDING



NO.	DATE	REVISION
1	9/16/16	PER CLIENT COMMENT
2	9/30/16	PER USACE FIELD REVIEW MEETING

FOR RETTEW ASSOCIATES BY:

FOR RETTEW ASSOCIATES BY:

MANAGER: MARK METZLER

DESIGN BY:

CHKD BY:

SURV. CHIEF: OTHERS

FIELDBOOK NO. DATA COLLECTOR

DRAWN BY: JME

CHKD BY: JTH

XREFS: -NS-TOPO 13064-DMW-Airport-Layout-STRIPPED -NS-BASE -NS-DLNT -NS-KMAP 13064 - LOD

DRAWING REFERENCE: C:_RettewVault\WIP\024552011-CarrollCoAirport\Sheets\NS\BogTurtle\024552011-BTHB-PLAN.dwg

CLIENT

DELTA AIRPORT CONSULTANTS, INC.
9711 FARAR COURT, SUITE 100
RICHMOND, VA 23236

SCALE 1"=100'
0 50' 100' 200' 300'

RETTEW
RETTEW Associates, Inc.
3020 Columbia Avenue, Lancaster, PA 17603
Phone (717) 394-3721 • Fax (717) 394-1063
Email: rettew@rettew.com
Website: www.rettew.com
Engineers • Planners • Surveyors • Landscape Architects
Environmental Consultants

PHASE 1 BOG TURTLE ASSESSMENT SITE PLAN
FOR
CARROLL COUNTY REGIONAL AIRPORT

TOWN OF WESTMINSTER — CARROLL CO., MD

DATE: AUGUST 2, 2016

SHEET NO. 7 OF 7

DWG. NO. 024552011

NOT FOR CONSTRUCTION/NOT FOR BIDDING

APPENDIX F

2009 PHASE II/III BOG TURTLE REPORT

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
John R. Griffin, Secretary
Eric Schwaab, Deputy Secretary

January 30, 2009

Jeremy Hite
RETTEW Associates, Inc.
3020 Columbia Ave.
Lancaster, PA 17603

RE: Phase II/III Bog Turtle Habitat Assessment for Carroll County Regional Airport Site
RETTEW Project No. 08-02455-002

Dear Mr. Hite:

I have reviewed the report prepared by you for the above named project. Your Phase II and Phase III surveys were conducted within the protocols we had in place at that time. Note that for future projects we will be following the "20:20" rule for Phase III surveys; that is a minimum 20 traps/acre for 20 consecutive days. While your 2008 trapping does not meet the 20:20 rule for consecutive days (you did 15) you exceeded the minimum for traps (90 traps for 2.97 wetland acres). However, you were following the draft guidelines I had given you at that time, so I accept your results, which was no bog turtles captured and no sign (tracks, etc.) to indicate that any had been missed.

If you have any questions or comments please contact me at our Wye Mills field office (410-827-8612 x103).

Sincerely,

Scott Smith, Ecologist
DNR-Wildlife & Heritage Service

Cc: L. Byrne, DNR
D. Brinker, DNR
A. Moser, USFWS

ER# 2008.1190.CA

Phase II/III- Bog Turtle Report
For
Carroll County Regional Airport Site
Carroll County, Maryland
January 2009

RETTEW Project No. 08-02455-002

Prepared for:

Delta Airport Consultants, Inc.
ATTN: Colleen Angstadt
8008 Corporate Center Drive, Suite 330
Charlotte, NC 28226

Prepared by:

RETTEW Associates, Inc.
Environmental Sciences Group
3020 Columbia Avenue
Lancaster, PA 17603
(717) 394-3721
(717) 394-1063 fax

Prepared by:

Prepared by: Jeremy T. Hite
Jeremy T. Hite, Biologist

Reviewed by:
Timothy A. Falkenstein, Group Manager

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

RETTEW Associates, Inc. (RETTEW) has conducted a bog turtle (*Glyptemys muhlenbergii)* presence/absence (Phase II/III) survey for Delta Airport Consultants, Inc. at the Carroll County Regional Airport Site in the Town of Westminster, Carroll County, Maryland. This survey targeted wetlands on site that had potential bog turtle habitat. The Designated Search Area (DSA) for each wetland was surveyed 4 times between April 15 and June 15, 2008. Trapping of the on site wetlands were done between May 15 and May 30, 2008. The following report documents the search effort, wetland descriptions, weather conditions and survey dates.

2.0 PROPOSED PROJECT DESCRIPTION

The proposed project involves the expansions of the Carroll County Regional Airport and may include runway extensions, new hangers, commercial and industrial buildings, and supporting infrastructure.

3.0 SITE DESCRIPTION

The Carroll County Regional Airport Site is located in the Town of Westminster, Carroll County, Maryland and appears on the New Windsor and Westminster, Maryland U.S. Geological Survey (USGS) 7.5-minute quadrangles (Latitude N 39° 36' 51.57" and Longitude W 77° 0' 41.68") (Appendix A). The area of investigation includes a portion of the airport property and several adjacent parcels totaling approximately 741.98 acres. The entire property is transected and border by several roads and is also bounded by commercial and private properties. The site is dominated by a mixture of vegetative communities, which include mowed lawns, agricultural fields, mature woods, successional woods, and wetlands. There are several small streams that are tributaries to Bear Branch of Big Pipe Creek. There are numerous palustrine emergent/scrub-shrub/forested wetlands within the Carroll County Regional Airport Site. These are all non-tidal resources.

4.0 AGENCY COORDINATION

A Phase I Bog Turtle Habitat Assessment Survey Report was sent to the Maryland Department of Natural Resources (MDDNR) and United States Fish and Wildlife Service (USFWS) on August 12, 2008 for their review and comment. A site visit of the wetlands on the Carroll County Regional Airport Site was conducted on January 14, 2009 with Scott Smith of MDDNR. From this site visit a letter was received on January 16, 2009 from the MDDNR recommending a Phase II and Phase III bog turtle survey to be conducted at Wetland #9 to determine the presence or absence of bog turtles (Appendix B).

4.0 METHODS

The Phase II bog turtle surveys were completed in accordance with the United States Fish and Wildlife Service (USFWS) "Guidelines for Bog Turtle Surveys" (Revised April 2006). Surveys were conducted on the following dates: April 16, May 7, May 14, May 30 and June 6, 2008 when the weather (ambient air temperature) was a minimum of 55°F. Phase II surveys were performed by Jeremy Hite (Qualified Bog Turtle Surveyor) with a 2-3 person survey crew.

The DSA was determined by the areas in the wetland that had suitable hydrology and soils during the 2008 bog turtle season. The DSA was calculated to be 2.97 acres. The search effort was 4.3-5.4 person hours/acre/visit. Total search time was 56.75 person hours.

Visual encounter techniques were done by walking quietly through the wetland searching for turtles basking, foraging, and in locomotion. If no turtles were found in the first sweep, a more intense search was done. Probing of mud, holes, and spring areas with hands and sticks was done to search for buried turtles. Lifting of dead and live vegetation was also done to find turtles in hiding. All other herpetafauna was identified and recorded.

Trapping was performed in accordance with the Maryland Department of Natural Resources-Wildlife and Heritage Services "Draft Phase 3 Survey Protocol- Maryland" (2008). Trapping took place from May 15 through May 30, 2008. Ninety "Fahey" design traps were placed strategically in travel corridors, rivulets, spring heads, and between vegetation to capture turtles passing through. Traps were covered with vegetation so the central area was shaded and was placed in shallow water to avoid exposing animals to ambient temperatures. All traps were given a unique label and a GPS coordinate was taken at each trap location. Traps were set by Jeremy Hite and checked once daily by Jeremy Hite. See Appendix F for information regarding the traps' location and orientation. All catch was identified and recorded.

5.0 RESULTS AND DISCUSSION

Wetlands

RETTEW's investigation determined that 14 wetlands exist on the site. Of the 14 wetlands, only 2 containing 2.97 acres of potential bog turtle habitat, were subjected to the Phase – II/III protocols. Table 1 and 2 in Appendix C gives wetland location and a summary of the bog turtle Phase 1 survey.

Wetland #1

Wetland #1 is identified as a large palustrine emergent/scrub-shrub/forested (PEM/SS/FO) wetland complex, situated in an afforestion area on the south side of Pleasant Valley Road in the middle of the northern property line. The wetland is bounded

by a Pleasant Valley Road to the north, a driveway and successional wood line to the west and successional woods on all other sides. The total acreage is 5.052. A sphagnum-like bog is located in the southeastern portion of the wetland and had mucky soils greater than 12 inches in depth. What appears to be an old pond was located in the southwestern part of the wetland. The ponds berm was breached and it was filled with sediment that had a mucky substrate greater than 12 inches in depth. The dominant wetland vegetation was *Typha latifolia* (broadleaf cattail), *Acorus calamus* (sweet flag), *Juncus effusus* (common rush), *Carex* sp. (sedge), *Solidago* sp. (goldenrod), *Acer rubrum* (red maple), *Fraxinus pennsylvanica* (green ash) and *Platanus occidentalis* (American sycamore), *Rosa multiflora* (multiflora rose) and *Scirpus cyperinus* (woolgrass). The hydrology of the wetland is derived for springs, seeps, overland drainage and 2 unnamed tributaries to Bear Branch of Big Pipe Creek. There was a spring house located on the southeast portion of the wetland. **Wetland #1 contained 1.59 acres of potential bog turtle habitat.**

Wetland # 2

Wetland #2 is identified as a small PEM wetland associated with an unnamed tributary to Bear Branch of Big Pipe Creek located near the northeast portion of the site. The total acreage of the wetland is 0.049. The dominant vegetation was *Carex* sp., *Typha latifolia* and *Solidago* sp. The hydrology of the wetland is derived from a small seep and from overland drainage. The soils were mostly dry and lacked a mucky substrate that could be probed to a depth of 3 inches. Wetland #2 did not meet the criteria for bog turtle habitat.

Wetland #3

Wetland #3 is identified as a small PEM/SS wetland associated with an unnamed tributary to Bear Branch of Big Pipe Creek and is bounded by agricultural fields. The total acreage of the wetland is 0.217. The dominant wetland vegetation was *Juncus effusus* (common rush), *Impatiens capensis* (jewelweed) and *Rosa multiflora* (multiflora rose). The hydrology of the wetland is derived from the unnamed tributary and seasonal seeps. The soils of the wetland were saturated, but lacked a mucky substrate that could be probed to a depth of 3 inches. Wetland #3 did not meet the criteria for bog turtle habitat

Wetland #4

Wetland #4 is identified as a palustrine emergent/scrub-shrub/forested (PEM/SS/FO) located near the northeast portion of the site and includes the headwaters of an unnamed tributary to the Bear Branch of Big Pipe Creek. The wetland is bounded by an agricultural field and contains 1.749 acres. The dominant wetland vegetation was *Juncus effuses*, *Impatiens capensis*, *Onoclea sensibilis* (sensitive fern), *Acer rubrum* (red maple), *Salix nigra* (black willow) and *Rosa multiflora*. The hydrology of the wetland is derived from the headwaters of the tributary and overland drainage. The soils were hard and lacked a mucky substrate. Wetland #4 was not potential bog turtle habitat.

Wetland #5

Wetland #5 is identified as a fringed PEM/SS/FO wetland associated with an unnamed tributary to Bear Branch of Big Pipe Creek near the northeast portion of the site. The wetland is bounded by woods and agricultural fields on all sides and has a total acreage of 0.452. The hydrology of the wetland is derived from the tributary and overland drainage. The dominant wetland vegetation was *Impatiens capensis*, *Acer rubrum*, *Salix nigra*, *Rosa multiflora* and *Sambucus canadensis* (common elderberry). The soils were hard and lacked a mucky substrate. Wetland # 5 did not contain potential bog turtle habitat.

Wetland #6

Wetland #6 is identified as a PEM/PSS wetland located north of Old Meadow Branch Road and has a total acreage of 0.293. The wetland is bounded by Old Meadow Branch Road to the south, successional woods to the west, and agricultural fields to the north and east. The dominant wetland vegetation was *Juncus effusus*, *Carex* sp., *Impatiens capensis*, *Rosa multiflora* and *Solidago* sp. The hydrology of the wetland is derived from a spring house, seeps and overland drainage. The wetland also includes the headwaters of an unnamed tributary to Bear Branch of Big Pipe Creek. The soils were mostly hard except for a small pocket (10' by 15') of mucky soils that could be probed to a depth of 3 inches. Due to the lack of mucky soils, Wetland #6 was not considered bog turtle habitat.

Wetland #7

Wetland #7 is identified as a PEM/SS/FO wetland located in an afforestion area near the center of the site, northwest of the runway and has a total acreage of 0.874. The wetland is bounded by a mowed grass area to the west, agricultural fields to the north, and successional woods to the east and south. The dominate vegetation was *Juncus effuses*, *Typha latifolia*, *Leersia oryzoides* (rice cutgrass), *Rosa multiflora* and *Platanus occidentalis*. The hydrology of the wetland is derived from an unnamed tributary to Bear Branch of Big Pipe Creek and overland drainage. The tributary empties into to the wetland from a culvert underneath the runway. The soils lacked a mucky substrate and were mostly dry. Wetland #7 was not potential bog turtle habitat.

Wetland #8

Wetland #8 is identified as a PEM/SS/FO wetland located on the northern and southern side of Pinch Valley Road, near the intersection of Pleasant Valley Road. The total acreage of the wetland is 0.883 acres. The wetland is bounded by a mown lawn to the west, a meadow to the east, and woods to the north and south. The dominant wetland vegetation was *Carex* sp., *Juncus effusus*, *Leersia oryzoides*, *Salix nigra*, *Juglans nigra* (black walnut), *Poa* sp. (bluegrass) and *Acer rubrum*. The hydrology of the wetland is derived from seasonal seeps, overland drainage and an unnamed tributary to Bear Branch of Big Pipe Creek. The wetland soils were firm and lacked a mucky substrate. Wetland #8 was not potential bog turtle habitat.

Wetland #9

Wetland #9 is identified as large PEM/SS/FO wetland complex located on the northern and southern sides of Pinch Valley Road. The wetland is 4.283 acres in size and is bounded by successional woods, forest, and agricultural fields. The dominant wetland vegetation was *Carex stricta* (tussock sedge), *Carex* sp., *Juncus effusus*, *Symplocarpus foetidus* (skunk cabbage), *Typha latifolia*, *Leersia oryzoides*, *Microstegium vimineum* (Nepalese browntop), *Rosa multiflora*, *Rosa palustris* (swamp rose), *Acer rubrum*, *Liriodendron tulipifera* (tuliptree), *Solidago* sp., *Quercus rubra* (northern red oak) and *Quercus palustris* (pin oak). The hydrology of the wetland is derived from two unnamed tributaries of Bear Branch of Big Pipe Creek, springs, seeps, and overland drainage of nearby uplands. The soils could be probe to a depth of 3-5 inches. **Wetland #9 contained approximately 1.38 acres of potential bog turtle habitat.**

Wetland #10

Wetland #10 is identified as a PEM/SS/FO wetland associated with an unnamed tributary to Bear Branch of Big Pipe Creek located near the north-central portion of site. The wetland is bounded by successional woods and forest on all sides and totals 0.342 acres in size. The dominant vegetation was *Scirpus* sp. (bulrush), *Onoclea sensibilis*, *Alnus* sp. (alder), *Leersia oryzoides*, *Acer rubrum*, *Rosa multiflora*, *Liriodendron tulipifera*, *Symplocarpus foetidus*, *Rubus allegheniensis* (Allegheny blackberry) and *Quercus* sp. The hydrology of the wetland is derived from the headwaters of the stream and overland drainage. There was a small pocket (10'by 10') of mucky soils that could be probe to a depth of 3 inches near the headwaters of the tributary. Due to small amount of mucky soils, Wetland #10 was not considered potential bog turtle habitat.

Wetland #11

Wetland #11 is identified as a PEM wetland located near the northeastern end of the runway and has a total acreage of 0.874. The wetland is located in a low lying area and is bounded by a mowed field. The dominant wetland vegetation was *Typha latifolia*, *Leersia oryzoides*, *Carex* sp., *Juncus effuses*, and *Poa* sp. The hydrology of the wetland is from overland drainage and was mostly dry. The soils were hard and lacked a mucky substrate. Wetland #11 did not meet the criteria for potential bog turtle habitat.

Wetland #12

Wetland #12 is identified as a small PEM/FO wetland located on the southern side of Pinch Valley Road and has a total acreage of 0.105. The wetland is bounded by Pinch Valley Road to the north and agricultural fields on all others sides. The dominant wetland vegetation was *Symplocarpus foetidus, Impatiens capensis, Lonicera japonica* (Japanese honeysuckle), *Solidago* sp., *Poa* sp., *Acer rubrum,* and *Rosa multiflora*. The hydrology of the wetland is derived from overland drainage and an unnamed tributary to Bear Branch

of Big Pipe Creek. The soils lacked a mucky substrate that could be probed to a depth of 3 inches. Wetland #12 was not potential bog turtle habitat.

Wetland #13

Wetland #13 is identified as a fringed PFO wetland, bounded by steep wooded slopes and has a total acreage of 0.301. The dominant wetland vegetation was *Symplocarpus foetidus*, *Impatiens capensis*, *Acer rubrum*, *Quercus* sp., *Carya tomentosa* (mockernut hickory), *Liriodendron tulipifera* and *Lindera benzoin* (northern spicebush). The hydrology of the wetland is derived from seeps at the tow of slope and an unnamed tributary to Bear Branch of Big Pipe Creek. The soils were rocky and lacked a mucky substrate. Wetland #13 did contain potential bog turtle habitat.

Wetland #14

Wetland #14 is identified as a PEM wetland located in a swale on the southern side of Meadow Branch Road and continues southwest offsite. The total acreage of the wetland is 0.055. The dominant wetland vegetation was *Typha latifolia, Carex* sp., *Juncus effuses, Solidago* sp. and *Poa* sp. The hydrology of the wetland is derived from stormwater runoff of Old Meadow Branch Road and overland drainage. The soils were hard and rocky. Wetland #14 did not contain potential bog turtle habitat.

6.0 SUMMARY/CONCLUSIONS

RETTEW identified 2.97 acres of potential bog turtle habitat on the Carroll County Regional Airport Site. The potential bog turtle habitat was located in Wetlands #1 and 9. Turtle searches were focused on the DSA area, quick and opportunistic searches of other wetlands on site were also performed. Trapping was done in Wetlands #1 and 9.

After 4 surveys of each wetland of 56.75 person hours (4.3-5.4 person hours/acre/visits) and trapping of 15 consecutive days, no bog turtles or signs of bog turtles were observed. In conclusion, the site did not contain the presence of bog turtles. Table 3 and 4 summarizes dates, search effort, surveyors, and weather.

The following herpetafauna was observed during surveys: snapping turtle (*Chelydra serpentine*), pickerel frog (*Rana palustris*), green frog (*Rana clamitans melanota*), eastern garter snake (*Thamnohpis sirtalis*), northern water snake (*Nerodia sipedon*), Queen snake (*Regina septemvittata*), American toad (*Bufo americanus*), northern red salamander (*Pseudotriton ruber*) and northern two-lined salamander (*Eurycea bislineata*). Table 5 list the animals captured and their frequency of captured during the 15 day trapping period at the Carroll County Regional Airport Site. Data sheets of trap locations and catch data for each trap are located in Appendix F.

Table 3: Summary of search efforts and weather for a Phase II survey Wetland #1 at the Carroll County Regional Airport Site

Survey Date	Time	Search Effort in Hours	Total Person hours	Surveyors	Weather In	Weather Out	Bog Turtle Found
5/7/08	9:00am-11:30pm	2.5	7.5	Jeremy Hite Jon Kasitz Bryan Kondikoff	63°F Sunny	69°F Sunny	No
5/14/08	1:00pm-3.30pm	2.5	7.5	Jeremy Hite Jon Kasitz Bryan Kondikoff	70° P. Cloudy	70°F P. Cloudy	No
5/30/08	10:00am-12:30pm	2.5	7.5	Jeremy Hite Jon Kasitz Bryan Kondikoff	69°F Sunny	74°F Sunny	No
6/6/08	8am-11:30pm	3.5	7	Jeremy Hite Bryan Kondikoff	68°F Sunny	76°F Sunny	No

Table 4: Summary of search efforts and weather for a Phase II survey Wetland #9 at the Carroll County Regional Airport Site

Survey Date	Time	Search Effort in Hours	Total Person hours	Surveyors	Weather In	Weather Out	Bog Turtle Found
4/23/08	10:00am-1:30pm	3.5	7	Jeremy Hite Jon Kasitz	62°F P. Cloudy	70°F P. Cloudy	No
5/7/08	12:00am-2:15pm	2.25	6.75	Jeremy Hite Jon Kasitz Bryan Kondikoff	70° Sunny	74°F Sunny	No
5/14/08	9:45am-12:15pm	2.5	7.5	Jeremy Hite Jon Kasitz Bryan Kondikoff	63°F P. Cloudy	70°F P. Cloudy	No
5/30/08	7:30am-9:30am	2	6	Jeremy Hite Jon Kasitz Bryan Kondikoff	60°F Sunny	69°F Sunny	No

Table 5: List of animals trapped and their frequency of capture at the Carroll County Regional Airport Site

Capture	Number of Catches
Snapping Turtle	12
Queen Snake	1
Green Frog	12
Pickerel Frog	2
Crayfish	11
Meadow Vole	4

APPENDIX A

SITE MAPS

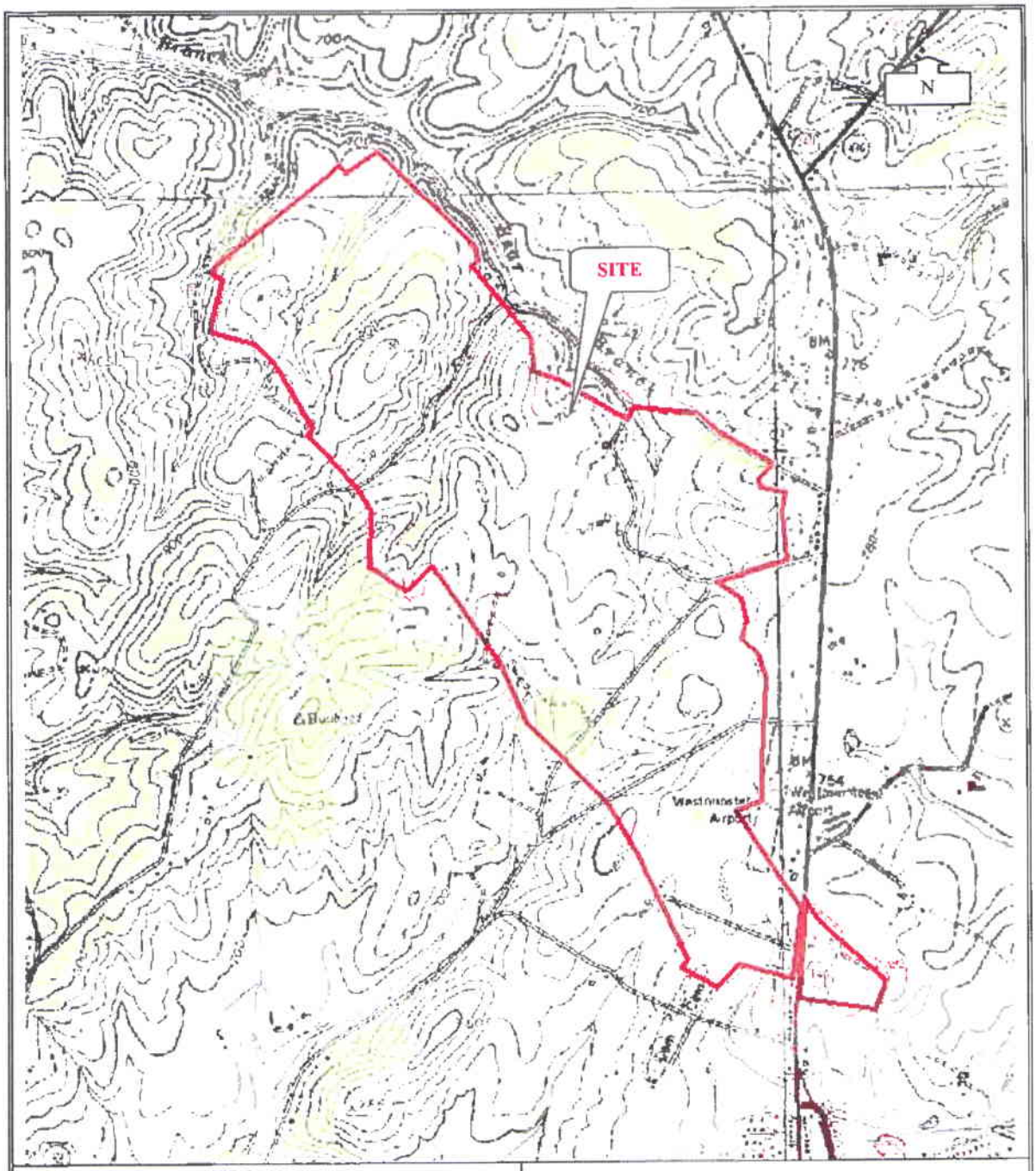


FIGURE 1
Site Location Map
Carroll County Regional Airport Site
Town of Westminster,
Carroll County, MD

New Windsor and Westminster, MD USGS
7.5-minute quadrangles
RETTEW Project No. 08-02455-002
Scale 1:24,000

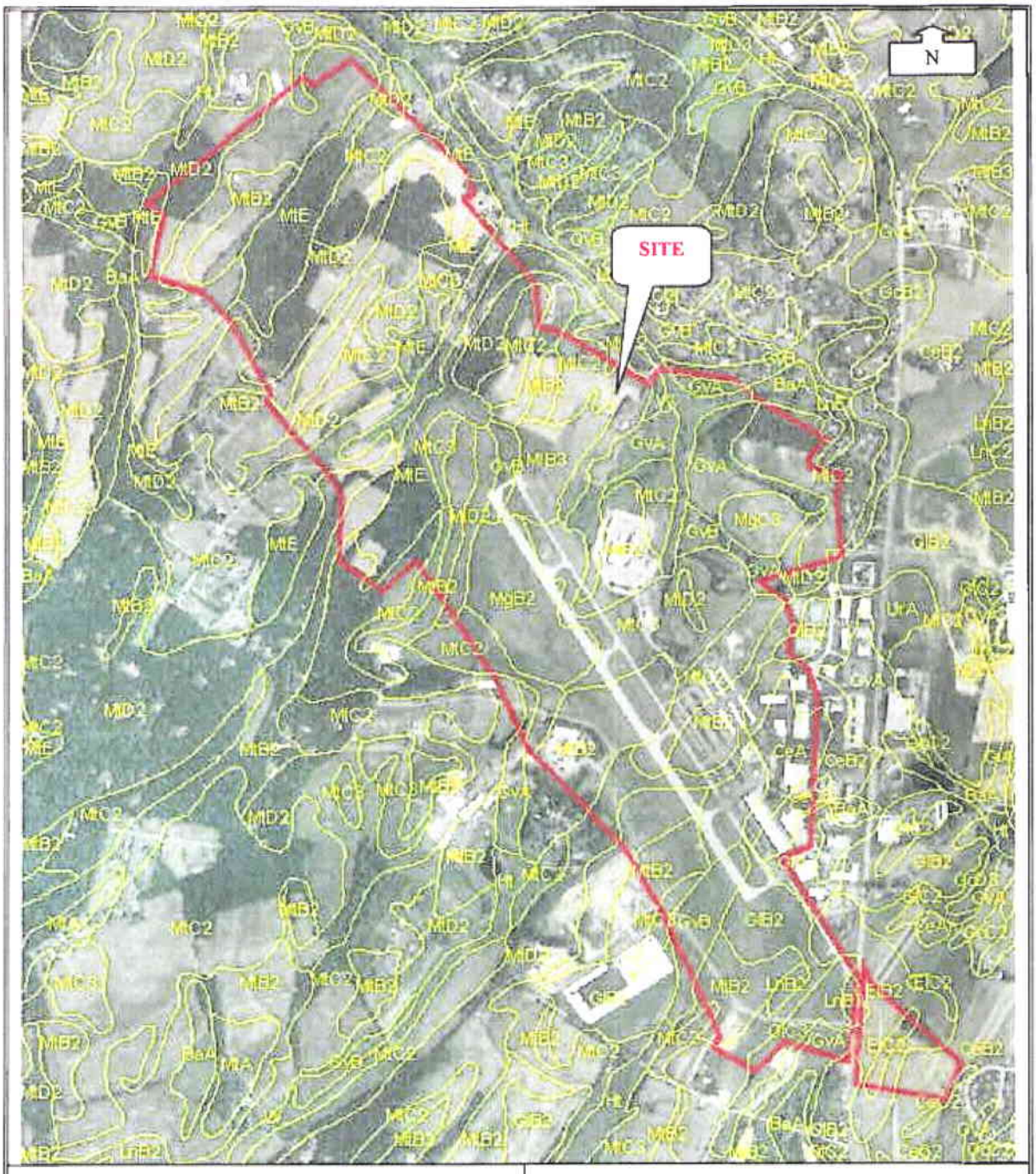


FIGURE 2 Soils Map Carroll County Regional Airport Site Town of Westminster, Carroll County, MD	**Soil Survey of Carroll County, MD** RETTEW Project No. 08-02455-002 1:19,000

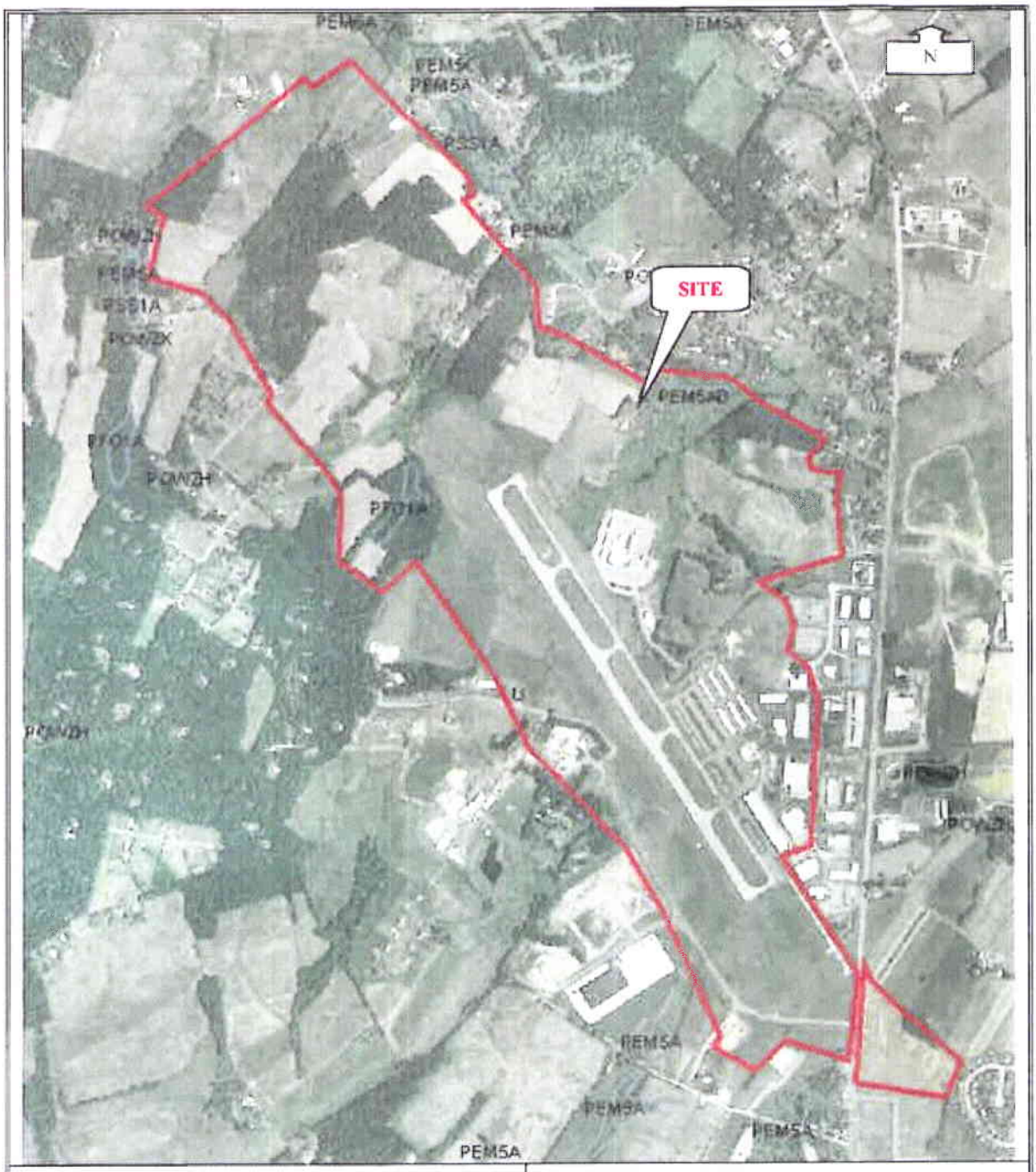


FIGURE 3
National Wetlands Inventory Map
Carroll County Regional Airport Site
Town of Westminster,
Carroll County, MD

RETTEW Project No. 08-02455-002
Scale 1:18,000

APPENDIX B

AGENCY LETTERS

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
John R. Griffin, Secretary
Eric Schwaab, Deputy Secretary

January 16, 2009

Jeremy Hite
RETTEW Associates, Inc.
3020 Columbia Ave.
Lancaster, PA 17603

RE: Phase I Bog Turtle Habitat Assessment for Carroll County Regional Airport Site
RETTEW Project No. 07-02455-002

Dear Mr. Hite:

I have reviewed the report prepared by you for the above named project and, after meeting with you in the field on January 14, 2009, offer the following comments:

1) The Feb. 4, 2002 letter from Lori Byrne of our staff to Timothy Falkenstein of your firm is in error in the following statement: "After consultation with our regional staff, it was determined that there is no suitable potential habitat for Bog Turtles on this site.". Based both on your report and on my field investigation with you, there is suitable potential bog turtle habitat within the project area, specifically Wetlands #9 and #1. According to the plans you provided and your verbal comments, Wetland # 1 is not to be impacted by the proposed runway extension activities in Alternative 4, so I have no further concerns with impacts to that area.

2) Wetland #9 was suitable bog turtle habitat and most or all of the wetland is proposed to be filled for the new runway associated with Alternative 4. I strongly recommend that Phase II and Phase III surveys be conducted at this wetland, as we need to be certain that the presence or absence of bog turtles is indisputably determined. If bog turtles are found then further consultations will be required with both MD DNR and the USFWS. If they are not then we have no further concerns with this proposed project.

If you have any questions or comments please contact me at our Wye Mills field office (410-827-8612 x103).

Sincerely,

Scott Smith, Ecologist
DNR-Wildlife & Heritage Service

Cc: L. Byrne, DNR
A. Mosser, USFWS

FRC 2008.1190.CA

APPENDIX C

WETLAND TABLES

Table 1: Wetland Size and Location for the Carroll County Regional Airport in Carroll County, MD

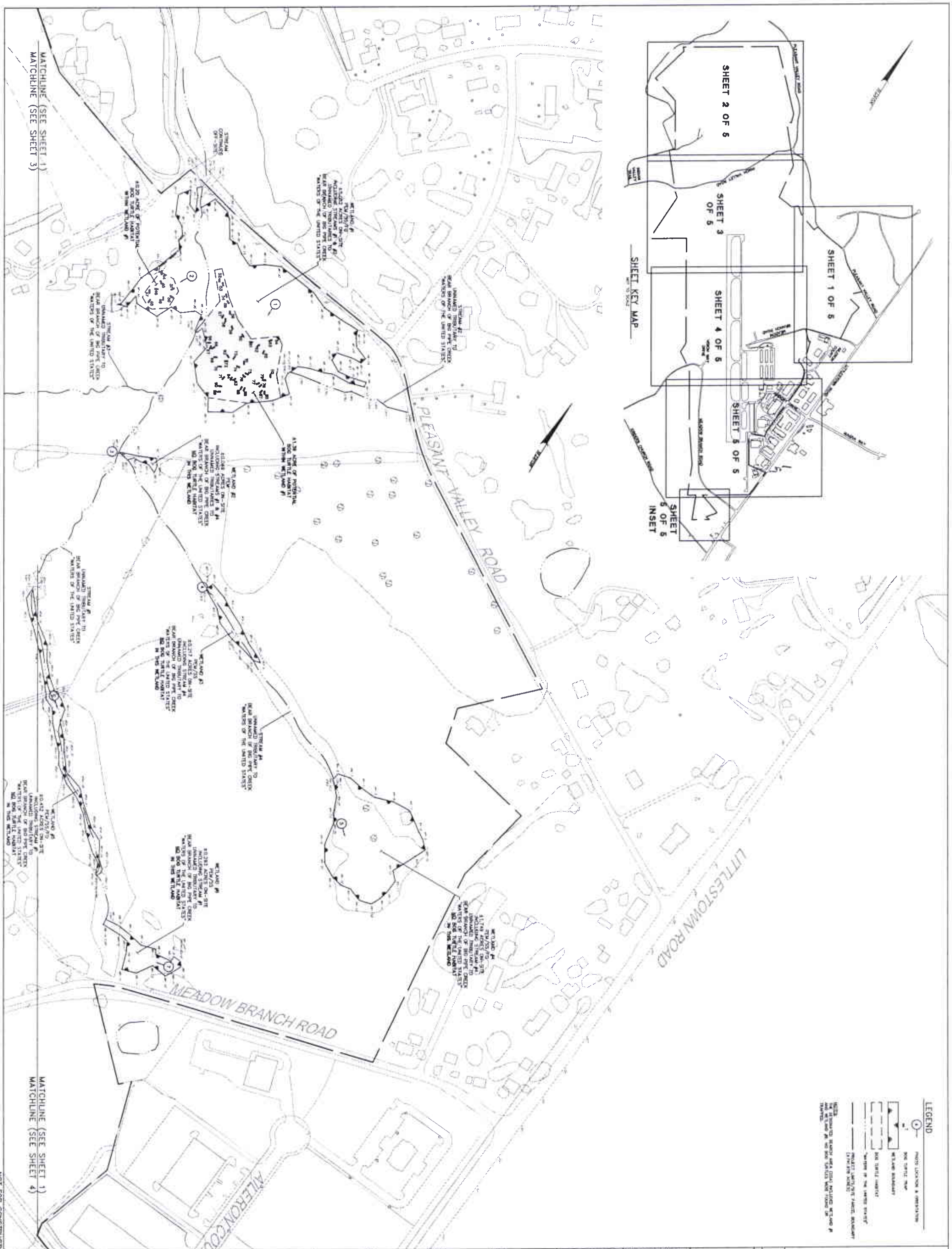
Wetland ID	Potential Bog Turtle Habitat (approximate acres)	Latitude/Longitude	Is the entire wetland on-site?
1	1.59	N 39-37-1.22 W 77-0-17.92	Yes
2	0	N 39-36-55.81 W 77-0-18.2	Yes
3	0	N 39-36-53.46 W 77-0-12.12	Yes
4	0	N 39-36-49.7 W 77-0-1.74	Yes
5	0	N 39-36-47.9 W 77-0-15.07	Yes
6	0	N 39-36-43.14 W 77-0-8.24	Yes
7	0	N 39-36-51.85 W 77-0-28.11	Yes
8	0	N 39-37-16.3 W 77-0-42.82	No
9	1.38	N 39-37-2.14 W 77-0-53.96	No
10	0	N 39-36-59.33 W 77-0-45.34	Yes
11	0	N 39-36-53.91 W 77-0-39.52	Yes
12	0	N 39-36-53.98 W 77-1-6.14	Yes
13	0	N 39-37-20.51 W 77-1-10.07	Yes
14	0	N 39-36-1.85 W 77-0-17.9	No

Table 2. Summary of Phase I Bog Turtle Survey Results for the Carroll County Regional Airport in Carroll County, MD

Wetland ID	Potential Bog Turtle Habitat (approximate acres)	Wetland Type & Amount (% or acres)	Extent of Mucky Soils (by Wetland Type)	Survey Effort (person-hours)	Bog Turtle Habitat?	Bog Turtles Found?
1	1.59	PEM - 60% PSS - 30% PFO -10%	PEM - 30% PSS - 0% PFO -0%	1	Yes	No
2	0	PEM - 100%	PEM - 0%	.5	No	No
3	0	PEM - 90% PSS - 10%	PEM - 0% PSS - 0%	.5	No	No
4	0	PEM - 15% PSS - 20% PFO - 65%	PEM -0% PSS - 0% PFO - 0%	1	No	No
5	0	PEM - 10% PSS - 20% PFO - 70%	PEM -0% PSS - 0% PFO - 0%	1	No	No
6	0	PEM - 90% PSS - 10%	PEM - 5% PSS - 0%	.75	No	No
7	0	PEM - 80% PSS - 15% PFO - 5%	PEM -0% PSS - 0% PFO - 0%	0.5	No	No
8	0	PEM - 80% PSS - 15% PFO - 5%	PEM -0% PSS - 0% PFO - 0%	.75	No	No
9	1.38	PEM - 75% PSS -5% PFO - 20%	PEM -30% PSS - 0% PFO - 5%	1	Yes	No
10	0	PEM - 20% PSS -15% PFO - 65%	PEM -5% PSS - 0% PFO - 0%	0.5	No	No
11	0	PEM - 100%	PEM - 0%	0.5	No	No
12	0	PEM - 50% PFO - 50%	PEM - 0% PFO - 0%	0.5	No	No
13	0	PFO - 100%	PFO - 0%	1.5	No	No
14	0	PEM - 100%	PEM - 0%	.5	No	No

APPENDIX D

BOG TURTLE SURVEY PLAN



NOT FOR CONSTRUCTION/NOT FOR BIDDING

PHASE II/III BOG TURTLE SURVEY PLAN

FOR

CARROLL COUNTY REGIONAL AIRPORT

TOWN OF WESTMINSTER CARROLL COUNTY, MD

DATE: JANUARY 19, 2009

SHEET NO. 1 OF 5

DWG. NO. 08-02455-002

RETTEW

CLIENT

DELTA AIRPORT CONSULTANTS, INC.
8008 CORPORATE CENTER DRIVE,
SUITE 330
CHARLOTTE, NC 28226
PHONE: (704) 521-9101

SCALE 1"=100'
0 50' 100' 200' 300'

MANAGER: DAN SYNORACKI

DESIGN BY: | CHKD BY:

SURV. CHIEF: | FIELDBOOK NO. DATA COLLECTOR

DRAWN BY: JME | CHKD BY: JTH

DRAWING REFERENCE:

FOR RETTEW ASSOCIATES BY:

FOR RETTEW ASSOCIATES BY:

NO. | DATE | REVISION

NOT FOR CONSTRUCTION/NOT FOR BIDDING

PHASE II/III BOG TURTLE SURVEY PLAN

FOR

CARROLL COUNTY REGIONAL AIRPORT

TOWN OF WESTMINSTER — CARROLL COUNTY, MD

DATE: JANUARY 19, 2009 | SHEET NO. 2 OF 5 | DWG. NO. 08-02455-002

RETTEW

RETTEW Associates, Inc.
3020 Columbia Ave., Lancaster, PA 17603
Phone (717) 394-3721 · Fax (717) 394-1063
Email: rettew@rettew.com
Website: www.rettew.com

CLIENT

DELTA AIRPORT CONSULTANTS, INC.
8008 CORPORATE CENTER DRIVE, SUITE 330
CHARLOTTE, NC 28226
PHONE: (704) 521-9101

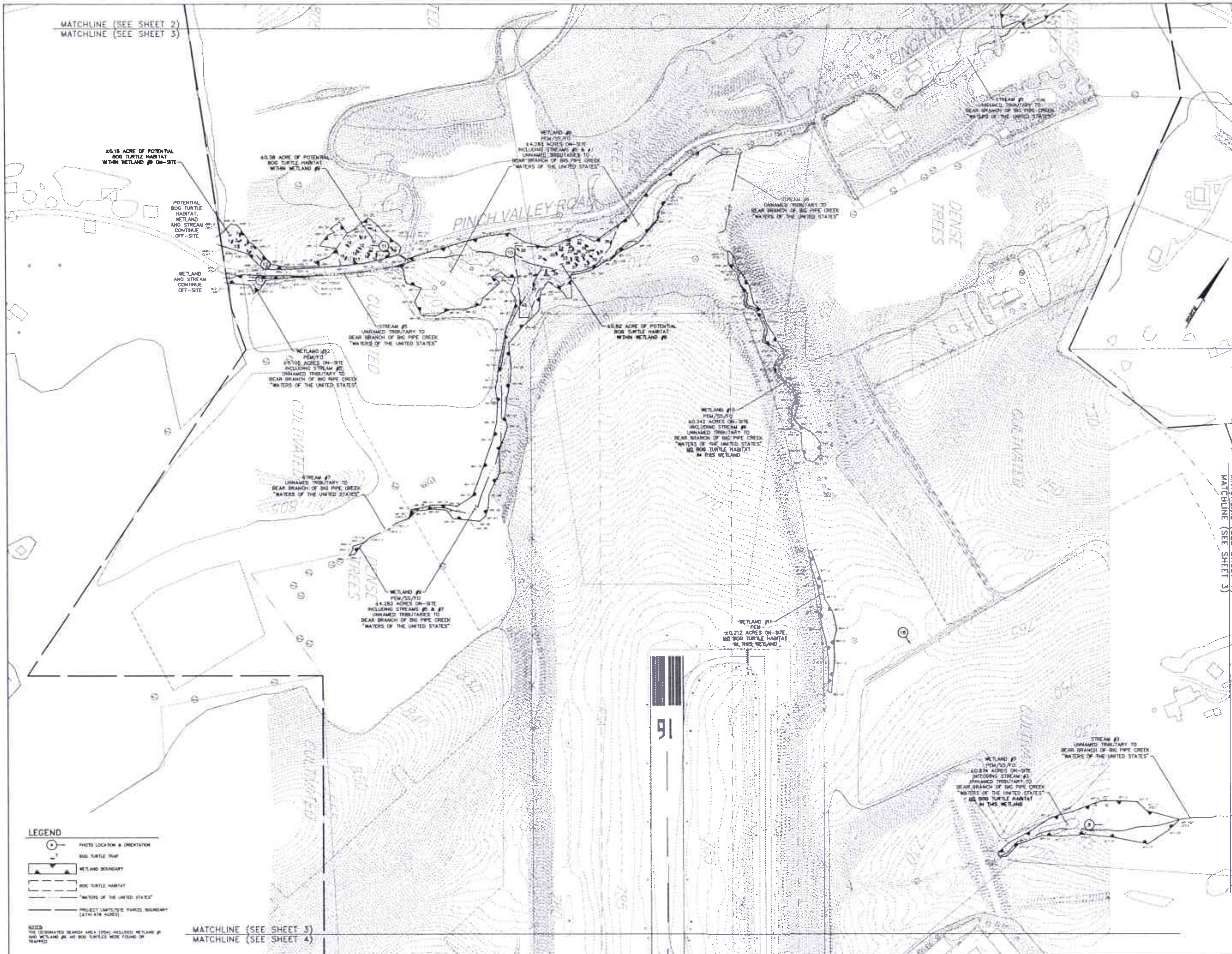
SCALE 1"=100'
0 50' 100' 200' 300'

MANAGER: DAN SYNORACKI
DESIGN BY: | CHKD BY:
SURV. CHIEF: | FIELDBOOK NO. DATA COLLECTOR
DRAWN BY: JME | CHKD BY: JTH
DRAWING REFERENCE:

FOR RETTEW ASSOCIATES BY:

FOR RETTEW ASSOCIATES BY:

NO.	DATE	REVISION



PHASE II/III BOG TURTLE SURVEY PLAN
FOR
CARROLL COUNTY REGIONAL AIRPORT

TOWN OF WESTMINSTER — CARROLL COUNTY, MD

RETTEW
RETTEW Associates, Inc.
3020 Columbia Ave., Lancaster, PA 17603

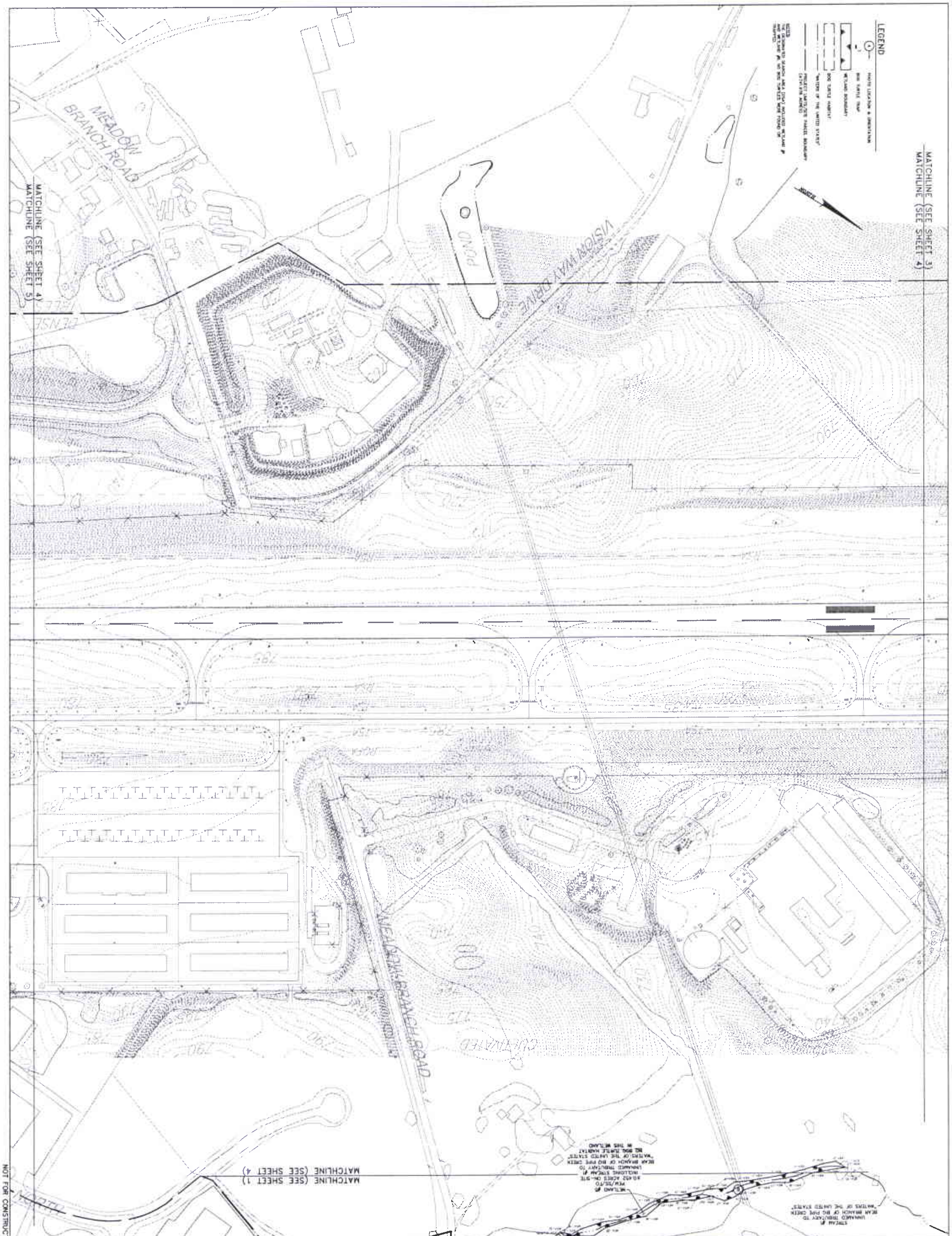
CLIENT
DELTA AIRPORT CONSULTANTS, INC.
8008 CORPORATE CENTER DRIVE,
SUITE 330
CHARLOTTE, NC 28226
PHONE: (704) 521-9101

SCALE 1"=100'
0 50' 100' 200' 300'

MANAGER: DAN SYNORACKI
DRAWN BY: JME
CHKD BY: JTH

DATE: JANUARY 19, 2009
SHEET NO. 3 OF 5
DWG. NO. 08-02455-002

NOT FOR CONSTRUCTION/NOT FOR BIDDING



NOT FOR CONSTRUCTION/NOT FOR BIDDING

PHASE II/III BOG TURTLE SURVEY PLAN FOR CARROLL COUNTY REGIONAL AIRPORT	TOWN OF WESTMINSTER	CARROLL COUNTY, MD
DATE: JANUARY 19, 2009	SHEET NO. 4 OF 5	DWG. NO. 08-02455-002

RETTEW

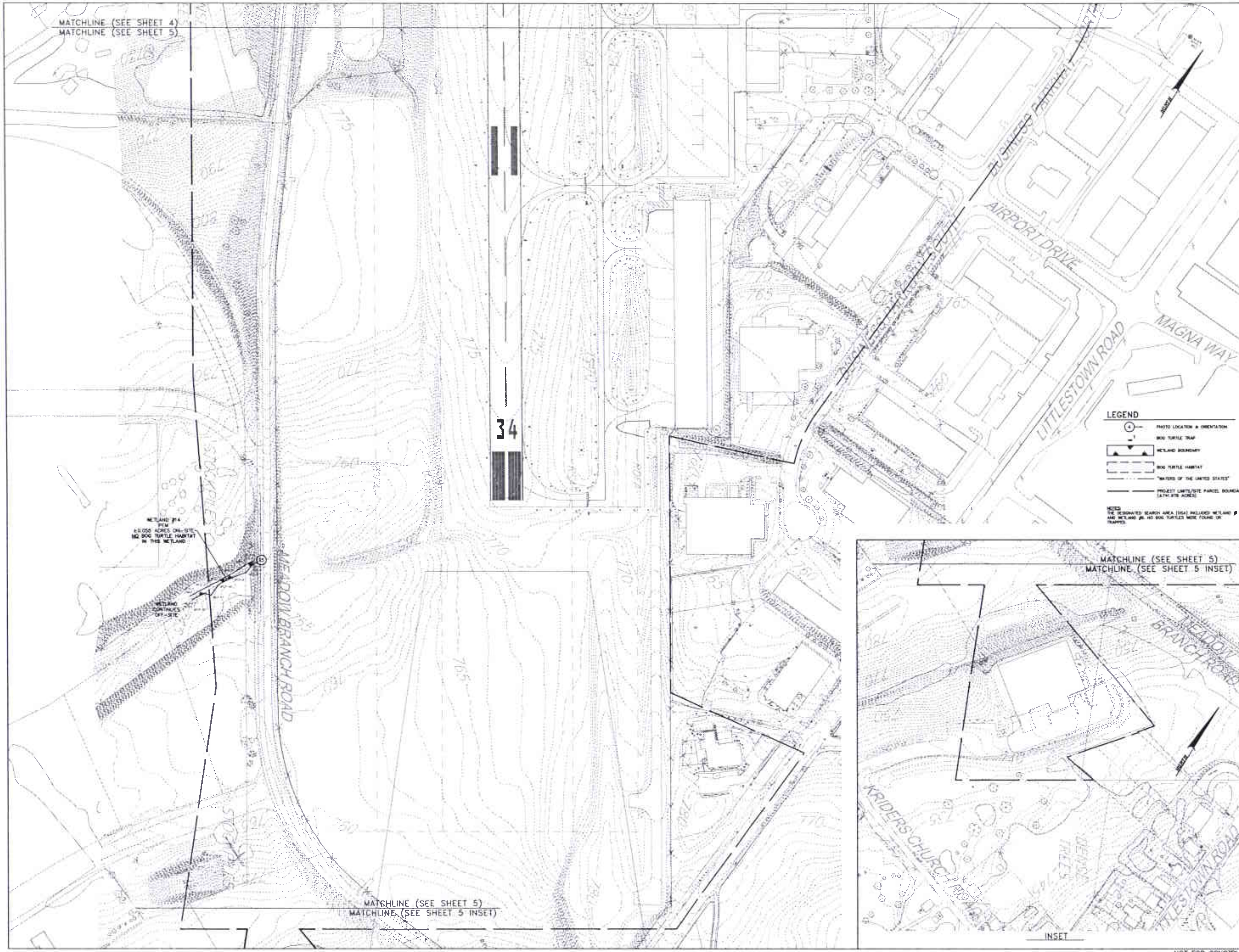
RETTEW Associates, Inc.
3020 Columbia Ave., Lancaster, PA 17603
Phone (717) 394-3721 Fax (717) 394-1063
Email: rettew@rettew.com
Website: www.rettew.com

CLIENT
DELTA AIRPORT CONSULTANTS, INC.
8008 CORPORATE CENTER DRIVE, SUITE 330
CHARLOTTE, NC 28226
PHONE: (704) 521-9101

SCALE 1"=100'
0 50' 100' 200' 300'

MANAGER: DAN SYNORACKI	
DESIGN BY:	CHKD BY:
SURV. CHIEF:	FIELDBOOK NO. DATA COLLECTOR
DRAWN BY: JMC	CHKD BY: JTH
DRAWING REFERENCE:	

NO.	DATE	REVISION



PHASE II/III BOG TURTLE SURVEY PLAN

FOR

CARROLL COUNTY REGIONAL AIRPORT

TOWN OF WESTMINSTER — CARROLL COUNTY, MD

RETTEW

RETTEW Associates, Inc.
3020 Columbia Ave., Lancaster, PA 17603
Phone (717) 394-3721 · Fax (717) 394-1063
Email: rettew@rettew.com
Website: www.rettew.com

CLIENT
DELTA AIRPORT CONSULTANTS, INC.
8008 CORPORATE CENTER DRIVE,
SUITE 330
CHARLOTTE, NC 28226
PHONE: (704) 521-9101

SCALE 1"=100'
0 50' 100' 200' 300'

MANAGER: DAN SYNORACKI
DESIGN BY: | CHKD BY:
SURV. CHIEF: | FIELDBOOK NO. DATA COLLECTOR
DRAWN BY: JME | CHKD BY: JTH
DRAWING REFERENCE:

FOR RETTEW ASSOCIATES BY: | FOR RETTEW ASSOCIATES BY:

NO. | DATE | REVISION

DATE: JANUARY 19, 2009
SHEET NO. 5 OF 5
DWG. NO. 08-02455-002

NOT FOR CONSTRUCTION/NOT FOR BIDDING

APPENDIX E

SITE PHOTOS

Photo 1- Facing west, viewing sphagnum moss portion of Wetland #1 and potential bog turtle habitat at the Carroll County Regional Airport Site.

Photo 2- Facing southwest, viewing cattail area of Wetland #1 that appears to be an old pond containing potential bog turtle habitat.

Photo 3- Facing northeast, viewing PEM Wetland #2 that was not potential bog turtle habitat at the Carroll County Regional Airport Site.

Photo 4- Facing east, viewing PEM/SS Wetland #3 that was not potential bog turtle habitat at the Carroll County Regional Airport Site.

Photo 5- Facing east, viewing PEM/SS/FO Wetland #4 that was not potential bog turtle habitat at the Carroll County Regional Airport Site.

Photo 6- Facing west, viewing fringed PEM/SS/PFO Wetland #5 that did not contain potential bog turtle habitat at the Carroll County Regional Airport Site

Photo 7- Facing northwest, viewing PEM/SS Wetland #6 that was not consider potential bog turtle habitat at the Carroll County Regional Airport.

Photo 8- Facing northeast, viewing PEM portion of Wetland #7 that was not potential bog turtle habitat.

Photo 9- Facing west, viewing PEM/SS/FO Wetland #8 that was not potential bog turtle habitat at the Carroll County Regional Airport.

Photo 10- Facing east, viewing PEM portion of Wetland #9 that contains potential bog turtle habitat at the Carroll County Regional Airport.

Photo 11- Facing west, viewing PEM Wetland #9 and potential bog turtle habitat on the northwestern side of Pinch Valley Road.

Photo 12- Facing northwest, viewing a pocket of potential bog turtle habitat at Wetland #9 at the Carroll County Regional Airport.

Photo 13- Facing west, viewing PEM/PSS/PF0 Wetland #12 that was not consider potential bog turtle habitat at the Carroll County Regional Airport Site.

Photo 14- Facing southwest, viewing a portion of fringed PFO Wetland #13 and an unnamed tributary to Bear Branch of Big Pipe Creek that was not potential bog turtle habitat.

Photo 15- Facing south. viewing a PEM Wetland #14 that was not potential bog turtle habitat at the Carroll County Regional Airport.

Photo 16- Facing southeast from the northern end of the site. viewing an agricultural field and proposed runway expansion corridor.

Photo 17- Facing south, viewing a viewing a characteristic wooded area at the Carroll County Regional Airport Site.

Photo 18- Facing southeast from the mid-northern portion of the site, viewing a characteristic agricultural field.

APPENDIX F

TRAPPING DATA SHEETS

BOG TURTLE TRAPPING DATA SHEET			wetland #9				Page # 1 of 18
Site Code: Carroll County Regional Airport		County: Carroll	Date Traps Set: 5/15/08	Mean Time Traps Set: 5 min	Date Traps Closed:	Mean Time Traps Closed:	
			Capture Data - Species, # of Individuals, Sex, Age				
Trap #	Latitude (DD) °N	Longitude (DD) °W	Date: 5/16/08	Date: 5/17/08	Date: 5/18/08	Date: 5/19/08	Date: 5/20/08
1	39.615206	-77.018747	—	—	—	—	—
2	39.615202	-77.018662	—	—	—	—	—
3	39.615244	-77.018681	—	Greenfrog	—	—	—
4	39.615269	-77.018601	—	—	—	—	—
5	39.615227	-77.01851	—	—	—	Snapping Turtle	—
6	39.615208	-77.018526	—	—	—	—	—
7	39.615287	-77.018715	—	—	—	—	—
8	39.615862	-77.017235	Greenfrog	Greenfrog	—	—	—
9	39.615824	-77.017272	—	—	—	—	—
10	39.615751	-77.017349	—	—	—	—	—
11	39.615751	-77.017425	—	—	—	—	—
12	39.615724	-77.017538	—	—	—	—	—
13	39.615806	-77.017594	—	—	—	—	—
14	39.61591	-77.017559	—	—	—	—	—
15	39.615680	-77.017667	—	—	—	—	—
16	39.61559	-77.01761	—	—	—	—	—
17	39.615	-77.017524	—	—	—	—	—
18	39.615	-77.017	—	—	—	—	—
19	39.615	-77.017	—	—	—	—	—
20	39.615		—	—	—	—	—

BOG TURTLE TRAPPING DATA SHEET			wetland #9				Page # 7 of 18
			Capture Data - Species, # of Individuals, Sex, Age				
Trap #	Latitude (DD) °N	Longitude (DD) °W	Date: 5/21/08	Date: 5/22/68	Date: 5/23/08	Date: 5/24/08	Date: 5/25/08
1	39.615206	-77.018747	—	—	—	—	—
2	39.615202	-77.018662	—	—	—	—	—
3	39.615244	-77.018681	—	—	—	—	—
4	39.615269	-77.018601	Snapping turtle	—	—	Green frog	—
5	39.615227	-77.01851	—	—	—	—	—
6	39.615208	-77.018526	—	Green frog	—	—	—
7	39.615287	-77.018715	—	—	—	—	—
8	39.615862	-77.017235	—	—	—	—	—
9	39.615826	-77.017273	—	—	—	—	—
10	39.615751	-77.017349	—	—	—	—	—
11	39.615751	-77.017425	—	—	—	—	—
12	39.615724	-77.017538	—	—	—	—	—
13	39.615806	-77.017594	—	—	—	—	—
14	39.61591	-77.017559	—	—	—	Queen Snake	—
15	39.615689	-77.017667	—	—	—	—	—
16	39.61559	-77.01761	—	—	—	—	—
17	39.615619	-77.017534	—	—	—	—	—
18	39.615915	-77.017541	—	—	—	—	—
19	39.615723	-77.017437	—	—	—	—	—
20	39.61512	-77.016087	—	—	—	—	—

BOG TURTLE TRAPPING DATA SHEET			wetland #9				Page # 13 of 18
			Capture Data - Species, # of Individuals, Sex, Age				
Trap #	Latitude (DD) °N	Longitude (DD) °W	Date: 5/26/08	Date: 5/27/08	Date: 5/28/08	Date: 5/29/08	Date: 5/30/08
1	39.615206	-77.018747	—	—	—	—	Greenfrog
2	39.615202	-77.018662	—	—	—	—	—
3	39.615244	-77.018681	—	—	—	—	—
4	39.615269	-77.018601	—	—	—	—	—
5	39.61527	-77.01851	—	—	—	—	—
6	39.615208	-77.018526	—	—	—	—	—
7	39.615237	-77.018715	Snapper	—	—	—	—
8	39.615862	-77.017235	—	—	—	Snapper	—
9	39.615826	-77.017273	—	—	—	—	—
10	39.615751	-77.017349	—	—	—	—	—
11	39.615751	-77.017425	—	—	—	—	—
12	39.615724	-77.017538	—	—	—	—	—
13	39.615806	-77.017594	—	—	—	—	—
14	39.61591	-77.017559	—	—	—	—	—
15	39.615689	-77.017667	Greenfrog	—	—	—	—
16	39.61559	-77.01761	—	—	—	—	—
17	39.615619	-77.017524	—	—	—	—	—
18	39.615915	-77.017541	—	—	—	—	—
19	39.615723	-77.017657	—	—	—	—	—
20	39.61512	-77.016087	—	—	—	—	—

BOG TURTLE TRAPPING DATA SHEET			wetland #29				Page # 2 of 18
Site Code: Carroll Co. 5		County: Carroll	Date Traps Set: 5/15/08	Mean Time Traps Set: 5pm	Date Traps Closed:	Mean Time Traps Closed:	
			Capture Data - Species, # of Individuals, Sex, Age				
Trap #	Latitude (DD) °N	Longitude (DD) °W	Date: 5/14/08	Date: 5/17/08	Date: 5/18/08	Date: 5/19/08	Date: 5/20/08
21	39.616646	-77.015781	—	—	—	—	—
22	39.616552	-77.015711	—	—	—	—	—
23	39.616567	-77.015646	—	—	—	—	—
24	39.616597	-77.015688	Crayfish	—	—	—	Crayfish
25	39.616652	-77.015583	—	—	—	—	—
26	39.616662	-77.015612	—	—	—	—	—
27	39.616724	-77.015558	—	—	—	—	—
28	39.616743	-77.015477	—	—	Meadowvole	—	—
29	39.616734	-77.015491	—	—	—	—	Crayfish
30	39.616876	-77.015272	—	—	—	—	—
31	39.616742	-77.015331	—	Crayfish	—	—	—
32	39.616687	-77.015391	—	—	—	—	—
33	39.616633	-77.015327	—	—	—	—	—
34	39.616641	-77.015434	—	—	—	—	—
35	39.616597	-77.015476	—	—	—	—	—
36	39.616536	-77.015532	—	Crayfish	—	—	—
37	39.616564	-77.015471	—	—	—	—	—
38	39.616578	-77.015542	—	—	—	—	—
39	39.616418	-77.015644	—	—	—	—	—
40	39.616383	-77.015769	—	—	—	—	—

BOG TURTLE TRAPPING DATA SHEET Wetland #9

Trap #	Latitude (DD) °N	Longitude (DD) °W	Capture Data - Species, # of Individuals, Sex, Age				
			Date: 5/21/08	Date: 5/22/08	Date: 5/23/08	Date: 5/24/08	Date: 5/25/08
21	39.616[illegible]	[illegible]788	—	—	—	—	meadow vole
22	39.6165[illegible]	-77.015711	—	—	—	—	—
23	39.616567	-77.015646	—	—	—	—	—
24	39.6[illegible]	-77.0[illegible]	—	—	—	—	—
25	39.6[illegible]	-77.015583	—	—	—	—	—
26	39.61[illegible]	-77.0[illegible]562	—	—	—	—	—
27	39.616724	-77.015558	—	—	—	—	—
28	39.616743	-77.015477	—	—	—	—	—
29	39.616734	-77.015401	crayfish	—	—	—	—
30	39.616[illegible]75	-77.015372	—	—	—	—	—
31	39.616742	-77.015331	—	—	—	—	—
32	39.616[illegible]	-77.015381	—	—	—	—	—
33	39.61[illegible]33	-77.015372	—	—	—	—	—
34	39.616641	-77.015[illegible]34	—	—	—	—	—
35	39.616597	-77.0154[illegible]	—	—	—	—	—
36	39.616636	-77.015532	—	—	—	—	—
37	39.616566	-77.015471	—	—	—	—	—
38	39.616578	-77.0155[illegible]	—	—	Snapper	—	—
39	39.616418	-77.015644	—	—	—	—	—
40	39.616383	-77.015709	—	—	—	—	—

BOG TURTLE TRAPPING DATA SHEET			Wetland #9				Page # 14 of 15
			Capture Data - Species, # of Individuals, Sex, Age				
Trap #	Latitude (DD) °N	Longitude (DD) °W	Date: 5/26/08	Date: 5/27/08	Date: 5/28/08	Date: 5/29/08	Date: 5/30/08
21	39.61[illegible]	-[illegible]5788	—	—	—	—	—
22	39.61[illegible]	-77.015711	—	—	—	—	—
23	39.616647	-77.015646	—	—	—	—	—
24	39.61[illegible]	-77.[illegible]	—	—	—	—	—
25	39.61[illegible]	-77.015582	—	—	—	—	—
26	39.61[illegible]	-77.015582	—	—	—	Crayfish	—
27	39.616734	-77.015558	—	—	—	—	—
28	39.61[illegible]	-77.015477	—	—	—	—	Crayfish
29	39.61[illegible]	-77.015401	—	—	—	—	—
30	39.61[illegible]	-77.015372	—	—	—	—	—
31	39.61[illegible]	-77.015331	—	—	—	—	—
32	39.61[illegible]	-77.015381	—	—	—	—	Crayfish
33	39.61[illegible]	-77.015372	—	—	—	—	—
34	39.616441	-77.015434	—	—	—	—	—
35	39.616561	-77.015471	—	—	—	—	—
36	39.61[illegible]	-77.015532	—	—	—	—	—
37	39.61[illegible]	-77.015471	—	—	—	—	—
38	39.61[illegible]	-77.015[illegible]	—	—	—	—	—
39	39.61[illegible]	-77.015[illegible]	—	—	—	—	—
40	39.61[illegible]	-77.015709	—	—	—	—	—

BOG TURTLE TRAPPING DATA SHEET			Wetland #9				Page # 3 of 18
Site Code: Co County Regional Airport		County: Carroll	Date Traps Set: 5/15/08	Mean Time Traps Set: Sunset	Date Traps Closed:	Mean Time Traps Closed:	
			Capture Data - Species, # of Individuals, Sex, Age				
Trap #	Latitude (DD) °N	Longitude (DD) °W	Date: 5/16/08	Date: 5/17/08	Date: 5/18/08	Date: 5/19/08	Date: 5/20/08
41	39.616303	-77.015792	—	—	—	—	—
42	39.616228	-77.015746	—	—	—	—	—
43	39.616220	-77.015773	—	—	—	—	—

BOG TURTLE TRAPPING DATA SHEET			Wetland #9				Page # 9 of
			Capture Data - Species, # of Individuals, Sex, Age				
Trap #	Latitude (DD) °N	Longitude (DD) °W	Date: 5/21/08	Date: 5/22/08	Date: 5/23/08	Date: 5/24/08	Date: 5/25/08
41	39.616303	-77.015792	—	—	—	—	—
42	39.616228	-77.015746	—	—	—	—	—
43	39.616303	-77.015773	—	—	—	—	—

BOG TURTLE TRAPPING DATA SHEET			Wetland #9				Page # 15 of ___
			Capture Data - Species, # of Individuals, Sex, Age				
Trap #	Latitude (DD) °N	Longitude (DD) °W	Date: 5/26/08	Date: 5/27/08	Date: 5/28/08	Date: 5/29/08	Date: 5/30/08
41	39.616303	-77.015792	—	—	Meadow vole	—	—
42	39.616238	-77.015746	—	—	—	—	—
43	39.616393	-77.015773	—	—	—	—	—

BOG TURTLE TRAPPING DATA SHEET			Wetland #1				Page # 4 of 18
Site Code: Carroll County Regional Airport		County: Carroll	Date Traps Set: 5/16/18	Mean Time Traps Set: 6pm	Date Traps Closed:	Mean Time Traps Closed:	
			Capture Data - Species, # of Individuals, Sex, Age				
Trap #	Latitude (DD) °N	Longitude (DD) °W	Date: 5/16/18	Date: 5/17/18	Date: 5/18/18	Date: 5/19/18	Date: 5/20/18
44	39.616929	-77.005866	—	—	—	—	—
45	39.616862	-77.005811	—	—	—	pickerel frog	—
46	39.616793	-77.005817	—	—	—	—	—
47	39.616745	-77.005863	—	—	—	—	—
48	39.616678	-77.005813	Meadow vole	—	—	—	—
49	39.616756	-77.005648	Green frog	—	—	—	—
50	39.616806	-77.00563	—	—	—	—	—
51	39.616866	-77.005644	—	—	—	—	—
52	39.617137	-77.005278	—	—	—	—	—
53	39.617124	-77.005225	—	—	—	—	—
54	39.617058	-77.005127	—	—	—	—	—
55	39.617019	-77.005074	—	Crayfish	—	—	—
56	39.616952	-77.004968	—	—	—	—	—
57	39.616893	-77.005043	—	—	—	—	—
58	39.616879	-77.004997	—	—	—	Crayfish	—
59	39.616854	-77.004891	—	—	—	—	—
60	39.616847	-77.004747	—	—	—	—	—
61	39.616836	-77.004625	—	—	—	—	—
62	39.616843	-77.004547	—	—	—	—	—
63	39.616931	-77.004463	—	—	—	—	—

BOG TURTLE TRAPPING DATA SHEET			Wetland #1				Page # 10 of 18
			Capture Data - Species, # of Individuals, Sex, Age				
Trap #	Latitude (DD) °N	Longitude (DD) °W	Date: 5/21/08	Date: 5/22/08	Date: 5/23/08	Date: 5/24/08	Date: 5/25/08
44	39.616929	-77.005[illegible]	—	—	—	—	—
45	39.6[illegible]	-77.00[illegible]	—	—	—	—	—
46	39.616743	-77.005817	—	—	—	—	—
47	39.616745	-77.005863	—	—	—	—	—
48	39.616678	-77.005813	—	—	—	—	—
49	39.616756	-77.005608	—	—	—	—	—
50	39.616806	-77.00563	—	—	—	—	—
51	39.616861	-77.005664	—	—	—	—	—
52	39.617137	-77.005278	—	—	—	—	—
53	39.617124	-77.005225	—	—	—	—	—
54	39.617058	-77.005127	—	—	—	—	—
55	39.617019	-77.005074	—	—	—	—	—
56	39.616952	-77.004998	—	—	—	—	—
57	39.616893	-77.005043	—	—	Greenfrog	—	—
58	39.616879	-77.004997	—	—	—	—	—
59	39.616854	-77.004841	—	—	—	—	—
60	39.616847	-77.004747	—	—	—	—	—
61	39.616836	-77.004635	—	—	—	—	—
62	39.616843	-77.004547	—	Meadow vole	—	—	—
63	39.616434	-77.664463	—	—	—	—	—

BOG TURTLE TRAPPING DATA SHEET			Wetland #1				Page # 16 of 18
			Capture Data - Species, # of Individuals, Sex, Age				
Trap #	Latitude (DD) °N	Longitude (DD) °W	Date: 5/26/08	Date: 5/27/08	Date: 5/28/08	Date: 5/29/08	Date: 5/30/08
[illegible]	[illegible]	[illegible]	—	—	—	—	—
45	[illegible]	[illegible]	—	—	—	—	—
46	39.616763	-77.005817	Pickerel Frog	—	—	—	—
47	39.616745	-77.005863	—	—	—	—	—
48	39.616678	-77.005813	—	—	—	—	—
49	39.616756	-77.005698	—	—	—	—	—
50	39.616806	-77.005563	—	—	—	Green Frog	—
51	39.616866	-77.005664	—	—	—	—	—
52	39.617137	-77.005278	—	—	—	—	—
53	39.617124	-77.005225	—	—	—	—	—
54	39.617058	-77.005127	—	—	—	—	—
55	39.617019	-77.005074	—	—	—	—	—
56	39.616952	-77.004998	—	—	—	—	—
57	39.616893	-77.005043	Crayfish	—	—	—	—
58	39.616879	-77.004997	—	—	—	—	—
59	39.616854	-77.004891	—	—	—	—	—
60	39.616847	-77.004747	—	—	—	—	—
61	39.616836	-77.004635	—	—	—	—	—
62	39.616843	-77.004547	—	—	—	—	—
63	39.616834	-77.004463	—	—	—	—	—

BOG TURTLE TRAPPING DATA SHEET			Wetland #1				Page # 5 of 18
Site Code: Carroll County Regional Airport		County: Carroll	Date Traps Set: 5/15/08 Mean Time Traps Set: 5min		Date Traps Closed:	Mean Time Traps Closed:	
			Capture Data - Species, # of Individuals, Sex, Age				
Trap #	Latitude (DD) °N	Longitude (DD) °W	Date: 5/16/08	Date: 5/17/08	Date: 5/18/08	Date: 5/19/08	Date: 5/20/08
64	39.616983	-77.004408	—	—	—	—	—
65	39.61682	-77.004416	—	—	—	—	—
66	39.616645	-77.005019	—	—	—	—	—
67	39.616619	-77.004479	—	—	—	Snapper	—
68	39.616627	-77.004465	—	—	—	Snapper	—
69	39.616572	-77.004877	—	—	—	—	—
70	39.616526	-77.004784	—	—	—	—	—
71	39.616456	-77.004682	—	—	—	—	—
72	39.616592	-77.004755	—	—	—	—	Snapper
73	39.616645	-77.004702	—	—	—	—	—
74	39.616607	-77.004613	—	—	—	—	—
75	39.616591	-77.004491	—	—	—	—	—
76	39.616564	-77.004504	—	—	—	—	—
77	39.616571	-77.004232	—	—	—	—	—
78	39.616566	-77.004297	—	—	—	—	—
79	39.616622	-77.004295	—	—	—	—	—
80	39.616682	-77.004426	—	—	—	—	—
81	39.616669	-77.004582	—	—	—	—	—
82	39.616634	-77.004764	—	Green frog	—	—	—
83	39.616446	-77.004573	—	—	—	—	—

BOG TURTLE TRAPPING DATA SHEET			Wetland #1				Page # 11 of 18
			Capture Data - Species, # of Individuals, Sex, Age				
Trap #	Latitude (DD) °N	Longitude (DD) °W	Date: 5/21/08	Date: 5/22/08	Date: 5/23/08	Date: 5/24/08	Date: 5/25/08
64	39.616983	-77.004408	—	—	—	—	—
65	39.61682	-77.004446	—	—	—	—	—
66	39.616645	-77.005019	—	—	—	—	—
67	39.616619	-77.004979	—	—	—	—	—
68	39.616627	-77.004945	—	—	—	—	—
69	39.616572	-77.004877	—	—	—	—	—
70	39.616526	-77.004784	—	Snapper	—	—	—
71	39.616456	-77.004682	—	—	—	—	—
72	39.616592	-77.004755	—	—	—	—	—
73	39.616665	-77.004702	—	—	—	—	—
74	39.616607	-77.004613	—	—	—	—	—
75	39.616591	-77.004491	—	—	—	—	—
76	39.616564	-77.004504	—	—	—	—	—
77	39.616571	-77.004332	—	—	—	—	—
78	39.616566	-77.004297	—	—	—	—	—
79	39.616622	-77.004295	—	—	—	—	—
80	39.616582	-77.004426	—	—	—	—	—
81	39.61666	-77.004582	—	—	—	—	—
82	39.616634	-77.004766	—	—	—	—	—
83	39.616494	-77.004573	—	—	—	—	—

BOG TURTLE TRAPPING DATA SHEET			Wetland #1				Page # 17 of 18
			Capture Data - Species, # of Individuals, Sex, Age				
Trap #	Latitude (DD) °N	Longitude (DD) °W	Date: 5/26/08	Date: 5/27/08	Date: 5/28/08	Date: 5/29/08	Date: 5/30/08
64	39.616983	-77.004408	—	—	—	—	—
65	39.61682	-77.00446	—	—	—	—	—
66	39.61645	-77.005019	—	—	—	—	—
67	39.616619	-77.004979	—	—	—	Greenfrog	—
68	39.616627	-77.004945	—	—	—	—	—
69	39.616572	-77.004877	—	—	—	—	Snapper
70	39.616526	-77.004784	—	—	—	—	—
71	39.616456	-77.004682	—	—	—	—	Snapper
72	39.616592	-77.004755	—	—	—	—	—
73	39.61665	-77.004702	—	—	—	—	—
74	39.616607	-77.004613	—	Snapper	—	—	—
75	39.616591	-77.004491	—	—	—	—	—
76	39.616564	-77.004504	—	—	—	—	—
77	39.616571	-77.004332	—	—	—	—	—
78	39.616556	-77.004297	—	—	—	—	—
79	39.616622	-77.004295	—	—	—	—	—
80	39.616582	-77.00426	—	—	—	—	—
81	39.61666	-77.004582	—	—	—	—	—
82	39.616634	-77.004766	—	—	—	—	—
83	39.616491	-77.004573	—	—	—	—	—

BOG TURTLE TRAPPING DATA SHEET			Wetland #1				Page # 6 of 18
Site Code: Carroll County Regional Airport		County: Carroll	Date Traps Set: 5/15/08	Mean Time Traps Set: 5pm	Date Traps Closed:	Mean Time Traps Closed:	
			Capture Data - Species, # of Individuals, Sex, Age				
Trap #	Latitude (DD) °N	Longitude (DD) °W	Date: 5/16/08	Date: 5/17/08	Date: 5/18/08	Date: 5/19/08	Date: 5/20/08
84	39.616487	-77.0641606	—	—	—	—	—
85	39.616469	-77.004416	—	—	—	—	—
86	39.616529	-77.004125	—	—	—	—	—
87	39.616529	-77.0041256	—	—	—	—	—
88	39.616536	-77.004217	—	—	—	—	—
89	39.616339	-77.0041646	—	—	—	—	—
90	39.616385	-77.0641665	—	—	—	—	—

BOG TURTLE TRAPPING DATA SHEET			Wetland #1				Page # 12 of 18
			Capture Data - Species, # of Individuals, Sex, Age				
Trap #	Latitude (DD) °N	Longitude (DD) °W	Date: 5/21/08	Date: 5/22/08	Date: 5/23/08	Date: 5/24/08	Date: 5/25/08
84	39.616487	-77.004606	—	—	—	—	—
85	39.616469	-77.004446	—	—	—	—	—
86	39.616529	-77.004425	—	—	—	—	—
87	39.616529	-77.004256	—	—	—	—	—
88	39.616536	-77.004217	—	—	—	—	—
89	39.616339	-77.004446	—	—	—	—	—
90	39.616385	-77.004465	—	—	—	—	—

BOG TURTLE TRAPPING DATA SHEET			Wetland #1				Page # 18 of 18
			Capture Data - Species, # of Individuals, Sex, Age				
Trap #	Latitude (DD) °N	Longitude (DD) °W	Date: 5/26/08	Date: 5/27/08	Date: 5/28/08	Date: 5/29/08	Date: 5/30/08
84	39.616487	-77.004606	—	—	—	—	
85	39.616469	-77.004446	—	—	—	—	
86	39.616529	-77.004425	—	—	—	—	
87	39.616529	-77.004256	—	—	—	—	
88	39.616536	-77.004217	—	—	—	—	
89	39.616339	-77.004041	—	—	—	—	
90	39.616385	-77.004165	—	—	—	—	

APPENDIX G

PROFESSIONAL QUALIFICATIONS

Jeremy T. Hite – Mr. Hite has a bachelor's degree in Wildlife and Fisheries Science from the Pennsylvania State University. He is currently involved in developing a Bog Turtle (*Glyptemys muhlenbergii*) Habitat Conservation Plan in Chester County, PA and New Castle County, DE. He is a qualified bog turtle surveyor for the state of PA and has six years of experience in searching and assessing different wetland environments for bog turtles as a technician for the Penn State University and as an environmental consultant. Through his employment as Research Technician at the Penn State Cooperative Wetlands Center he has been trained in and has helped development various protocols in assessing stream, wetlands, and riparian areas across the Mid-Atlantic Region. This research also included the sampling of streams and wetlands for macroinvertebrates and other herpetofauna. Some of these projects include Bog Turtle (*Gleptemys muhlenbergii*), Wood Turtle (*Gleptemys insculpta*), Eastern Massassauga (*Sistrurus catenatus catenatus*), Stream-sided salamanders, benthic macroinvertebrates, and River Otter (*Lutra canadensis*) surveys. His responsibilities include leading field crews, field data collection, data management, filling out permits, meeting coordination, and landowner contacts.

Jonathan P. Kasitz – Mr. Kasitz has a bachelor's degree in Biology/Ecology from Millersville University. He has used the 1987 *Corps of Engineers Wetland Delineation Manual* for numerous field delineations in PA, MD and NY. He has completed the U.S. Army Corp of Engineers' Wetland Delineation Course. He has also been trained in several different stream assessment protocols, both in the eastern U. S. as well as in the Rocky Mountain region. Mr. Kasitz participated in internships with the PA Department of Environmental Protection in their Water Quality division and with the PA Department of Military and Veteran Affairs as a Biology Tech at Fort Indiantown Gap. He has worked with various government agencies including the National Park Service at Yellowstone NP and the US Forest Service in Colorado. He has performed biological surveys for many different threatened and endangered species across the country. He also completed honors research on the effects of ponds on stream nitrate levels in Lancaster County while at Millersville.

Bryan J. Kondikoff – Mr. Kondikoff has a bachelor's degree in Biology/Ecology from Millersville University. During his employment and course work, he has been trained to conduct wetland delineations in PA and is familiar with the 1987 *Corps of Engineers Wetland Delineation Manual* and 1989 Federal Interagency Manuel. While attending Millersville, he has also been trained in various stream bioassessment protocols in the eastern U.S. region by completing research in Lancaster County, PA on the long-term effects of stream remediation on both the aquatic macroinvertebrate and fish communities. Mr. Kondikoff has also participated in several internships with The Stroud Water Research Center in Avondale, PA as an Aquatic Biologist and for the PA Department of Environmental Protection in their Water Quality/Vector Management division. He was also employed by The Stroud Water Research Center and Millersville University, both as a Research Assistant, to conduct numerous water quality assessments in PA, NY, DE, MD, and NJ.

Timothy A. Falkenstein - Mr. Falkenstein has degrees in Forestry and Environmental Resource Management from the Pennsylvania State University and a Masters Degree in Biology from Shippensburg University. He has attended numerous professional training courses including Wetland Delineation Methodology, Wetland Soils and Hydrology, Identification of grasses, sedges and rushes, and Threatened and Endangered species of New Jersey. In his 16 years of environmental consulting he has conducted numerous wetland delineations at sites throughout Pennsylvania, Ohio, Maryland, Virginia, West Virginia, Delaware, New York, and Tennessee. He regularly conducts field meetings with the USACOE, PADEP, USFWS and other agencies to secure Jurisdictional Determinations and develop appropriate permit applications. He routinely prepares and submits general and joint permit applications for clients including private developers, and municipalities and state infrastructure projects. He has conducted and participated in rare species searches for state and federally listed plants and animals, including *Clemmys muhlenbergii.* He is also certified by the US Fish and Wildlife Service to conduct Phase I Bog Turtle Habitat Assessments. His Masters thesis entitled "*Vascular Plant Communities of the Mount Cydonia Ponds in the Michaux State Forest Natural Area, Franklin County, Pennsylvania*" involved plant community classification, topographic descriptions, and soil chemical analysis of 17 temporary autumnal/vernal pools within the Michaux State Forest Natural Area.

Joel M. Esh – Mr. Esh has an Associate in Specialized Technology Degree in Computer Aided Drafting and Design from York Technical Institute and 6 years of experience at RETTEW. He is responsible for the technical workload of the Natural Sciences department, including computer-aided drafting and design (CADD), global positioning systems (GPS), and geographic information systems (GIS). He has created and been involved with the design of stream restoration plans, dam removal plans, pond restoration plans, wetland mitigation plans, and wetland delineation plans. Additional training has included Introduction to Stream Processes and Ecology by Canaan Valley Institute and West Virginia University. When working in the field, he has assisted with data collection and surveying for stream design and wetland delineations in PA, NY, and DE using the 1987 *Corps of Engineers Wetland Delineation Manual*. Utilizing GIS information, he has obtained and analyzed information for watershed assessments and created maps for grant applications and other uses. He has also been involved with cultural resources by performing site visits for documentation of buildings and bridges and creating plans for historic survey forms. In his first four years at RETTEW, he worked in the Transportation Engineering department, where he has directed data collection, prepared traffic engineering analysis, and completed PENNDOT plans involving right-of-way, traffic signals and highway occupancy permits utilizing PENNDOT resources.

APPENDIX G

PROFESSIONAL QUALIFICATIONS

Jeremy T. Hite – Mr. Hite has a bachelor's degree in Wildlife and Fisheries Science from the Pennsylvania State University. He is currently involved in developing a Bog Turtle (*Glyptemys muhlenbergii*) Habitat Conservation Plan in Lancaster County, PA and New Castle County, DE. He is a qualified bog turtle surveyor for the state of PA and has six years of experience in searching and assessing different wetland environments for bog turtles as a technician for the Penn State University and as an environmental consultant. Through his employment as Research Technician at the Penn State Cooperative Wetlands Center he has been trained in and has helped development various protocols in assessing stream, wetlands, and riparian areas across the Mid-Atlantic Region. This research also included the sampling of streams and wetlands for macroinvertebrates and other herpetofauna. Some of these projects include Bog Turtle (*Glyptemys muhlenbergii*), Wood Turtle (*Glyptemys insculpta*), Eastern Massassauga (*Sistrurus catenatus catenatus*), Stream-sided salamanders, benthic macroinvertebrates, and River Otter (*Lutra canadensis*) surveys. His responsibilities include leading field crews, field data collection, data management, filling out permits, meeting coordination, and landowner contacts.

Mark A. Metzler, Senior Environmental Scientist/NICET II – Mr. Metzler has an associate's degree in Wildlife Technology from the Pennsylvania State University and is certified by the National Institute for Certification in Engineering Technologies in Land Management and Water Control/Erosion and Sediment Control. Mr. Metzler has twelve years of experience working in the environmental regulatory community (Lancaster County Conservation District) and 13 years of private consulting experience. He received training in both the 1987 Corps of Engineers Wetland Delineation Manual and the 1989 Federal Manual from both the PA Dept. of Environmental Protection and the U.S. Army Corps of Engineers. In addition, he received soil mechanics training from the U.S. Dept. of Agriculture – Natural Resources Conservation Service. As an environmental regulator, Mr. Metzler reviewed, permitted, and inspected over 2,000 various plans and project sites many of which involved impacts to Waters of the Commonwealth (wetlands, rivers, lakes). Mr. Metzler has prepared four TMDL implementation plans for the Commonwealth of Pennsylvania and U.S. EPA, as well as numerous watershed assessment and river restoration plans. He is also experienced in dam removal design, the issue of legacy sediment and has overseen dam removal and fish migration projects within Pennsylvania, Maryland, and Virginia.