Draft Final Waters of the United States Delineation Report Barnes Air National Guard

104th Fighter Wing, Westfield-Barnes Regional Airport, Westfield, Massachusetts



November 2022

Acronyms and Abbreviations

104 FW	104th Fighter Wing
BAF	Westfield-Barnes Regional Airport
GSRC	Gulf South Research Corporation
MAANG	Massachusetts Air National Guard
MassDEP	Massachusetts Department of Environmental Protection
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
U.S.	United States
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
WOTUS	Waters of the United States

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- Appendix C 2014 Previous Jurisdictional Determination
- Appendix D Approved USACE Jurisdictional Determination
- Appendix E Approved MassDEP Jurisdictional Determination

EXECUTIVE SUMMARY

LOCATION

This Waters of the United States (WOTUS) Delineation Report provides the results of the delineation work conducted at the 104th Fighter Wing (104 FW) of the Massachusetts Air National Guard (MAANG) located at Westfield-Barnes Regional Airport (BAF) in Westfield, Massachusetts on May 17 and 18, 2022. The project area for the 104 FW installation consists of three parcels totaling approximately 206 acres of land. Per land use records, the 104 FW installation is located approximately 5 miles north of downtown Westfield, in Hampden County, Massachusetts.

SITE DESCRIPTION

The majority of the project area consists of existing air base runways and structures. According to the *Natural Resources Conservation Service Web Soil Survey of Hampden County, Massachusetts* (United States Department of Agriculture [USDA] Natural Resources Conservation Service [USDA NRCS] 2020), soils in the project area consist of Hinckley loamy sands, including series with 0 to 3 percent slopes, 3 to 8 percent slopes, and 15 to 25 percent slopes; Windsor loamy sand, 0 to 3 percent slopes; and urban land.

The predominant vegetation communities within the project area are mowed, maintained fields, and mixed hardwood forest. The dominant vegetation within the mowed, maintained field community includes cheatgrass (*Bromus tectorum*), white sagebrush (*Artemisia ludoviciana*), Canada mayflower (*Maianthemum canadense*), tussock sedge (*Carex stricta*), and cat grass (*Dactylis glomerata*). The dominant vegetation within the mixed hardwood forest community includes northern red oak (*Quercus rubra*), red maple (*Acer rubrum*), eastern white pine (*Pinus strobus*), white oak (*Quercus alba*), American witch-hazel (*Hamamelis virginiana*), lowbush blueberry (*Vaccinium angustifolium*), black cherry (*Prunus serotina*), red pine (*Pinus resinosa*), blueridge blueberry (*Vaccinium pallidum*), quaking aspen (*Populus tremuloides*), highbush blueberry (*Vaccinium corymbosum*), sensitive fern (*Onoclea sensibillis*), royal fern (*Osmunda spectabilis*), black oak (*Quercus velutina*), downy serviceberry (*Amelanchier arborea*), sugar maple (*Acer saccharum*), coastal pepperbush (*Clethra alnifolia*), and swamp whiteoak (*Quercus bicolor*).

FINDINGS

Based on the routine field investigation, the project area contains three retention ponds, four wetlands of approximately 4.03 acres, and zero linear feet of WOTUS. The four wetlands observed did not have a connection with any surface waters, were not adjacent to surface waters, and were

closed systems. The three retention ponds were located on the developed portion of the installation and were also closed systems.

1.0 INTRODUCTION

1.1 **PROPERTY ACCESS**

The project area is located on a property with controlled access. Consequently, access to the site was granted as needed via appointment with the local 104th Fighter Wing (104 FW) installation point of contact, Mr. John Richardson, by phone at 413-568-9151. Mr. Richardson introduced Ms. Jen Baker to Gulf South Research Corporation (GSRC) personnel and Ms. Baker assisted with escorting GSRC personnel across the airfield to access the forested tract.

1.2 PURPOSE OF REPORT

GSRC was subcontracted by Cardno GS, Inc. to perform a Waters of the United States (WOTUS) delineation on approximately 206 acres of land (project area) (Figure 1). The purpose of this study was to identify and quantify potential areas within the project area that meet the criteria of WOTUS, including wetlands. The WOTUS delineation was conducted by GSRC biologists on May 17 and 18, 2022. Photographs and data forms of sample plots can be found in Appendix A and Appendix B, respectively.

1.3 LOCATION AND STUDY AREA

The project area encompasses approximately 206 acres at the 104 FW installation of the Massachusetts Air National Guard (MAANG) located at Westfield-Barnes Regional Airport (BAF) in Westfield, Massachusetts. Specifically, the project area is located approximately 5 miles north of downtown Westfield, in Hampden County, Massachusetts, and is bordered by BAF to the west and east and mixed hardwood forest to the north, south, and east (Figure 2).





2.0 RESEARCH OF AVAILABLE INFORMATION

Prior to conducting field work, several resources were consulted to provide background information for the project area. United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey maps were reviewed for baseline water feature and soils information (USDA NRCS 2020). United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping data was also reviewed to screen for potential wetlands or surface waters previously identified on-site (USFWS 2022). The 2015 *Waters of the United States Survey Report and Wetland Function and Values Assessment for Barnes ANGB* was also reviewed as part of the research conducted (United States Army Corps of Engineers [USACE] 2015). In addition to this report, the previous jurisdictional determination (NAE-2014-01568) was also reviewed prior to completing the field work (Appendix C).

2.1 Soils

The USDA NRCS web soil survey (NRCS 2020) was reviewed to determine the presence of hydric soils. The rating system describes the percentage of mapped soil units that are rated as hydric or non-hydric within six classes: 100 percent, 66–99 percent, 33–65 percent, 1–32 percent, 0 percent, and not rated. According to the *NRCS Web Soil Survey of Hampden County, Massachusetts*, three soil series are represented in the project area: Hinckley loamy sand (ranging from 0 to 3, 3 to 8, and 15 to 25 percent slopes); Windsor, 0 to 3 percent slopes; and Urban land. None of these soils are listed as hydric by the USDA NRCS (USDA NRCS 2020) (Figure 3 and Table 1).

Map Unit	Map Unit Name	Acres in Project Area	% of Project Area	Hydric Soil Rating
1	Water	1.1	0.5%	N/A
253A	Hinckley loamy sand, 0 to 3 percent slopes	101.11	48.9%	Non-Hydric
253B	Hinckley loamy sand, 3 to 8 percent slopes	1.45	0.7%	Non-Hydric
253D	Hinckley loamy sand, 15 to 25 percent slopes	24.19	11.7%	Non-Hydric
255A	Windsor loamy sand, 0 to 3 percent slopes	24.1	6.9%	Non-Hydric
602	Urban Land	64.49	31.2%	Non-Hydric

Table 1Soil Map Units Located within the Project Area

Source: NRCS 2020

2.2 NATIONAL WETLANDS INVENTORY

NWI data indicated the presence of two freshwater forested/shrub wetlands and two freshwater emergent wetlands within the 104 FW installation (USFWS 2022; Figure 4). Data from the NWI often represents the most obvious wetland features observed in aerial imagery and should not be utilized as a method of determining the absence or presence of wetlands.





3.0 METHODS

GSRC conducted the WOTUS and wetland delineation in accordance with Section D, Subsection 2, of *Technical Report Y-87-1*, *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the 2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (USACE 2012). References include the USDA NRCS *Web Soil Survey of Hampden County, Massachusetts* (see Figure 3) (USDA NRCS 2020) and the 2020 National Wetland Plant List (USACE 2020).

Field investigations were conducted to determine the presence and extent of potential WOTUS, including wetlands, in the project area. The site was traversed using meandering pedestrian transects and sample plots were established within each vegetation community. Wetland Delineation Data Forms – Northcentral and Northeast Region, as approved by Headquarters, USACE (USACE 2012) were completed for each sample plot (Appendix A). These data forms contain information regarding the presence or absence of hydric soils, hydrophytic vegetation, and wetland hydrology sufficient to support the establishment of a wetland boundary.

A soil pit was excavated to a depth of approximately 16 inches at each sample plot to confirm the soil series present on site. The soil pit remained open for at least 15 minutes to allow the pit to fill with water if present. Information recorded on the data form included soil colors (hue, value, and chroma as per the 2010 revised edition of the Munsell Color Chart [Munsell Color 2010]); size, abundance, and depth of mottles; as well as soil texture. Soil texture was determined using the "texture by feel" analysis.

Dominant vegetation was sampled by ocular estimation of percent cover. Species accounting for greater than or equal to 20 percent of the vegetation present were recorded as dominant for each stratum. Vegetation was recorded in the following strata: tree, sapling/shrub, herbaceous, and woody vine. Dominant vegetation was recorded on the data form, along with the indicator status as listed by the 2020 National Wetland Plant List, version 3.5 (USACE 2020). Once the dominant vegetation was recorded and evaluated, if more than 50 percent of the dominant vegetation had an indicator status of Facultative, Facultative Wetland, or Obligate, the hydrophytic vegetation criterion was recorded as positive.

Wetland hydrology indicators were also recorded at the sample plot as per USACE requirements. If at least one primary or two secondary indicators of wetland hydrology were present, the sample plot was classified as exhibiting wetland hydrology. Photographs provided in Appendix A show overviews of each sample plot and a representative soil profile at each sample plot. GSRC utilized a TrimbleTM global positioning system to obtain sub-meter accuracy coordinates of WOTUS, including wetland boundaries.

4.0 **RESULTS**

A large portion of the project area consists of existing air base runways and structures. The predominant vegetation communities within the project area are mowed, maintained fields and mixed hardwood forest. The dominant vegetation within the mowed, maintained field community includes cheatgrass, white sagebrush, Canada mayflower, tussock sedge, and cat grass. The dominant vegetation within the mixed hardwood forest community includes northern red oak, red maple, eastern white pine, white oak, American witch-hazel, lowbush blueberry, black cherry, red pine, blueridge blueberry, quaking aspen, highbush blueberry, sensitive fern, royal fern, black oak, downy serviceberry, Canada mayflower, sugar maple, coastal pepperbush, and swamp white oak.

According to the *NRCS Web Soil Survey of Hampden County, Massachusetts* (USDA NRCS 2020), soils in the project area consist of Hinckley loamy sands, including series with 0 to 3 percent slopes, 3 to 8 percent slopes, and 15 to 25 percent slopes; Windsor loamy sand; 0 to 3 percent slopes; and urban land (see Figure 3). The soils identified on the USDA NRCS web soils website matched those that were found during the survey effort.

The following sub-sections provide a characterization of the project area, descriptions of each mapped wetland, and a summary of data collected at each sample plot. Descriptions of sample plot attributes, including the vegetation community, soil conditions, and hydrologic conditions are also provided. A map depicting sample plot locations and the distribution and extent of each mapped wetland is provided in Figures 5a and 5b.





4.1 CHARACTERIZATION OF THE PROJECT AREA

On-site surveys verified the presence of 4.03 acres of wetlands and zero linear feet of WOTUS. These features are described in Table 2. A total of 15 sample locations were evaluated across the project area (see Figures 5a and 5b). The four wetlands observed did not possess a connection with any surface waters, were not adjacent to surface waters, and were closed systems. GSRC's findings were the same as those concluded during the previous Jurisdictional Determination, NAE-2014-01568. The May 17 and 18, 2022 investigations took place during a below normal period as demonstrated by the USACE Antecedent Precipitation Tool (Figure 6) (Deters 2020).

	Table 2 WOTOS Survey Data for 104 F W Troject Area					
Delineated Features	NWI Classification	Field Observation	Acres in Project Area	Coordinates NAD 83 (Decimal Degrees)		
Wetland 1	No data	Freshwater Forested/Shrub Wetland	0.07 acre	42.163221, -72.706282		
Wetland 2	No data	Freshwater Forested/Shrub Wetland	0.03 acre	42.163879, -72.707121		
Wetland 3	Freshwater Emergent Wetland and Freshwater Forested/Shrub Wetland	Freshwater Emergent Wetland and Freshwater Forested/Shrub Wetland	3.77 acres	42.165791, -72.707954		
Wetland 4	Freshwater Emergent Wetland	Freshwater Emergent Wetland/ Freshwater Forested/Shrub Wetland	0.17 acre	42.166263, -72.70657		

Table 2WOTUS Survey Data for 104 FW Project Area

4.2 WETLAND DESCRIPTIONS

Four wetlands were identified within the study area. Table 2 shows the acreage of each wetland area and photographs of each wetland sample plot are included in Appendix A. Data sheets for all sample plots are in Appendix B. A brief description of each of the wetland areas is provided below.

Wetland 1 is a small, isolated wetland (0.07 acre) located in the southeastern portion of the wooded tract that lies east of the airfield. This wetland seems to be man-made as it has a rectangular shape and may have been created while establishing the airfield. The soil type within this wetland is Hinckley loamy sand, 0 to 3 percent slopes, which is considered a non-hydric soil. The dominant vegetation includes red maple, northern red oak, eastern white pine, Canada mayflower, and common serviceberry. This wetland has no surface connections to any WOTUS, nor is it adjacent to any WOTUS. Wetland 1 was previously determined by the USACE not to be jurisdictional (see Approved Jurisdictional Determination NAE-2014-01568 in Appendix A). Site conditions per that Jurisdictional Determination have not changed. In addition to the USACE, the Massachusetts Department of Environmental Protection (MassDEP) will receive a copy of the Draft Final WOTUS Report for them to review and if needed conduct a site review to determine if Wetland 1 meets the definition of wetlands in accordance with the regulations governing Massachusetts's Wetlands Protection Act.



Figure 6 Rainfall Normality 104 FW Installation, Westfield, MA – May 17, 2022, using the Antecedent Rainfall Calculator

Wetland 2 is a small, isolated wetland (0.03 acre) located in the southeastern portion of the wooded tract that lies east of the airfield. The dominant vegetation cover includes eastern white pine, red maple, tussock sedge, and Canada mayflower. The soil types within this wetland include Hinckley loamy sand, 0 to 3 percent slopes and 15 to 25 percent slopes; both of which are considered a non-hydric soil. Wetland 2 has no connectivity to any WOTUS nor is it located adjacent to a WOTUS. This wetland was previously determined by the USACE not to be jurisdictional (see NAE-2014-01568 in Appendix A). Site conditions per that Jurisdictional Determination have not changed. In addition to the USACE, the MassDEP will receive a copy of the Draft Final WOTUS Report for them to review and if needed conduct a site review to determine if Wetland 2 meets the definition of wetlands in accordance with the regulations governing Massachusetts's Wetlands Protection Act.

Wetland 3, the largest and most robust wetland (3.77 acres) found during the delineation is in the north central portion of the wooded tract east of the airfield. This wetland possesses emergent vegetation as well as forest/shrub along the fringes. The central and southern portion of the wetland consists of open water with inter-mixed emergent vegetation and a small band of forested wetland fringe. The soil type within this wetland is Hinckley loamy sand, 15 to 25 percent slopes, which is considered non-hydric soil. The dominant vegetative cover in this portion of the wetland includes red maple, highbush blueberry, tussock sedge, and sensitive fern. The northeastern, north central, and northwestern portions of the wetland consist primarily of emergent and forested/shrub wetland. The dominant vegetative cover in this habitat type is red maple, skunk cabbage (Symplocarpus foetidus), jewelweed (Impatiens capensis), and sensitive fern. This wetland appears to receive water through sheet flow from the surrounding sloped uplands and potentially a seep near the intersection of the northwestern boundary of the wetland and the elevated airfield. This wetland, like Wetlands 1 and 2, has no surface connectivity to any WOTUS, nor is it located adjacent to any WOTUS. Wetland 3 was previously determined by the USACE not to be jurisdictional (see NAE-2014-01568 in Appendix A). Site conditions per that Jurisdictional Determination have not changed. In addition to the USACE, the MassDEP will receive a copy of the Draft Final WOTUS Report for them to review and if needed conduct a site review to determine if Wetland 3 meets the definition of wetlands in accordance with the regulations governing Massachusetts's Wetlands Protection Act.

Wetland 4 is in the northeastern portion of the wooded tract in a natural depression. The wetland consists of emergent vegetation in the center with forested/shrub wetland fringes. The dominant vegetation cover was red maple, lowbush blueberry, and coastal pepperbush. Similar to the other wetlands found at the 104 FW installation, this wetland possesses no connectivity to any WOTUS, nor is it located adjacent to any WOTUS. Wetland 4 was previously determined by the USACE not to be jurisdictional (see NAE-2014-01568 in Appendix A). Site conditions per that Jurisdictional Determination have not changed. In addition to the USACE, the MassDEP will

receive a copy of the Draft Final WOTUS Report for them to review and if needed conduct a site review to determine if Wetland 4 meets the definition of wetlands in accordance with the regulations governing Massachusetts's Wetlands Protection Act.

5.0 CONCLUSION

The 104 FW of the MAANG was investigated on May 17 and 18, 2022 to determine if WOTUS, including wetland conditions, are present on the installation. Fifteen plots were assessed for the presence of wetlands. Five of the assessed sites exhibited the hydrology, hydrophytic vegetation and hydric soils that characterize wetlands as defined by the *1987 Corps of Engineers Wetlands Delineation Manual* and the *2012 Regional Supplement: Northcentral and Northeast Region*.

This report documents the presence of approximately 4.03 acres of wetlands and zero linear feet of WOTUS. Four wetlands were identified during the delineation. None of the wetlands were observed to have a connection with a surface water, nor were they adjacent to any WOTUS, and all appeared to be closed systems. The types of wetlands found on the 104 FW installation consisted of palustrine emergent, palustrine scrub-shrub, open water, and palustrine forest. All waters on the 104 FW installation are components of closed systems. These waters were previously determined to be non-jurisdictional by the USACE as stated in Approved Jurisdictional Determination NAE-2014-01568. The delineation work conducted and discussed in this report identified site conditions have not changed and it is expected the USACE New England District will confirm the delineated wetlands at the 104 FW installation continue to be non-jurisdictional.

The Draft Final WOTUS Report will be submitted to both MassDEP and the USACE New England District along with a cover email requesting both entities to review the report to obtain a current Approved Jurisdictional Determination from the USACE and to obtain a jurisdictional determination from MassDEP. The updated Approved Jurisdictional Determination from the USACE and the Jurisdictional Determination from MassDEP will be added to the Final WOTUS report along with any information resulting from the Jurisdictional Determination reviews to arrive at the Final WOTUS Report.

6.0 **REFERENCES**

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APPENDIX A PHOTOGRAPHS

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Photograph 1. Mixed hardwood forests at P1, facing north, Barnes Air National Guard Base, MA.



Photograph 2. Wetland with hydrophytic vegetation and standing water at P2 (Wetland 1), facing south, Barnes Air National Guard Base, MA.



Photograph 3. Mixed hardwood forests at P3, facing south, Barnes Air National Guard Base, MA.



Photograph 4. Mixed hardwood forests at P4, facing south, Barnes Air National Guard Base, MA.



Photograph 5. Depressed wetland with some hydrophytic vegetation and standing water at P5 (Wetland 2), facing north, Barnes Air National Guard Base, MA.



Photograph 6. Mixed hardwood forests at P6, facing east, Barnes Air National Guard Base, MA.



Photograph 7. Wetland with open water and emergent hydrophytic vegetation at P7 (Wetland 3), facing east, Barnes Air National Guard Base, MA.



Photograph 8. Mixed hardwood forest at P8, facing south, Barnes Air National Guard Base, MA.



Photograph 9. Wetland with hydrophytic vegetation at P9 (Wetland 3), facing east, Barnes Air National Guard Base, MA.



Photograph 10. Mixed hardwood forest at P10, facing west, Barnes Air National Guard Base, MA.



Photograph 11. Wetland with standing water and hydrophytic vegetation at P11 (Wetland 4), facing north, Barnes Air National Guard Base, MA.



Photograph 12. Mixed hardwood forest at P12, facing west, Barnes Air National Guard Base, MA.



Photograph 13. Mixed hardwood forest at P13, facing east, Barnes Air National Guard Base, MA.



Photograph 14. Open field with maintained grass at P14, facing north, Barnes Air National Guard Base, MA.



Photograph 15. Maintained open field at P15, facing west, Barnes Air National Guard Base, MA.

APPENDIX B WETLAND DELINEATION DATA FORMS This page intentionally left blank.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Barnes ANG	City/County: Westfield	Sampling Date: 2022-05-17
Applicant/Owner: Barnes ANG	State	: <u>Massachusetts</u> Sampling Point: P1
Investigator(s): Josh M, Madison V	Section, Township, Range:	
Landform (hillslope, terrace, etc.): Depression	cal relief (concave, convex, none): <u>Co</u>	oncave Slope (%): <u>5</u>
Subregion (LRR or MLRA): <u>S</u> Lat: <u>42.1632596</u>	5 Long:72.70616	508 Datum: WGS 84
Soil Map Unit Name: 253A, Hinckley loamy sand, 0 to 3 perc	ent slopes NV	VI classification: None
Are climatic / hydrologic conditions on the site typical for this time of ye	ear? Yes 🖌 No (If no, e	xplain in Remarks.)
Are Vegetation, Soil, or Hydrology significantly	disturbed? Are "Normal Circum	stances" present? Yes 🖌 No
Are Vegetation, Soil, or Hydrology naturally pr	oblematic? (If needed, explain a	any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes Yes	No 🔽 No 🔽	Is the Sampled Area within a Wetland? Yes <u>No</u>
Wetland Hydrology Present?	Yes	No	If yes, optional Wetland Site ID:
Remarks: (Explain alternative proced	ures here or in a	a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) Water-Stained Leaves (B9)	Drainage Patterns (B10)
High Water Table (A2) Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3) Marl Deposits (B15)	Dry-Season Water Table (C2)
Water Marks (B1) Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2) Oxidized Rhizospheres on Living	Roots (C3) Saturation Vis ble on Aerial Imagery (C9)
Drift Deposits (B3) Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Sc	pils (C6) Geomorphic Position (D2)
Iron Deposits (B5) Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No 🖌 Depth (inches):	
Water Table Present? Ves No 🖌 Depth (inches):	
Saturation Present? Yes No Pepth (inches):	Wetland Hydrology Present? Yes No
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VEGETATION – Use scientific names of plants.

· · · ·	Absolute	Dominant	Indicator	
Tree Stratum (Plot size: 30 ft r)	<u>% Cover</u>	Species?	Status	Dominance Test worksheet:
1. Quercus rubra	40	~	FACU	Number of Dominant Species That Are OBL EACW or EAC: 2 (A)
2 Acer rubrum	20	~	FAC	
2 Pinus strobus	20	~	FACU	Total Number of Dominant
4			·	Percent of Dominant Species That Are OBL EACW or EAC: 33.3 (A/B)
5				
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
	80%	= Total Cov	/er	OBL species 0 x 1 = 0
Sapling/Shrub Stratum (Plot size: 15 ft r)				FACW species 0 $x 2 = 0$
1. Acer rubrum	15	~	FAC	FAC species $\frac{35}{100}$ x 3 = $\frac{105}{1000}$
2.				FACU species $\frac{70}{2}$ x 4 = $\frac{280}{2}$
3			FAC	UPL species $\frac{0}{105}$ x 5 = $\frac{0}{205}$
				Column Totals: 105 (A) 385 (B)
4		·	EACU	Prevalence Index = $B/A = 3.67$
5			FACU	
6			·	Hydrophytic Vegetation Indicators:
7		·		1 - Rapid Lest for Hydrophytic Vegetation
	15%	= Total Cov	/er	2 - Dominance Test is >50%
Herb Stratum (Plot size: 5 ft r)				3 - Prevalence Index is ≤3.0*
1. Amelanchier arborea	5	~	FACU	data in Remarks or on a separate sheet)
2. Maianthemum canadense	5	~	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
3				
		·		¹ Indicators of hydric soil and wetland hydrology must
4				be present, unless disturbed or problematic.
5		·		Definitions of Vegetation Strata:
6				Tree – Woody plants 3 in. (7.6 cm) or more in diameter
7				at breast height (DBH), regardless of height.
8				Sapling/shrub – Woody plants less than 3 in. DBH
9			OBL	and greater than or equal to 3.28 ft (1 m) tall.
10.				Herb – All herbaceous (non-woody) plants, regardless
11				of size, and woody plants less than 3.28 ft tall.
12				Woody vines – All woody vines greater than 3 28 ft in
12	10%		·	height.
00 # -	10 /6	= I otal Cov	/er	
Woody Vine Stratum (Plot size: 30 ft r)				
1				
2				
3				Hydrophytic
4.				Vegetation
		= Total Cov	/er	Present? fes <u>No</u>
Remarks: (Include photo numbers here or on a separate	sheet.)			
	,			
SOIL				
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Profile Desc	cription: (Describe	to the dep	th needed to docu	ment the i	indicator	or confirn	n the absence	of indicators.)
Depth (inches)	<u>Matrix</u>	%	Color (moist)	ox Feature	S Type ¹		Texture	Romarke
0 - 1		100		/0	<u> </u>		Texture	Organic matter
	10/10 2/4				·		Cand	
1 - 10	10 fR 3/4				·	·	Sand	
-					·	<u> </u>		
-					·			
-								
-								
					·			
					·			
					· <u> </u>	. <u></u>		
					·			
-								
¹ Type: C=C	oncentration, D=Dep	oletion, RM=	Reduced Matrix, M	S=Masked	d Sand Gra	ains.	² Location	n: PL=Pore Lining, M=Matrix.
Hydric Soil	Indicators:		Delvisius Dele				Indicators	for Problematic Hydric Soils":
Histosol Histic El	pipedon (A2)		Polyvalue Belo MLRA 149B	w Surface	(58) (LR F	κĸ,	Coast	Prairie Redox (A16) (LRR K, L, MLRA 149B)
Black Hi	istic (A3)		Thin Dark Surfa	, ace (S9) (I	_RR R, MI	RA 149B) 5 cm M	Mucky Peat or Peat (S3) (LRR K, L, R)
Hydroge	en Sulfide (A4)		Loamy Mucky	Mineral (F	1) (LRR K	, L)	Dark S	Surface (S7) (LRR K, L)
Stratified	d Layers (A5) d Below Dark Surfac	ο (Δ11)	Loamy Gleyed	Matrix (F2	2)		Polyva	alue Below Surface (S8) (LRR K, L)
Thick Da	ark Surface (A12)	e (ATT)	Depleted Math	rface (F6)			Iron-M	langanese Masses (F12) (LRR K. L. R)
Sandy N	/lucky Mineral (S1)		Depleted Dark	Surface (F	7)		Piedm	ont Floodplain Soils (F19) (MLRA 149B)
Sandy G	Gleyed Matrix (S4)		Redox Depress	sions (F8)			Mesic	Spodic (TA6) (MLRA 144A, 145, 149B)
Sandy F	Redox (S5)						Red P	arent Material (F21)
Dark Su	inface (S7) (LRR R, I	MLRA 149E	3)				Other	(Explain in Remarks)
3			, 					
[°] Indicators o	f hydrophytic vegeta	tion and we	tland hydrology mu	st be prese	ent, unless	s disturbed	l or problemati	с.
Type:	Layer (il Observed)	•						
Depth (in	ches):						Hydric Soil	Present? Yes No
Remarks:	<u> </u>							
rtomanto.								

Project/Site: Barnes ANG	City/County: Westfield	S	ampling Date: 2022-05-17
Applicant/Owner: Barnes ANG		State: Massachusetts	Sampling Point: P2
Investigator(s): Josh M, Madison V	_ Section, Township, Range:		
Landform (hillslope, terrace, etc.): Depression	ocal relief (concave, convex, noi	ne): Concave	Slope (%): 2
Subregion (LRR or MLRA): <u>S</u> Lat: <u>42.163275</u>	1Long:72	.7061624	Datum: WGS 84
Soil Map Unit Name: 253A, Hinckley loamy sand, 0 to 3 percent	cent slopes	NWI classificati	_{on:} None
Are climatic / hydrologic conditions on the site typical for this time of y	vear? Yes 🖌 No	(If no, explain in Rem	narks.)
Are Vegetation, Soil, or Hydrology significant	y disturbed? Are "Normal	Circumstances" pres	sent? Yes 🖌 No
Are Vegetation, Soil, or Hydrology naturally p	roblematic? (If needed, e	explain any answers i	n Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes 🖌 No Yes 🖌 No	Is the Sampled Area within a Wetland? Yes <u></u> No
Wetland Hydrology Present?	Yes 🥙 No	If yes, optional Wetland Site ID:
Remarks: (Explain alternative proced	ures here or in a separate report.)	

wetianu nyurulogy indicato	ors:			Secondary Indicators (minimum of two required)
Primary Indicators (minimum	of one is required;	Surface Soil Cracks (B6)		
Surface Water (A1)		Drainage Patterns (B10)		
 High Water Table (A2) 		Aquatic Fauna (B13)		Moss Trim Lines (B16)
Saturation (A3)		Marl Deposits (B15)		Dry-Season Water Table (C2)
Water Marks (B1)		 Hydrogen Sulfide Odor (C1) 		Crayfish Burrows (C8)
Sediment Deposits (B2)		Oxidized Rhizospheres on Living	Roots (C3)	Saturation Vis ble on Aerial Imagery (C9)
Drift Deposits (B3)		Presence of Reduced Iron (C4)		Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Second	oils (C6)	Ceomorphic Position (D2)
Iron Deposits (B5)		Thin Muck Surface (C7)		Shallow Aquitard (D3)
Inundation Visible on Aer	ial Imagery (B7)	Other (Explain in Remarks)		Microtopographic Relief (D4)
Sparsely Vegetated Conc	cave Surface (B8)			FAC-Neutral Test (D5)
Field Observations:				
Surface Water Present?	Yes 🖌 No _	Depth (inches): <u>6</u>		
Water Table Present?	Yes 🖌 No _	Depth (inches): 4		
1				
Saturation Present?	Yes 🖌 No	Depth (inches): 0	Wetland H	lydrology Present? Yes 🖌 No
Saturation Present? (includes capillary fringe)	Yes 🖌 No _	Depth (inches): 0	Wetland H	lydrology Present? Yes <u> </u>
Saturation Present? (includes capillary fringe) Describe Recorded Data (stre	Yes <u>v</u> No am gauge, monitor	Depth (inches): 0	Wetland H	lydrology Present? Yes <u> No</u> No
Saturation Present? (includes capillary fringe) Describe Recorded Data (stre	Yes <u>V</u> No am gauge, monitor	Depth (inches): 0	Wetland H	Iydrology Present? Yes <u> </u>
Saturation Present? (includes capillary fringe) Describe Recorded Data (stre Remarks:	Yes <u>v</u> No eam gauge, monitor	Depth (inches): 0	Wetland H	Iydrology Present? Yes <u>✓</u> No
Saturation Present? (includes capillary fringe) Describe Recorded Data (stre Remarks:	Yes <u>/</u> No _	Depth (inches): 0	Wetland H	Iydrology Present? Yes <u> </u>
Saturation Present? (includes capillary fringe) Describe Recorded Data (stre Remarks:	Yes <u>/</u> No am gauge, monitor	Depth (inches): 0	Wetland H	Iydrology Present? Yes <u>✓</u> No ilable:
Saturation Present? (includes capillary fringe) Describe Recorded Data (stre Remarks:	Yes <u>/</u> No am gauge, monitor	Depth (inches): 0	Wetland H	Iydrology Present? Yes <u> No</u> No
Saturation Present? (includes capillary fringe) Describe Recorded Data (stre Remarks:	Yes <u>/</u> No am gauge, monitor	Depth (inches): 0	Wetland H	Iydrology Present? Yes <u> No</u> No
Saturation Present? (includes capillary fringe) Describe Recorded Data (stre Remarks:	Yes <u>v</u> No <u></u> am gauge, monitor	Depth (inches): <u>0</u>	Wetland H	Iydrology Present? Yes <u> </u>
Saturation Present? (includes capillary fringe) Describe Recorded Data (stre Remarks:	Yes <u>v</u> No	Depth (inches): 0	Wetland H	Iydrology Present? Yes <u> No</u> No
Saturation Present? (includes capillary fringe) Describe Recorded Data (stre Remarks:	Yes <u>v</u> No	Depth (inches): 0	Wetland H	Iydrology Present? Yes <u> </u>
Saturation Present? (includes capillary fringe) Describe Recorded Data (stre Remarks:	Yes <u>v</u> No <u></u>	Depth (inches): 0	Wetland H	Iydrology Present? Yes <u>✓</u> No ilable:
Saturation Present? (includes capillary fringe) Describe Recorded Data (stre Remarks:	Yes <u>v</u> No am gauge, monitor	Depth (inches): 0	Wetland H	Iydrology Present? Yes <u> No</u> No
Saturation Present? (includes capillary fringe) Describe Recorded Data (stre Remarks:	Yes <u>v</u> No eam gauge, monitor	Depth (inches): 0	Wetland H	Iydrology Present? Yes <u> No</u> No
Saturation Present? (includes capillary fringe) Describe Recorded Data (stre Remarks:	Yes <u>/</u> No am gauge, monitor	Depth (inches): 0	Wetland H	Iydrology Present? Yes <u> </u>

	Abaaluta	Dominont	Indiantar	1
Tree Stratum (Plot size: 30 ft r)	% Cover	Species?	Status	Dominance Test worksheet:
A Acer rubrum	10	~	FAC	Number of Dominant Species
Pinus strobus	5		FACU	That Are OBL, FACW, or FAC: <u>3</u> (A)
				Total Number of Dominant
3. Quercus alba	5	~	FACU	Species Across All Strata: _/ (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: <u>42.9</u> (A/B)
6				Prevalence Index worksheet:
7.				Total % Cover of: Multiply by:
	20%	- Total Cov	uor.	$\frac{101}{101} \frac{101}{100} \frac{100}{100} 10$
				$\frac{1}{2} = \frac{1}{2}$
Sapling/Shrub Stratum (Plot size: 19101)	45	,	F AO	EAC species 25 $x_3 = 75$
1. Acer rubrum	15	<u> </u>	FAC	$\frac{1}{1} = \frac{1}{1} = \frac{1}$
2. Hamamelis virginiana	5	 ✓ 	FACU	FACO species $\underline{-2}$ $x 4 = \underline{-2}$
3. Vaccinium angustifolium	5	 ✓ 	FACU	Column Totolo: 60 (A) 170 (P)
4.				Column rotals. $$ (A) $$ (B)
5				Prevalence Index = $B/A = 2.83$
o				Hydronhytic Vegetation Indicators:
0				1 - Rapid Test for Hydrophytic Vegetation
7				2 Dominance Test is >50%
	25%	= Total Cov	ver	\sim 2 - Dominance results >50%
Herb Stratum (Plot size: 5 ft r)				S - Flevalence Index is \$5.0
_{1.} Carex stricta	15	~	OBL	data in Remarks or on a separate sheet)
2				Problematic Hydrophytic Vegetation ¹ (Explain)
2				
				¹ Indicators of hydric soil and wetland hydrology must
4			·	be present, unless disturbed or problematic.
5				Definitions of Vegetation Strata:
6				Tree Mandy plants 2 in (7.6 am) or more in diameter
7				at breast height (DBH), regardless of height.
8.				Orallia afabarah - Misarda da ata da a dia - DDU
0				and greater than or equal to 3.28 ft (1 m) tall.
ð				
10		. <u> </u>	. <u></u>	Herb – All herbaceous (non-woody) plants, regardless
11				
12				Woody vines – All woody vines greater than 3.28 ft in
	15%	= Total Cov	/er	neight.
Woody Vine Stratum (Plot size: 30 ft r)				
1				
··				
<u>ــــــــــــــــــــــــــــــــــــ</u>				
3		. <u> </u>		Hydrophytic
4				Present? Yes V No
		= Total Cov	ver	
Remarks: (Include photo numbers here or on a separate	sheet.)			

SOIL	
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Depth	Matrix	to the depi	Red	ox Feature	S			i maloutor 5.j
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0 - 16	10YR 4/1	100					Sandy Loam	
						<u> </u>	. <u> </u>	
-								
-								
-							. <u> </u>	
-							·	
-								
							<u> </u>	
-								
-								
1-							2	
Type: C=C	oncentration, D=Dep	pletion, RM=	Reduced Matrix, M	S=Masked	Sand Gra	ains.	Location:	PL=Pore Lining, M=Matrix.
Histosol			Polyvalue Belo	w Surface	(S8) (I RE	R	2 cm Mu	ck (A10) (I BB K I MI BA 149B)
Histic E	pipedon (A2)		MLRA 149E		(00) (EI	х іх ,	Coast Pr	airie Redox (A16) (LRR K, L, R)
Black H	istic (A3)		Thin Dark Surf	, ace (S9) (I	.RR R, MI	LRA 149B)	5 cm Mu	cky Peat or Peat (S3) (LRR K, L, R)
Hydroge	en Sulfide (A4)		Loamy Mucky	Mineral (F	1) (LRR K	, L)	Dark Sur	face (S7) (LRR K, L)
Stratifie	d Layers (A5)		Loamy Gleyed	Matrix (F2)		Polyvalue	e Below Surface (S8) (LRR K, L)
Deplete	d Below Dark Surfac	ce (A11)	Depleted Matri	x (F3) urfaco (E6)			I hin Dar	K Sufface (S9) (LRR K, L)
Sandy N	Aucky Mineral (S1)		Redux Dark 30	Surface (F0)	7)		Piedmon	t Floodplain Soils (F19) (MLRA 149B)
Sandy C	Gleyed Matrix (S4)		Redox Depres	sions (F8)	.,		Mesic Sp	podic (TA6) (MLRA 144A, 145, 149B)
Sandy F	Redox (S5)			. ,			Red Pare	ent Material (F21)
Stripped	d Matrix (S6)						Very Sha	allow Dark Surface (TF12)
Dark Su	Irface (S7) (LRR R, I	MLRA 149B	5)				Other (E:	xplain in Remarks)
³ Indicators o	f hydrophytic vegeta	ation and we	tland hydrology mu	st be prese	ent. unless	s disturbed	or problematic.	
Restrictive	Layer (if observed)	:		or 50 p. 000				
Type:								
Depth (in	ches).						Hydric Soil P	resent? Yes 🖌 No
Remarks:							-	
Remarks.								

Project/Site: Barnes ANG	tity/County: Westfield Sampling Date: 2022-0	5-17
Applicant/Owner: Barnes ANG	State: Massachusetts Sampling Point: P3	
Investigator(s): Josh M, Madison V	Section, Township, Range:	
Landform (hillslope, terrace, etc.): Flat Lo	al relief (concave, convex, none): <u>None</u> Slope (%):	
Subregion (LRR or MLRA): <u>S</u> Lat: <u>42.1637192</u>	Long: -72.7082648 Datum: WGS	84
Soil Map Unit Name: 253A, Hinckley loamy sand, 0 to 3 perc	nt slopes NWI classification: None	
Are climatic / hydrologic conditions on the site typical for this time of ye	r? Yes 🔽 No (If no, explain in Remarks.)	
Are Vegetation, Soil, or Hydrology significantly	listurbed? Are "Normal Circumstances" present? Yes <u>/</u> No _	
Are Vegetation, Soil, or Hydrology naturally pr	lematic? (If needed, explain any answers in Remarks.)	

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes Yes	No 🔽	Is the Sampled Area within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No 🔽	If yes, optional Wetland Site ID:
Remarks: (Explain alternative proced	lures here or in a	a separate report.)	

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) Water-Stained Leaves (B9)	Drainage Patterns (B10)
High Water Table (A2) Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3) Marl Deposits (B15)	Dry-Season Water Table (C2)
Water Marks (B1) Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2) Oxidized Rhizospheres on Living R	Roots (C3) Saturation Vis ble on Aerial Imagery (C9)
Drift Deposits (B3) Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soi	ils (C6) Geomorphic Position (D2)
Iron Deposits (B5) Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No 🖌 Depth (inches):	
Water Table Present? Yes No V Depth (inches):	
Saturation Present? Yes No 🖌 Depth (inches):	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Ver Depth (inches):	Wetland Hydrology Present? Yes No
Saturation Present? Yes No ✓ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Concern Present? Yes No Concern Present? No Concern Present? No Concern Present? Present Pr	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Concern Depth (inches): Concern Con	Wetland Hydrology Present? Yes No
Saturation Present? Yes No ✓ Depth (inches):	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection Remarks: Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection Remarks: Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection Remarks: Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection Remarks: Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No ✓ Depth (inches):	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection) Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Copy Depth (inches): Copy Copy Copy Copy Copy Copy Copy Copy	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Concern Depth (inches): Concern Con	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Concern Depth (inches): Concern Con	Wetland Hydrology Present? Yes <u>No</u>

· · · ·	Abaaluta	Deminent	lu al'a a ta a	
Tree Stratum (Plot size: 30 ft r)	% Cover	Species?	Status	Dominance Test worksheet:
1 Quercus alba	40	~	FACU	Number of Dominant Species
2 Pinus strobus	20	~	FACU	That Are OBL, FACW, or FAC: \bigcirc (A)
Acer rubrum	10	·	FAC	Total Number of Dominant Species Across All Strata: 5 (B)
3. <u>70011001011</u>		·		
4		·		Percent of Dominant Species That Are OBL EACW or EAC: 0 (A/B)
5		·		
6				Prevalence Index worksheet:
7		·		Total % Cover of: Multiply by:
	70%	= Total Cov	/er	OBL species 0 x 1 = 0
Sapling/Shrub Stratum (Plot size: 15 ft r)				FACW species 0 x 2 = 0
_{1.} Pinus strobus	15	~	FACU	FAC species $\frac{10}{10}$ x 3 = $\frac{30}{10}$
2 Prunus serotina	5	~	FACU	FACU species 85 x 4 = 340
3 Quercus alba	5	~	FACU	UPL species $\frac{0}{25}$ x 5 = $\frac{0}{270}$
				Column Totals: <u>95</u> (A) <u>370</u> (B)
4				Prevalence Index = $B/A = 3.89$
5		·		Hadrenbedie Mandetten hadtestens
6				nyuropnytic vegetation indicators:
7				T - Rapid Test for Hydrophytic Vegetation
	25%	= Total Cov	/er	2 - Dominance Test is >50%
Herb Stratum (Plot size: 5 ft r)				3 - Prevalence Index is ≤3.0
1	_			data in Remarks or on a separate sheet)
2.				Problematic Hydrophytic Vegetation ¹ (Explain)
3				
	_	·		¹ Indicators of hydric soil and wetland hydrology must
4		·		be present, unless disturbed or problematic.
5		·		Definitions of Vegetation Strata:
6		·	<u> </u>	Tree – Woody plants 3 in. (7.6 cm) or more in diameter
7		·	<u> </u>	at breast height (DBH), regardless of height.
8				Sapling/shrub – Woody plants less than 3 in. DBH
9				and greater than or equal to 3.28 ft (1 m) tall.
10				Herb – All herbaceous (non-woody) plants, regardless
11	_			of size, and woody plants less than 3.28 ft tall.
12.				Woody vines – All woody vines greater than 3.28 ft in
		= Total Cov	/er	height.
Woody Vine Stratum (Plot size: 30 ft r)				
(i for size)				
1		·		
2		·		
3		·	·	Hydrophytic Venetation
4				Present? Yes No V
		= Total Cov	/er	
Remarks: (Include photo numbers here or on a separate	sheet.)			

SOIL	
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Profile Des	cription: (Describe	to the dep	oth needed to docu	ment the i	indicator	or confirn	n the absence of ind	licators.)
Depth (inches)	Matrix	0/_	Color (moist)	ox Feature	S Typo ¹		Texture	Remarks
<u>(incries)</u> 0 - 8	10YR 4/4	100		70	<u> </u>		Loamy Sand	Remains
8 - 16	10YR 5/4	100					Loamy Sand	
-								
-								
_								
_								
	<u>.</u>							
¹ Type: C=C Hvdric Soil	oncentration, D=Dep Indicators:	pletion, RM	=Reduced Matrix, M	S=Masked	d Sand Gra	ains.	² Location: PL=I Indicators for Pr	Pore Lining, M=Matrix. roblematic Hvdric Soils ³ :
Histoso	(A1)		Polvvalue Belo	w Surface	(S8) (LR F	R.	2 cm Muck (A	A10) (LRR K. L. MLRA 149B)
Histic E	pipedon (A2)		MLRA 149B	5)	(00) (211	,	Coast Prairie	e Redox (A16) (LRR K, L, R)
Black H	istic (A3)		Thin Dark Surf	ace (S9) (I	_RR R, MI	_RA 149B) 5 cm Mucky	Peat or Peat (S3) (LRR K, L, R)
Hydroge	en Sulfide (A4)		Loamy Mucky	Mineral (F	1) (LRR K	, L)	Dark Surface	e (S7) (LRR K, L)
Stratifie	d Layers (A5) d Below Dark Surfa	co (A11)	Loamy Gleyed	Matrix (F2	2)		Polyvalue Be	elow Sufface (S8) (LRR K, L)
Depiete Thick D	ark Surface (A12)		Depleted Math	v (F6) urface (F6)			Iron-Mangan	ese Masses (F12) (LRR K. L. R)
Sandy M	Mucky Mineral (S1)		Depleted Dark	Surface (F	7)		Piedmont Flo	odplain Soils (F19) (MLRA 149B)
Sandy (Gleyed Matrix (S4)		Redox Depress	sions (F8)	,		Mesic Spodic	c (TA6) (MLRA 144A, 145, 149B)
Sandy F	Redox (S5)						Red Parent N	Material (F21)
Stripped	d Matrix (S6)						Very Shallow	/ Dark Surface (TF12)
Dark Su	urface (S7) (LRR R,	MLRA 149I	B)				Other (Explai	in in Remarks)
³ Indicators o	f hydrophytic vegeta	ation and we	etland hydrology mu	st be prese	ent, unless	s disturbed	l or problematic.	
Type:	Layer (if observed)):						
Depth (in	ches):						Hydric Soil Prese	ent? Yes No 🖌
Remarks:								

Project/Site: Barnes ANG	City/County:	Westfield	Sampling Date: 2022-05-17
Applicant/Owner: Barnes ANG		State:	Massachusetts Sampling Point: <u>P4</u>
Investigator(s): Josh M, Madison V	Section, Towr	nship, Range:	
Landform (hillslope, terrace, etc.): Hillslope	Local relief (conc	ave, convex, none): <u>Con</u>	vex Slope (%): 6
Subregion (LRR or MLRA): <u>S</u> Lat: <u>42.1</u>	638452	Long:72.70709	51 Datum: WGS 84
Soil Map Unit Name: 253A, Hinckley loamy sand, 0 to	3 percent slopes	NW	classification: None
Are climatic / hydrologic conditions on the site typical for this	time of year? Yes	No (If no, exp	olain in Remarks.)
Are Vegetation, Soil, or Hydrology sig	gnificantly disturbed?	Are "Normal Circums	ances" present? Yes 🖌 No
Are Vegetation, Soil, or Hydrology na	aturally problematic?	(If needed, explain ar	y answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes Yes	No 🔽	Is the Sampled Area within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No 🔽	If yes, optional Wetland Site ID:
Remarks: (Explain alternative proced	ures here or in a	a separate report.)	

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) Water-Stained Leaves (B9)	Drainage Patterns (B10)
High Water Table (A2) Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3) Marl Deposits (B15)	Dry-Season Water Table (C2)
Water Marks (B1) Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2) Oxidized Rhizospheres on Living F	Roots (C3) Saturation Vis ble on Aerial Imagery (C9)
Drift Deposits (B3) Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled So	ils (C6) Geomorphic Position (D2)
Iron Deposits (B5) Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No 🖌 Depth (inches):	
Water Table Present? Yes No 🖌 Depth (inches):	
Saturation Present? Yes No Concernence Depth (inches):	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inclus). (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inclus) (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inclus). (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inclus): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inclus). (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inclus). (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inclus) (includes capillary fringe) Mo Depth (inclus) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inclus) (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inclus) (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inclus). (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inclus). (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inclus) (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inclus) (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inclus). (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No

	Absolute	Dominant	Indicator	
Tree Stratum (Plot size: 30 ft r)	% Cover	Species?	Status	Dominance Test worksheet:
1. Pinus resinosa	5	~	FACU	Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
2. Pinus strobus	5	~	FACU	Total Number of Deminant
3. Quercus alba	5	~	FACU	Species Across All Strata: <u>8</u> (B)
4.				Percent of Dominant Species
5	_			That Are OBL, FACW, or FAC: 12.5 (A/B)
6				
7		·		Prevalence Index worksheet:
·	15%	- Total Ca		$\begin{array}{c c} \hline \text{Iotal \% Cover of:} & \text{Multiply by:} \\ \hline \text{OPL opening} & 0 & \text{vi} 1 = 0 \\ \end{array}$
Casting (Christian Christian 15 ft r	1070		ver	$\begin{array}{c} \text{OBL species} & \underline{0} \\ \text{EACW species} & 0 \\ \text{V2} = 0 \end{array}$
Sapling/Shrub Stratum (Plot size: 10111)	15		FAC	FAC species 15 $x_3 = 45$
	<u></u>		EACU	FACU species $\overline{65}$ $x_{4} = \overline{260}$
2. Prunus seronna	<u> </u>			UPL species $0 x 5 = 0$
3. Quercus alba	5	~	FACU	Column Totals: 80 (A) 305 (B)
4		·		5 4 5 5 6 3 81
5				Prevalence Index = $B/A = \frac{3.01}{2}$
6				Hydrophytic Vegetation Indicators:
7				1 - Rapid Test for Hydrophytic Vegetation
	25%	= Total Co	ver	2 - Dominance Test is >50%
Herb Stratum (Plot size: 5 ft r)				3 - Prevalence Index is ≤3.0°
1. Dendrolycopodium obscurum	20	~	FACU	data in Remarks or on a separate sheet)
2. Maianthemum canadense	15	~	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
3 Carex pensylvanica	10	~		
A Pinus strobus	5		FACU	¹ Indicators of hydric soil and wetland hydrology must
		·		be present, unless disturbed of problematic.
5		·		Definitions of Vegetation Strata:
6		·		Tree – Woody plants 3 in. (7.6 cm) or more in diameter
7		· ·	·	at breast height (DBH), regardless of height.
8		·		Sapling/shrub – Woody plants less than 3 in. DBH
9		·		and greater than or equal to 3.28 ft (1 m) tall.
10		·		Herb – All herbaceous (non-woody) plants, regardless
11		·		of size, and woody plants less than 3.28 ft tall.
12				Woody vines – All woody vines greater than 3.28 ft in
	50%	= Total Co	ver	neight.
Woody Vine Stratum (Plot size: <u>30 ft r</u>)				
1				
2.				
3	_			Hydronbytic
4				Vegetation
T		- Total Co		Present? Yes No V
Remarks: (Include photo numbers here or on a separate	sheet)		vei	
	onoou)			

SOIL

Profile Dese	cription: (Describe	to the dep	th needed to docu	ment the	indicator	or confirn	n the absence	of indicators.)
Depth (inches)	Matrix Color (moist)	%	Color (moist)	ox Feature	S Type ¹		Texture	Remarks
<u>0 - 2</u>	10YR 3/2	100		/0			Sand	
2 - 4	10YR 2/3						Sandy Clay Loam	
<u> </u>	10YR 5/4	100					Sand	
4 - 10	1011(3/4							
-								
					·			
-							2	
'Type: C=C Hydric Soil	oncentration, D=Dep Indicators:	pletion, RM=	Reduced Matrix, M	S=Masked	d Sand Gra	ains.	Locatior	h: PL=Pore Lining, M=Matrix.
Histosol	I (A1)		Polyvalue Belo	w Surface	(S8) (LRF	R,	2 cm M	Muck (A10) (LRR K, L, MLRA 149B)
Histic E	pipedon (A2)		MLRA 149B)	. , .		Coast	Prairie Redox (A16) (LRR K, L, R)
Black H	istic (A3)		Thin Dark Surfa	ace (S9) (I Minoral (E		LRA 149B) 5 cm M	Mucky Peat or Peat (S3) (LRR K, L, R)
Stratifie	d Lavers (A5)		Loamy Gleved	Matrix (F2	1) (LKK K !)	, L)	Polvva	alue Below Surface (S8) (LRR K. L)
Deplete	d Below Dark Surfac	e (A11)	Depleted Matri	x (F3)	,		Thin D	Dark Surface (S9) (LRR K, L)
Thick D	ark Surface (A12)		Redox Dark Su	Irface (F6)			Iron-M	langanese Masses (F12) (LRR K, L, R)
Sandy M	Mucky Mineral (S1)		Depleted Dark	Surface (F	7)		Piedm	Specia (TAS) (MLRA 149B)
Sandy C	Redox (S5)		Redux Depress				Red P	arent Material (F21)
Stripped	d Matrix (S6)						Very S	Shallow Dark Surface (TF12)
Dark Su	urface (S7) (LRR R, I	MLRA 149E	3)				Other	(Explain in Remarks)
³ Indicators o	f hydrophytic vegeta	tion and we	tland hydrology mu	st be pres	ent, unless	s disturbed	l or problemation	с.
Restrictive	Layer (if observed)	:						
Туре:								
Depth (in	ches):						Hydric Soil	Present? Yes No V
Remarks:								

Project/Site: Barnes ANG	City/County: Wes	stfield	Sampling Date: 2022-05-17
Applicant/Owner: Barnes ANG		State: Massachusett	Sampling Point: P5
Investigator(s): Josh M, Madison V	Section, Township	o, Range:	
Landform (hillslope, terrace, etc.): Depression	Local relief (concave	, convex, none): Concave	Slope (%): 2
Subregion (LRR or MLRA): S Lat: 42.1	638312	Long: -72.7070464	Datum: WGS 84
Soil Map Unit Name: 253A, Hinckley loamy sand, 0 to	3 percent slopes	NWI classifica	ation: None
Are climatic / hydrologic conditions on the site typical for this t	time of year? Yes	No (If no, explain in Re	emarks.)
Are Vegetation, Soil, or Hydrology sig	nificantly disturbed?	Are "Normal Circumstances" p	resent? Yes 🖌 No
Are Vegetation, Soil, or Hydrology nat	turally problematic?	(If needed, explain any answer	s in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes 🖌	No No No	Is the Sampled Area within a Wetland? Yes <u>Ves</u> No If yes, optional Wetland Site ID:
Remarks: (Explain alternative procedure	es here or in a	separate report.)	
P5			

Wetland Hydrology Indicato	ors:			Secondary Indicators (minimum of two required)
Primary Indicators (minimum	of one is required; ch	Surface Soil Cracks (B6)		
Surface Water (A1)	_	Water-Stained Leaves (B9)		Drainage Patterns (B10)
 High Water Table (A2) 	_	Aquatic Fauna (B13)		Moss Trim Lines (B16)
Saturation (A3)	-	Marl Deposits (B15)		Dry-Season Water Table (C2)
Water Marks (B1)	-	 Hydrogen Sulfide Odor (C1) 		Crayfish Burrows (C8)
Sediment Deposits (B2)	-	Oxidized Rhizospheres on Living	Roots (C3)	 Saturation Vis ble on Aerial Imagery (C9)
Drift Deposits (B3)	-	Presence of Reduced Iron (C4)		Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	-	Recent Iron Reduction in Tilled So	oils (C6)	Geomorphic Position (D2)
Iron Deposits (B5)	_	Thin Muck Surface (C7)		Shallow Aquitard (D3)
 Inundation Visible on Aer 	ial Imagery (B7)	Other (Explain in Remarks)		Microtopographic Relief (D4)
Sparsely Vegetated Cond	cave Surface (B8)			FAC-Neutral Test (D5)
Field Observations:				
Surface Water Present?	Yes 🖌 No _	Depth (inches): 1		
Water Table Present?	Yes 🖌 No _	Depth (inches): 0		
Saturation Present?	Yes 🖌 No 🔄	Depth (inches): 0	Wetland H	-lydrology Present? Yes 🖌 No
(includes capillary fringe)		a well parial photos, provious ipapas	tiona) if ave	niloble:
Describe Recorded Data (stre	am gauge, monitoni	ig weil, aenai priotos, previous inspec	suons), ii ava	aliadie.
Remarks:				

Tree Stratum (Plot size: <u>30 ft r</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. Pinus strobus	10	~	FACU	That Are OBL, FACW, or FAC: <u>3</u> (A)
2. Acer rubrum	10	 ✓ 	FAC	Total Number of Dominant
3				Species Across All Strata: <u>5</u> (B)
4				Percent of Dominant Species
5			FAC	That Are OBL, FACW, or FAC: <u>60</u> (A/B)
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
	20%	= Total Cov	/er	OBL species $\frac{20}{2}$ x 1 = $\frac{20}{2}$
Sapling/Shrub Stratum (Plot size: 15 ft r)				FACW species 0 $x_2 = 0$
1. Acer rubrum	5	~	FAC	FAC species 10 $x_3 = 40$
2		·		$\begin{array}{c} raco \text{ species } \underline{20} \\ \text{LIPL species } 0 \\ \text{V5} = 0 \end{array}$
3				Column Totals: 55 (A) 145 (B)
4				
5				Prevalence Index = B/A = 2.64
6				Hydrophytic Vegetation Indicators:
7				1 - Rapid Test for Hydrophytic Vegetation
	5%	= Total Cov	/er	\checkmark 2 - Dominance Test is >50%
Herb Stratum (Plot size: 5 ft r)				\checkmark 3 - Prevalence Index is $\leq 3.0^{\circ}$
1. Carex stricta	20	~	OBL	data in Remarks or on a separate sheet)
2. Maianthemum canadense	10	~	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
3. Amelanchier laevis	5			1
4				Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5				Definitions of Vegetation Strata
6.				
7.				Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
8.				Senling/shuth Weady plants loss than 2 in DDU
9.				and greater than or equal to 3.28 ft (1 m) tall.
10.				Herb – All herbaceous (non-woody) plants, regardless
11.				of size, and woody plants less than 3.28 ft tall.
12.				Woody vines – All woody vines greater than 3.28 ft in
	35%	= Total Cov	/er	height.
Woody Vine Stratum (Plot size: 30 ft r)				
1.				
2				
3				Hudronhutio
аа		·		Vegetation
		– Total Cov		Present? Yes Vo No
Remarks: (Include photo numbers here or on a separate	sheet.)	- 10121001		
	,			

Profile Des	cription: (Describe	e to the dep	th needed to docu	ment the	indicator	or confirm	the absence of in	dicators.)	
Depth (inches)	Color (moist)	%	Color (moist)	<u>ox Feature</u> %	S Type ¹	Loc ²	Texture	Remarks	
0 - 5	10YR 3/1	100	, , , , , , , , , , , , , , , , ,				Mucky Sand		
5 - 16	10YR 4/1	100					Sandy Loam		
					·				
-							<u> </u>		
-							. <u> </u>		
-									
-									
-									
-									
-									
					·				
					<u> </u>		·		
-							21	Dens Linian M. Mateix	
Hydric Soil	Indicators:	pletion, RM	Reduced Matrix, N	IS=Masked	d Sand Gr	ains.	Indicators for F	Problematic Hydric Soils ³ :	
Histoso	l (A1)		Polyvalue Belo	ow Surface	(S8) (LR	R,	2 cm Muck	(A10) (LRR K, L, MLRA 149B)	
Histic E	pipedon (A2)		MLRA 149E	B)			Coast Prairi	e Redox (A16) (LRR K, L, R)	
Black H	en Sulfide (A4)		Loamv Mucky	ace (S9) (I Mineral (F	LRR R, MI 1) (LRR K	LRA 149B) . L)) 5 cm Mucky Dark Surfac	(Peat or Peat (S3) (LRR K, L, R) e (S7) (LRR K. L)	
Stratifie	d Layers (A5)		Loamy Gleyed	Matrix (F2	2)	, ,	Polyvalue B	elow Surface (S8) (LRR K, L)	
Deplete	d Below Dark Surface	ce (A11)	Depleted Matri	ix (F3)			Thin Dark Surface (S9) (LRR K, L)		
Sandy N	Mucky Mineral (S1)		Depleted Dark	Surface (F6)	=7)		Piedmont F	loodplain Soils (F12) (LRR K, L, R)	
Sandy (Gleyed Matrix (S4)		Redox Depres	sions (F8)	,		Mesic Spod	lic (TA6) (MLRA 144A, 145, 149B)	
Sandy F	Redox (S5)						Red Parent	Material (F21)	
Dark Su	urface (S7) (LRR R.	MLRA 149E	3)				Other (Explain in Remarks)		
		-	,				<u> </u>	,	
°Indicators o	of hydrophytic vegeta	ation and we	etland hydrology mu	ist be pres	ent, unless	s disturbed	or problematic.		
Type:									
Depth (in	nches):						Hydric Soil Pres	ent? Yes 🖌 No	
Remarks:									

Project/Site: Barnes ANG	City/County: Westfield	Sa	mpling Date: 2022-05-17
Applicant/Owner: Barnes ANG		State: Massachusetts	Sampling Point: P6
Investigator(s): Josh M, Madison V	_ Section, Township, Range:		
Landform (hillslope, terrace, etc.): Hillside	ocal relief (concave, convex, none	_{e):} Concave	Slope (%): 20
Subregion (LRR or MLRA): <u>S</u> Lat: <u>42.165340</u>	5 Long:72.7	7060578	Datum: WGS 84
Soil Map Unit Name: 253D, Hinckley loamy sand, 15 to 25 pe	ercent slopes	NWI classificatio	_{n:} None
Are climatic / hydrologic conditions on the site typical for this time of y	rear? Yes 🖌 No (If	f no, explain in Rema	arks.)
Are Vegetation, Soil, or Hydrology significantl	y disturbed? Are "Normal C	Circumstances" pres	ent? Yes 🖌 No
Are Vegetation, Soil, or Hydrology naturally p	roblematic? (If needed, ex	plain any answers ir	Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes Yes	No 🔽	Is the Sampled Area within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No 🔽	If yes, optional Wetland Site ID:
Remarks: (Explain alternative proced	ures here or in a	a separate report.)	

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) Water-Stained Leaves (B9)	Drainage Patterns (B10)
High Water Table (A2) Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3) Marl Deposits (B15)	Dry-Season Water Table (C2)
Water Marks (B1) Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2) Oxidized Rhizospheres on Living F	Roots (C3) Saturation Vis ble on Aerial Imagery (C9)
Drift Deposits (B3) Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled So	ils (C6) Geomorphic Position (D2)
Iron Deposits (B5) Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No 🖌 Depth (inches):	
Water Table Present? Yes No 🖌 Depth (inches):	
Saturation Present? Yes No Concernence Depth (inches):	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inclus). (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inclus) (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inclus). (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inclus): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks: Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inclus): (includes capillary fringe) Mo Depth (inclus): Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inclus). (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inclus) (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inclus) (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inclus). (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inclus). (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inclus). (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inclus) (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inclus) (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inclus). (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No

	Absoluto	Dominant	Indicator	
Tree Stratum (Plot size: 30 ft r)	% Cover	Species?	Status	Dominance Test worksheet:
A Quercus alba	25	~	FACU	Number of Dominant Species
				That Are OBL, FACW, or FAC: 0 (A)
	15		FACU	Total Number of Dominant
3. Pinus resinosa	5		FACU	Species Across All Strata: <u>4</u> (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 0 (A/B)
6				
7				Prevalence Index worksheet:
/	450/			Total % Cover of:Multiply by:
	45%	= Total Cov	ver	OBL species $\frac{0}{0}$ $x_1 = \frac{0}{0}$
Sapling/Shrub Stratum (Plot size: 15 ft r)				FACW species 0 $x^2 = 0$
1. Quercus rubra	15	✓	FACU	FAC species $\frac{0}{0}$ $x^3 = \frac{0}{00}$
2. Quercus alba	5	~	FACU	FACU species $\frac{65}{2}$ $x 4 = \frac{260}{2}$
3				UPL species $\frac{0}{25}$ x 5 = $\frac{0}{200}$
				Column Totals: <u>65</u> (A) <u>260</u> (B)
4				Provolonce Index = P/A = 4.00
5				
6				Hydrophytic Vegetation Indicators:
7.				1 - Rapid Test for Hydrophytic Vegetation
	20%	- Total Co	(or	2 - Dominance Test is >50%
E ft r			vei	3 - Prevalence Index is ≤3.0 ¹
Herb Stratum (Plot size: 51(1))	_			4 - Morphological Adaptations ¹ (Provide supporting
1. Vaccinium pailidum	5	<u> </u>	······	data in Remarks or on a separate sheet)
2				Problematic Hydrophytic Vegetation ¹ (Explain)
3.				
4				Indicators of hydric soil and wetland hydrology must
				be present, unless disturbed of problematic.
5				Definitions of Vegetation Strata:
6				Tree – Woody plants 3 in. (7.6 cm) or more in diameter
7				at breast height (DBH), regardless of height.
8				Sanling/shrub – Woody plants less than 3 in DBH
9				and greater than or equal to 3.28 ft (1 m) tall.
10				
10				of size, and woody plants less than 3.28 ft tall.
11			·	
12				Woody vines – All woody vines greater than 3.28 ft in beight
	5%	= Total Cov	ver	neight.
Woody Vine Stratum (Plot size: 30 ft r)				
,,,,				
··				
۲				
3				Hydrophytic
4				Present? Yes No
		= Total Cov	ver	
Remarks: (Include photo numbers here or on a separate	sheet.)			

Profile Dese	cription: (Describe	e to the dep	oth needed to docu	ment the i	ndicator	or confirn	n the absence of indicators.)	
Depth (inches)	Matrix Color (moist)	%	Color (moist)	<u>x Feature</u> %	s Type ¹		Texture Re	marks
0 - 1	10YR 3/2	100		/0			Sandy Loam	inano
1 - 16	10YR 4/4	100					Sandy Loam	
							·	
-								
_								
-								
¹ Type: C=C	oncentration, D=De	pletion, RM	=Reduced Matrix, M	S=Masked	I Sand Gra	ains.	² Location: PL=Pore Lining,	M=Matrix.
Hydric Soil	Indicators:						Indicators for Problematic	Hydric Soils ³ :
Histosol	l (A1) pipedon (A2)		Polyvalue Belo MLRA 149B	w Surface	(S8) (LRF	κR,	2 cm Muck (A10) (LRR P Coast Prairie Redox (A1	6) (LRR K. L. R)
Black H	istic (A3)		Thin Dark Surfa	, ace (S9) (I	.RR R, MI	LRA 149B) 5 cm Mucky Peat or Pea	t (S3) (LRR K, L, R)
Hydroge Stratifie	en Sulfide (A4) d Lavers (A5)		Loamy Mucky I	Mineral (F [.] Matrix (F2	1) (LRR K ')	, L)	Dark Surface (S7) (LRR Polyvalue Below Surface	K, L) (S8) (I RR K I)
Deplete	d Below Dark Surfa	ce (A11)	Depleted Matrix	x (F3)	·)		Thin Dark Surface (S9) (LRR K, L)
Thick Da	ark Surface (A12)		Redox Dark Su	Irface (F6)	-7)		Iron-Manganese Masses	(F12) (LRR K, L, R)
Sandy N	Gleyed Matrix (S4)		Redox Depress	Surrace (F sions (F8)	.7)		Mesic Spodic (TA6) (ML	RA 144A, 145, 149B)
Sandy F	Redox (S5)						Red Parent Material (F2	1)
Stripped	d Matrix (S6) Irface (S7) (LRR R,	MLRA 149	B)				Very Shallow Dark Surfa Other (Explain in Remark)	ce (TF12) ks)
³ Indicators o	f hydrophytic vegeta	ation and w	etland hydrology mu	st be prese	ent, unless	s disturbed	l or problematic.	
Type:	Layer (if observed)):						
Depth (in	ches).						Hydric Soil Present? Yes	No 🖌
Remarks:	onco)							

Project/Site: Barnes ANG	City/County: Westfield	Samplir	ng Date: 2022-05-17
Applicant/Owner: Barnes ANG		State: Massachusetts Sam	pling Point: P7
Investigator(s): Josh M, Madison V	Section, Township, Range:		
Landform (hillslope, terrace, etc.): Depression	Local relief (concave, convex, no	_{ne):} Concave	Slope (%):
Subregion (LRR or MLRA): <u>S</u> Lat: <u>42.165</u>	1631 Long: -72	2.7080976	Datum: WGS 84
Soil Map Unit Name: 253D, Hinckley loamy sand, 15 to 2	5 percent slopes	NWI classification: N	lone
Are climatic / hydrologic conditions on the site typical for this time	e of year? Yes 🔽 No	(If no, explain in Remarks.))
Are Vegetation, Soil, or Hydrology signifi	cantly disturbed? Are "Norma	l Circumstances" present?	Yes 🖌 No
Are Vegetation, Soil, or Hydrology natura	ally problematic? (If needed,	explain any answers in Rer	narks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes <u>v</u> No <u></u> Yes <u>v</u> No	Is the Sampled Area within a Wetland? Yes <u>V</u> No
Wetland Hydrology Present?	Yes Vo	If yes, optional Wetland Site ID:
Remarks: (Explain alternative procedu	res here or in a separate report.)	

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)				
Primary Indicators (minimum of one is required;	check all that apply)	Surface Soil Cracks (B6)				
Surface Water (A1)	Drainage Patterns (B10)					
High Water Table (A2)	Moss Trim Lines (B16)					
Saturation (A3)	✓ Saturation (A3) Marl Deposits (B15)					
Water Marks (B1)	 Hydrogen Sulfide Odor (C1) 	Crayfish Burrows (C8)				
Sediment Deposits (B2)	Oxidized Rhizospheres on Living	Roots (C3) 🛛 🖌 Saturation Vis ble on Aerial Imagery (C9)				
Drift Deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)				
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Sc	bils (C6) Geomorphic Position (D2)				
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)				
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)				
Sparsely Vegetated Concave Surface (B8)		FAC-Neutral Test (D5)				
Field Observations:						
Surface Water Present? Yes 🖌 No	Depth (inches): 2					
Water Table Present? Yes <u>Ves</u> No	Depth (inches): 0					
Saturation Present? Yes <u>Ves</u> No	Depth (inches): 0	Wetland Hydrology Present? Yes 🗹 No				
(includes capillary fringe)						
Describe Recorded Data (stream gauge, monito	ring well, aerial photos, previous inspec	tions), if available:				
Remarks:						
i contanto.						

The Olympic (Distained 20 ft r	Absolute	Dominan	t Indicator	Dominance Test worksheet:
Acor rubrum	<u>% Cover</u>	<u>Species</u> ?		Number of Dominant Species
	20		140	That Are OBL, FACW, or FAC: <u>5</u> (A)
2				Total Number of Dominant
3				Species Across All Strata: <u>6</u> (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 83.3 (A/B)
6.				Barralan a la desenadada a f
7				Tetal % Cover of Multiply by
	20%	Tatal Ca		Multiply by:
5	2070	= Total Co	over	$\begin{array}{c c} \text{OBL species} & \underline{10} & x \\ \hline x \\ x \\$
Sapling/Shrub Stratum (Plot size: 15111)	45		FAOL	FAC species $\frac{10}{20}$ $x_2 = \frac{00}{60}$
1. Populus tremuloides	15	~	FACU	FACt species 15 $x_4 = 60$
2. Vaccinium corymbosum	5	~	FACW	FACO species $\frac{10}{2}$ $x 4 = \frac{00}{2}$
3	<u> </u>			Column Totalo: 60 (A) 160 (P)
4.				Column rotais. <u></u> (A) <u></u> (B)
5				Prevalence Index = $B/A = 2.67$
o		-		Hydronhytic Vegetation Indicators:
6				1 - Ranid Test for Hydrophytic Vegetation
7				✓ 2 - Dominance Test is >50%
	20%	= Total Co	over	\checkmark 3 - Prevalence Index is <3.0 ¹
Herb Stratum (Plot size: 5 ft r)				4 - Morphological Adaptations ¹ (Provide supporting
1. Onoclea sensibilis	10	~	FACW	data in Remarks or on a separate sheet)
2. Carex stricta	5	~	OBL	Problematic Hydrophytic Vegetation ¹ (Explain)
3. Osmunda spectabilis	5	~	OBL	
4				¹ Indicators of hydric soil and wetland hydrology must
		-		be present, unless disturbed of problematic.
5				Definitions of Vegetation Strata:
6				Tree – Woody plants 3 in. (7.6 cm) or more in diameter
7				at breast height (DBH), regardless of height.
8				Sapling/shrub – Woody plants less than 3 in. DBH
9				and greater than or equal to 3.28 ft (1 m) tall.
10				Herb – All herbaceous (non-woody) plants, regardless
11.				of size, and woody plants less than 3.28 ft tall.
12				Woody vines – All woody vines greater than 3.28 ft in
12.	20%	Tatal Oa		height.
20 # *	2070	= Total Co	over	
Woody Vine Stratum (Plot size: 30 It I)				
1				
2				
3				Hydrophytic
4				Vegetation
		= Total Co	over	
Remarks: (Include photo numbers here or on a separate	sheet.)		-	
	,			

SOIL

Profile Desc	cription: (Describe	to the dep	th needed to docu	ment the	indicator	or confirm	the absence	of indicators.)		
Depth (inches)	Color (moist)	%	Color (moist)	<u>ox Feature</u> %	s Tvpe ¹	Loc ²	Texture	Remarks		
0 - 2								Organic		
2 - 16	10VP 2/2	100					Sand			
2 - 10	10111 2/2	100			·		Sanu			
					·					
					. <u> </u>					
-										
_					·					
					·					
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					·					
-										
-										
					·					
					·					
-					·		. <u></u>			
¹ Type: C=C	oncentration, D=Dep	oletion, RM=	Reduced Matrix, N	IS=Masked	d Sand Gra	ains.	² Location	n: PL=Pore Lining, M=Matrix.		
Hydric Soli	Indicators:		Debuselus Bala	Surface			Indicators	tor Problematic Hydric Solis :		
Histosol Histic Fi	nipedon (A2)		Polyvalue Beic MI RA 149F	w Surrace	(58) (LRF	Κ ,	2 cm r Coast	Prairie Redox (A16) (I RR K, I, R)		
Black Hi	istic (A3)		Thin Dark Surf	ace (S9) (I	LRR R, MI	LRA 149B)) 5 cm l	Mucky Peat or Peat (S3) (LRR K, L, R)		
 Hydroge 	en Sulfide (A4)		Loamy Mucky	Mineral (F	1) (LRR K	, L)	Dark S	Surface (S7) (LRR K, L)		
Stratified	d Layers (A5)	- () ()	Loamy Gleyed	Matrix (F2	2)		Polyva	Polyvalue Below Surface (S8) (LRR K, L)		
Depleted	d Below Dark Surrac ark Surface (A12)	e (A11)	Depleted Math	urface (E6)			Inin L	Jark Surface (S9) (LRR K, L) Janganese Masses (F12) (LRR K, L, R)		
Sandy N	Aucky Mineral (S1)		Depleted Dark	Surface (F	7)		Piedm	nont Floodplain Soils (F19) (MLRA 149B)		
Sandy G	Gleyed Matrix (S4)		Redox Depres	sions (F8)			Mesic	Spodic (TA6) (MLRA 144A, 145, 149B)		
Sandy F	Redox (S5)						Red P	Red Parent Material (F21)		
Stripped	I Matrix (56) Inface (S7) (I BB B I	MI RA 149F	2)				Very Shallow Dark Surface (TF12)			
			-)							
³ Indicators o	f hydrophytic vegeta	tion and we	etland hydrology mu	ist be pres	ent, unless	s disturbed	or problemati	С.		
Type:		•								
Denth (in	ches):						Hydric Soil	l Present? Yes 🖌 No		
Remarks:	cnes).						,			
Remarks.										

Project/Site: Barnes ANG	City/County: Westfield	Sar	mpling Date: 2022-05-17
Applicant/Owner: Barnes ANG		State: Massachusetts S	Sampling Point: P8
Investigator(s): Josh M, Madison V	Section, Township, Range:		
Landform (hillslope, terrace, etc.): Hillside	ocal relief (concave, convex, no	one): Convex	Slope (%): 20
Subregion (LRR or MLRA): <u>S</u> Lat: <u>42.164986</u>	4 Long: <u>-72</u>	2.7080970	Datum: WGS 84
Soil Map Unit Name: 253D, Hinckley loamy sand, 15 to 25 pe	rcent slopes	NWI classification	n: None
Are climatic / hydrologic conditions on the site typical for this time of y	ear? Yes No 🗹	(If no, explain in Rema	ırks.)
Are Vegetation, Soil, or Hydrology significantly	/ disturbed? Are "Norma	al Circumstances" prese	ent? Yes No 🔽
Are Vegetation, Soil, or Hydrology naturally pr	oblematic? (If needed,	explain any answers in	Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes Yes	No <u>v</u> No <u>v</u> No <u>v</u>	Is the Sampled Area within a Wetland? Yes No If yes, optional Wetland Site ID:
Remarks: (Explain alternative proced	ures here or in a	a separate report.)	

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) Water-Stained Leaves (B9)	Drainage Patterns (B10)
High Water Table (A2) Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3) Marl Deposits (B15)	Dry-Season Water Table (C2)
Water Marks (B1) Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2) Oxidized Rhizospheres on Living F	Roots (C3) Saturation Vis ble on Aerial Imagery (C9)
Drift Deposits (B3) Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled So	ils (C6) Geomorphic Position (D2)
Iron Deposits (B5) Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No 🖌 Depth (inches):	
Water Table Present? Yes No 🖌 Depth (inches):	
Saturation Present? Yes No 🖌 Depth (inches):	Wetland Hydrology Present? Yes No
Saturation Present? Yes No V Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No ions), if available:
Saturation Present? Yes No Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks: Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ ✓ _ Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks: Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ ✓ _ Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks: Remarks:	Wetland Hydrology Present? Yes No ions), if available:
Saturation Present? Yes No _ ✓ _ Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks: Remarks:	Wetland Hydrology Present? Yes No ions), if available:
Saturation Present? Yes No _ ✓ _ Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks: Remarks:	Wetland Hydrology Present? Yes No ions), if available:
Saturation Present? Yes No _ ✓ _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ ✓ _ Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks: Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No ions), if available:

· · · ·	Abaaluta	Deminent	la di sete a	· · ·
Tree Stratum (Plot size: 30 ft r)	% Cover	Species?	Status	Dominance Test worksheet:
Acer rubrum	5	~	FAC	Number of Dominant Species
2. Quercus velutina	5	~		
		·		Total Number of Dominant
3		·		Species Across All Strata. <u> </u>
4		·		Percent of Dominant Species
5		·		That Are OBL, FACW, or FAC: <u>20</u> (A/B)
6		·		Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
	10%	= Total Co	ver	OBL species 0 $x_1 = 0$
Sapling/Shrub Stratum (Plot size: 15 ft r)				FACW species 0 $x_2 = 0$
1 Pinus strobus	5	~	FACU	FAC species $5 \times 3 = 15$
 Prunus serotina 		~	FACU	FACU species 20 x 4 = 80
		·	17100	UPL species 0 x 5 = 0
3. Quercus velutina	5			Column Totals: <u>25</u> (A) <u>95</u> (B)
4		·		5
5		·		Prevalence Index = B/A =
6				Hydrophytic Vegetation Indicators:
7.				1 - Rapid Test for Hydrophytic Vegetation
	15%	- Total Co	ver	2 - Dominance Test is >50%
Horb Stratum (Plot size: 5 ft r)		- 1010100		3 - Prevalence Index is ≤3.0 ¹
1. Amelanchier arborea	5	~	FACU	4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
2. Maianthemum canadense	5	~	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
3		·		
		·		¹ Indicators of hydric soil and wetland hydrology must
4		·		be present, unless disturbed or problematic.
5		·		Definitions of Vegetation Strata:
6				Tree – Woody plants 3 in. (7.6 cm) or more in diameter
7		·		at breast height (DBH), regardless of height.
8				Sapling/shrub – Woody plants less than 3 in. DBH
9				and greater than or equal to 3.28 ft (1 m) tall.
10.				Herb – All herbaceous (non-woody) plants, regardless
11				of size, and woody plants less than 3.28 ft tall.
12		·		Woody vines – All woody vines greater than 3.28 ft in
12.	10%			height.
20 ft -	10%	= Total Co	ver	
Woody Vine Stratum (Plot size: 30 It I				
1		·		
2		·		
3				Hydrophytic
4.				Vegetation
		= Total Co	ver	Present? fes <u>No</u>
Remarks: (Include photo numbers here or on a separate	sheet.)			
	,			

Depth (inches) Matrix Color (moist) Redox Features Color (moist) Type ¹ Loc ² Texture Remarks 0 - 7 7.5YR 2.5/1 100 Loamy Sand Loamy Sand	Profile Description:	(Describe	to the depth	needed to docur	ment the i	ndicator	or confirm	the absence of	indicators.)	
Inductory Jo Hype Loc Hype Loc Hype Locarny Sand 0 - 7 7.5YR 2.5/1 100	Depth	Matrix	0/2	Color (moist)	x Features			Texture	Pemarka	3
7 - 16 10YR 4/4 100 Loamy Sand -	0 - 7 7.5YF	R 2.5/1	100		70	<u> </u>		Loamy Sand	Kemarka	<u> </u>
	7 - 16 10YR	4/4	100					Loamy Sand		
	-									
	-									
	-									
	-									
			<u> </u>							
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ² Location: PL=Pore Lining, M=Matrix. Hydric Soil Indicators: Indicators for Problematic Hydric Soils ³ :	¹ Type: C=Concentra	ation, D=Dep	eletion, RM=Re	educed Matrix, M	S=Masked	Sand Gra	ains.	² Location: F	PL=Pore Lining, M=N	latrix. c Soils ³ :
Histosol (A1) Polyvalue Below Surface (S8) (LRR R. 2 cm Muck (A10) (LRR K. L. MLRA 149B)	Histosol (A1)			Polvvalue Belo	w Surface	(S8) (LRF	R.	2 cm Muc	ck (A10) (LRR K. L. I	MLRA 149B)
	Histic Epipedon	(A2)		MLRA 149B)	(00) (111	,	Coast Pra	airie Redox (A16) (LF	RR K, L, R)
Black Histic (A3) Thin Dark Surface (S9) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	Black Histic (A3))		_ Thin Dark Surfa	ace (S9) (L	.RR R, MI	_RA 149B)) 5 cm Muc	cky Peat or Peat (S3)	(LRR K, L, R)
Hydrogen Sulfide (A4)Loamy Mucky Mineral (F1) (LRR K, L)Dark Surface (S7) (LRR K, L)	Hydrogen Sulfide	e (A4)		Loamy Mucky Mucky	Motrix (F1	I) (LRR K	, L)	Dark Surl	face (S7) (LRR K, L)	
Stratified Layers (AS) Loanny Gleyed Matrix (F2) Polyvalue Below Surface (So) (LRR R, L)	Depleted Below	(Ab) Dark Surfac	e (A11)	Loamy Gleyed Matrix (F2)				Thin Dark	s Surface (S9) (I RR	(LKK K, L) K I)
Thick Dark Surface (A12) Redox Dark Surface (F6) Iron-Manganese Masses (F12) (LRR K. L. R)	Thick Dark Surfa	ace (A12)	c (/(II)	Redox Dark Su	rface (F6)			Iron-Man	ganese Masses (F12	(LRR K. L. R)
Sandy Mucky Mineral (S1) Depleted Dark Surface (F7) Piedmont Floodplain Soils (F19) (MLRA 149B)	Sandy Mucky Mi	ineral (S1)		Depleted Dark	Surface (F	7)		Piedmont	t Floodplain Soils (F1	9) (MLRA 149B)
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	Sandy Gleyed M	latrix (S4)		_ Redox Depress	sions (F8)	,		Mesic Sp	odic (TA6) (MLRA 14	44A, 145, 149B)
Sandy Redox (S5) Red Parent Material (F21)	Sandy Redox (S	5)						Red Pare	ent Material (F21)	
Stripped Matrix (S6) Very Shallow Dark Surface (TF12)	Stripped Matrix ((S6)		х.				Very Sha	llow Dark Surface (T	F12)
Dark Surface (S7) (LRR R, MLRA 149B) Other (Explain in Remarks)	Dark Surface (S	7) (LRR R, N	MLRA 149B)					Other (Ex	plain in Remarks)	
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	³ Indicators of hydrop	hytic vegeta	tion and wetla	nd hydrology mus	st be prese	ent, unless	s disturbed	or problematic.		
Type:	Type:	r observed):	:							
Depth (inches): No _	Depth (inches):			_				Hydric Soil Pr	esent? Yes	No
Remarks:	Remarks:									

Project/Site: Barnes ANG	City/County: Westfield	Sar	mpling Date: 2022-05-17
Applicant/Owner: Barnes ANG		State: Massachusetts	Sampling Point: P9
Investigator(s): Josh M, Madison V	_ Section, Township, Range:		
Landform (hillslope, terrace, etc.): Terrace	ocal relief (concave, convex, non	_{e):} None	Slope (%):
Subregion (LRR or MLRA): <u>S</u> Lat: <u>42.165905</u>		7088883	Datum: WGS 84
Soil Map Unit Name: 253D, Hinckley loamy sand, 15 to 25 pe	ercent slopes	NWI classification	n: None
Are climatic / hydrologic conditions on the site typical for this time of y	/ear? Yes 🔽 No (lf no, explain in Rema	ırks.)
Are Vegetation, Soil, or Hydrology significantl	ly disturbed? Are "Normal	Circumstances" prese	ent? Yes 🖌 No
Are Vegetation, Soil, or Hydrology naturally p	roblematic? (If needed, e	xplain any answers in	Remarks.)
Are climatic / hydrologic conditions on the site typical for this time of y Are Vegetation, Soil, or Hydrology significantl Are Vegetation, Soil, or Hydrology naturally p	vear? Yes _ ✓ No _ (ly disturbed? Are "Normal roblematic? (If needed, e	lf no, explain in Rema Circumstances" prese xplain any answers in	rks.) ent? Yes <u>✔</u> No Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes 🖌 No Yes 🖌 No	Is the Sampled Area within a Wetland? Yes <u></u> No
Wetland Hydrology Present?	Yes 🥙 No	If yes, optional Wetland Site ID:
Remarks: (Explain alternative proced	ures here or in a separate report.)	

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)		
Primary Indicators (minimum of one is required;	check all that apply)	Surface Soil Cracks (B6)		
✓ Surface Water (A1)	 Water-Stained Leaves (B9) 	Drainage Patterns (B10)		
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3)	Marl Deposits (B15)	Dry-Season Water Table (C2)		
Water Marks (B1)	 Hydrogen Sulfide Odor (C1) 	Crayfish Burrows (C8)		
Sediment Deposits (B2)	Oxidized Rhizospheres on Living	Roots (C3) 🗹 Saturation Vis ble on Aerial Imagery (C9)		
Drift Deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Sc	bils (C6) Geomorphic Position (D2)		
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)		✓ FAC-Neutral Test (D5)		
Field Observations:				
Surface Water Present? Yes 🖌 No	Depth (inches): 0			
Water Table Present? Yes <u> Ves</u> No	Depth (inches): 0			
Saturation Present? Yes 🖌 No _	Depth (inches): 0	Wetland Hydrology Present? Yes 🗹 No		
(includes capillary fringe)				
Describe Recorded Data (stream gauge, monito	ring well, aerial photos, previous inspec	tions), if available:		
Remarks [.]				
Konano.				

00 (Absolute	Dominant	Indicator	Dominance Test worksheet
Tree Stratum (Plot size: 30 ft r)	<u>% Cover</u>	Species?	<u>Status</u>	Number of Dominant Species
1. Acer rubrum	5	~	FAC	That Are OBL, FACW, or FAC: 4 (A)
2				Total Number of Dominant
3				Species Across All Strata: 4 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 100 (A/B)
6.				
7				Prevalence Index worksheet:
/·	5%	Tatal Oa	·	I otal % Cover of: Multiply by:
15 ft *	570		/er	OBL species 35 $x_1 = 70$
Sapling/Shrub Stratum (Plot size: 15 It I)	_			FACW species 5 $x_2 = \frac{15}{15}$
1. Castanea dentata	5	<u> </u>		FAC species 0 $x_3 = 10$
2. Lindera benzoin	5	~	FACW	$\begin{array}{c} x = \underline{0} \\ y = $
3				Column Totale: 70 (A) 115 (B)
4.				Column Totals. (A) (B)
5				Prevalence Index = $B/A = 1.64$
6				Hydrophytic Vegetation Indicators:
			. <u></u>	1 - Rapid Test for Hydrophytic Vegetation
7			<u> </u>	✓ 2 - Dominance Test is >50%
	10%	= Total Cov	/er	\checkmark 3 - Prevalence Index is <3.0 ¹
Herb Stratum (Plot size: 5 ft r)				4 - Morphological Adaptations ¹ (Provide supporting
1. Symplocarpus foetidus	30	~	OBL	data in Remarks or on a separate sheet)
2. Onoclea sensibilis	20	~	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
3. Impatiens capensis	10		FACW	
4				Indicators of hydric soil and wetland hydrology must
				be present, unless disturbed of problematic.
5				Definitions of Vegetation Strata:
6				Tree – Woody plants 3 in. (7.6 cm) or more in diameter
7		<u> </u>		at breast height (DBH), regardless of height.
8				Sapling/shrub – Woody plants less than 3 in. DBH
9				and greater than or equal to 3.28 ft (1 m) tall.
10				Herb – All herbaceous (non-woody) plants, regardless
11				of size, and woody plants less than 3.28 ft tall.
12.				Woody vines – All woody vines greater than 3.28 ft in
	60%	- Total Cov		height.
Weather View Construmt (Plat size, 30 ft r		- 101ai 000		
Woody vine Stratum (Plot size: <u>so ret</u>)				
1			<u> </u>	
2				
3				Hydrophytic
4				Vegetation Present? Ves V
		= Total Cov	/er	
Remarks: (Include photo numbers here or on a separate	sheet.)			

SOIL

Profile Des	cription: (Describe	to the dep	th needed to docu	iment the	indicator	or confirm	the absence	of indicators.)		
Depth (inches)	Matrix Color (moist)	%	Color (moist)	ox Feature %	s Type ¹	Loc ²	Texture	Remarks		
0 - 1				/0	<u> </u>		<u> </u>	Organic		
1 - 8	7.5YR 2.5/1	100						Soil too wet to sample past 8 inches		
								· · ·		
	· _									
					·					
-										
-										
-	·									
-										
-										
-										
¹ Type: C=C	Concentration D=Der	letion RM=		 IS=Masker	Sand Gr	ains	² Location	PI =Pore Lining M=Matrix		
Hydric Soil	Indicators:					uno.	Indicators	for Problematic Hydric Soils ³ :		
Histoso	l (A1)		Polyvalue Belo	ow Surface	(S8) (LRF	RR,	2 cm M	Muck (A10) (LRR K, L, MLRA 149B)		
Histic E Black H	ipipedon (A2) listic (A3)		MLRA 149E	3) face (S9) (I		RA 149B)	Coast Prairie Redox (A16) (LRR K, L, R)			
✓ Hydroge	en Sulfide (A4)		Loamy Mucky	Mineral (F	1) (LRR K	, L)	Dark S	Surface (S7) (LRR K, L)		
Stratifie	d Layers (A5)	()	Loamy Gleyed	Matrix (F2	2)		Polyva	Polyvalue Below Surface (S8) (LRR K, L)		
Deplete Thick D	ed Below Dark Surface	e (A11)	Depleted Matr Redox Dark S	ıx (F3) urface (F6)			Ihin Dark Surface (S9) (LRR K, L) Iron-Manganese Masses (F12) (I RR K, L, R)			
Sandy I	Mucky Mineral (S1)		Depleted Dark	Surface (F	7)		Piedmont Floodplain Soils (F19) (MLRA 149B)			
Sandy (Gleyed Matrix (S4)		Redox Depres	sions (F8)			Mesic	Spodic (TA6) (MLRA 144A, 145, 149B)		
Sandy i Strippe	Redox (S5) d Matrix (S6)						Red Parent Material (F21)			
Dark Su	urface (S7) (LRR R, I	MLRA 149E	3)				Other (Explain in Remarks)			
³ Indicators o	of hydrophytic vegeta	ition and we	tland hydrology mu	ust be prese	ent, unless	s disturbed	or problemation	2.		
Restrictive	Layer (if observed)	:	, ,,	•	,					
Туре:										
Depth (ir	nches):						Hydric Soil	Present? Yes V No		
Remarks:										

Project/Site: Barnes ANG	City/County: Westfield	Sam	oling Date: 2022	2-05-17
Applicant/Owner: Barnes ANG		_ State: Massachusetts Sa	mpling Point: P1	0
Investigator(s): Josh M, Madison V	Section, Township, Range:			
Landform (hillslope, terrace, etc.): Hillslope	Local relief (concave, convex, no	ne): None	Slope (%)	<u>5</u>
Subregion (LRR or MLRA): <u>S</u> Lat: <u>42.14</u>	78220 Long:72	.7353525	Datum: W	GS 84
Soil Map Unit Name: 253D, Hinckley loamy sand, 15 to 2	25 percent slopes	NWI classification:	None	
Are climatic / hydrologic conditions on the site typical for this tim	ne of year? Yes 🖌 No	(If no, explain in Remark	xs.)	
Are Vegetation, Soil, or Hydrology signi	ficantly disturbed? Are "Norma"	l Circumstances" presen	t?Yes 🖌	No
Are Vegetation, Soil, or Hydrology nature	rally problematic? (If needed, e	explain any answers in R	temarks.)	

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes Yes	No 🔽	Is the Sampled Area within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No 🔽	If yes, optional Wetland Site ID:
Remarks: (Explain alternative proced	ures here or in a	a separate report.)	

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)		
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)		
Surface Water (A1) Water-Stained Leaves (B9)	Drainage Patterns (B10)		
High Water Table (A2) Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3) Marl Deposits (B15)	Dry-Season Water Table (C2)		
Water Marks (B1) Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2) Oxidized Rhizospheres on Living R	Roots (C3) Saturation Vis ble on Aerial Imagery (C9)		
Drift Deposits (B3) Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled So	ils (C6) Geomorphic Position (D2)		
Iron Deposits (B5) Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)	FAC-Neutral Test (D5)		
Field Observations:			
Surface Water Present? Yes No 🖌 Depth (inches):			
Water Table Present? Yes No 🖌 Depth (inches):			
Saturation Present? Yes No 🖌 Depth (inches):	Wetland Hydrology Present? Yes No _		
Saturation Present? Yes No V Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No		
Saturation Present? Yes No Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect	Wetland Hydrology Present? Yes No		
Saturation Present? Yes No Concern Present? Yes No Concern Present? No Concern Present? Depth (inches): Concern Present Presen	Wetland Hydrology Present? Yes No		
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No <u>*</u>		
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No <u>✓</u>		
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No <u>✓</u>		
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No <u>✓</u>		
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks: Remarks:	Wetland Hydrology Present? Yes No <u>✓</u>		
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks: Remarks:	Wetland Hydrology Present? Yes No <u>*</u>		
Saturation Present? Yes No _ ✓ _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No <u>*</u>		
Saturation Present? Yes No <u>v</u> Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No		
Saturation Present? Yes No <u>'</u> Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No _✔ tions), if available:		
Saturation Present? Yes No <u>'</u> Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No		
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No		

Trop Stratum (Plat size: 30 ft r)	Absolute	Dominant	Indicator	Dominance Test worksheet:				
Acer rubrum	<u>-% Cover</u> 15		FAC	Number of Dominant Species				
	5	~	FACU	That Are OBL, FACW, or FAC: 3 (A)				
	<u> </u>		17100	Total Number of Dominant				
3				Species Across All Strata. <u> </u>				
4			·	Percent of Dominant Species				
5		·						
6				Prevalence Index worksheet:				
7		· - <u></u>		Total % Cover of: Multiply by:				
	20%	= Total Co	ver	OBL species 0 x 1 = 0				
Sapling/Shrub Stratum (Plot size: 15 ft r)				FACW species 0 $x 2 = 0$				
1. Acer rubrum	5	~	FAC	FAC species 30 $x_3 = 90$				
2. Acer saccharum	5	~	FACU	FACU species 25 $x 4 = 100$				
_{3.} Pinus strobus	5	~	FACU	UPL species 0 $x = 0$ 190 $x = 100$				
4 Prunus serotina	5	~	FACU	Column Totals: (A) (B)				
5				Prevalence Index = $B/A = \frac{3.45}{1000}$				
6				Hydrophytic Vegetation Indicators:				
o		·	·	1 - Rapid Test for Hydrophytic Vegetation				
/	20%			2 - Dominance Test is >50%				
Г () -	20%	= Total Co	ver	3 - Prevalence Index is ≤3.0 ¹				
Herb Stratum (Plot size: 5 ft f)	10			4 - Morphological Adaptations ¹ (Provide supporting				
1. Acer rubrum	- 10	<u> </u>	FAC	data in Remarks or on a separate sheet)				
2. Prunus serotina	5	~	FACU	Problematic Hydrophytic Vegetation' (Explain)				
3		· - <u></u>		¹ Indicators of hydric soil and wetland hydrology must				
4			·	be present, unless disturbed or problematic.				
5		·		Definitions of Vegetation Strata:				
6				Tree Weeds plants 2 in (7.6 am) or more in diameter				
7	<u> </u>			at breast height (DBH), regardless of height.				
8				Sanling/shrub – Woody plants less than 3 in DBH				
9.				and greater than or equal to 3.28 ft (1 m) tall.				
10.	_			Herb – All berbaceous (non-woody) plants, regardless				
11				of size, and woody plants less than 3.28 ft tall.				
12		·	·	Woody vines – All woody vines greater than 3.28 ft in				
12.	15%	Total Ca		height.				
100 ft	10/10		ver					
Woody vine Stratum (Plot size:)								
1			·					
2		·	·					
3		·	·	Hydrophytic				
4			·	Present? Yes No				
		= Total Co	ver					
Remarks: (Include photo numbers here or on a separate	sheet.)							
Profile Desc	cription: (Describe	e to the dep	th needed to docur	nent the i	ndicator	or confirn	n the absence of indicators.)	
---------------------------	----------------------	--------------	-------------------------------	------------------------------	-------------------	-------------	---	-----------------------
Depth (inches)	Matrix	0/	Redo	x Features			Touturo	
<u>(incries)</u> 0 - 1	10YR 3/3	100		%	<u> </u>		Loamy Sand	
1 . 16	10VP 3/3	100					Loamy Sand	
	101 K 3/3	100						
							··	
-								
-								
				<u> </u>				
-								
-								
-								
¹ Type: C=C	oncentration, D=De	pletion, RM:	=Reduced Matrix, M	S=Masked	Sand Gra	ains.	² Location: PL=Pore Lining, M=Matr	ix.
Hydric Soil	Indicators:						Indicators for Problematic Hydric S	Soils ³ :
Histosol	(A1)		Polyvalue Belov	w Surface	(S8) (LRF	RR,	2 cm Muck (A10) (LRR K, L, MLI	RA 149B)
Histic El	pipedon (A2)		MLRA 149B) Thip Dark Surfs)) (50) (1		DA 1400	Coast Prairie Redox (A16) (LRR	K, L, R)
Hvdroae	en Sulfide (A4)		Loamv Muckv N	lice (39) (∎ ∕lineral (F1		LKA 1490	Dark Surface (S7) (LRR K. L)	RRRR, L , R)
Stratified	d Layers (A5)		Loamy Gleyed Matrix (F2)			, _,	Polyvalue Below Surface (S8) (L	RR K, L)
Deplete	d Below Dark Surfa	ce (A11)	Depleted Matrix (F3)				Thin Dark Surface (S9) (LRR K,	L)
Thick Da	ark Surface (A12)		Redox Dark Surface (F6)				Iron-Manganese Masses (F12) (L	_RR K, L, R)
Sandy N	Aucky Mineral (S1)		Depleted Dark Surface (F7)				Piedmont Floodplain Soils (F19)	(MLRA 149B)
Sandy 6	Sedox (S5)		Redox Depressions (F8)				Red Parent Material (F21)	1 , 145, 149D)
Stripped	d Matrix (S6)						Verv Shallow Dark Surface (TF12	2)
Dark Su	urface (S7) (LRR R,	MLRA 1498	3)				Other (Explain in Remarks)	,
³ Indicators o	f hydrophytic vegeta	ation and we	etland hydrology mus	st be prese	ent, unless	s disturbed	l or problematic.	
Restrictive	Layer (if observed)):						
Туре:								
Depth (in	ches):						Hydric Soil Present? Yes	No
Remarks:								

Project/Site: Barnes ANG	City/County: Westfield	Sampl	ing Date: 2022-05-17
Applicant/Owner: Barnes ANG		State: Massachusetts Sam	npling Point: P11
Investigator(s): Josh M, Madison V	Section, Township, Range:		
Landform (hillslope, terrace, etc.): Depression	Local relief (concave, convex,	none): Concave	Slope (%):
Subregion (LRR or MLRA): S Lat: 42.16	60091 Long: -	72.7064313	Datum: WGS 84
Soil Map Unit Name: 253D, Hinckley loamy sand, 15 to	25 percent slopes	NWI classification: F	reshwater Emergent Wetland
Are climatic / hydrologic conditions on the site typical for this tin	ne of year? Yes 🚩 No	_ (If no, explain in Remarks	.)
Are Vegetation, Soil, or Hydrologysign	ificantly disturbed? Are "Norr	nal Circumstances" present?	Yes 🖌 No
Are Vegetation, Soil, or Hydrology natu	rally problematic? (If needed	d, explain any answers in Re	marks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes <u> </u>	Is the Sampled Area within a Wetland? Yes <u>Ves</u> No If yes, optional Wetland Site ID:				
Remarks: (Explain alternative procedures here or in a separate report.)						

welland hydrology indicators.		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required;	Surface Soil Cracks (B6)	
✓ Surface Water (A1)	Drainage Patterns (B10)	
✓ High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)
✓ Saturation (A3)	Dry-Season Water Table (C2)	
Water Marks (B1)	Crayfish Burrows (C8)	
Sediment Deposits (B2)	Oxidized Rhizospheres on Living F	Roots (C3) 🗹 Saturation Vis ble on Aerial Imagery (C9)
Drift Deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled So	ils (C6) Geomorphic Position (D2)
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)
 Inundation Visible on Aerial Imagery (B7) 	Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)		FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes 🖌 No	Depth (inches): <u>4</u>	
Water Table Present? Yes Yes No	Depth (inches): 0	
Saturation Present? Yes <u>Ves</u> No	Depth (inches): 0	Wetland Hydrology Present? Yes 🗹 No
(includes capillary fringe)		
Describe Recorded Data (stream gauge, monito	ring well, aerial photos, previous inspect	tions), if available:
Remarks:		

Sampling Point: P11

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30 ft r</u>)	<u>% Cover</u>	<u>Species?</u>	<u>Status</u>	Number of Dominant Species
1. Acer rubrum	5	<u> </u>	FAC	That Are OBL, FACW, or FAC: 2 (A)
2				Total Number of Dominant
3				Species Across All Strata: <u>3</u> (B)
4				Demonst of Deminant Species
 Б				That Are OBL, FACW, or FAC: 66.7 (A/B)
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
	5%	= Total Cov	/er	OBL species 0 x 1 = 0
Sapling/Shrub Stratum (Plot size: 15 ft r)				FACW species 0 $x_2 = 0$
1. Clethra alnifolia	20	~	FAC	FAC species 25 $x_3 = 75$
2 Vaccinium angustifolium	5	~	FACU	FACU species 5 $x 4 = 20$
<u>z.</u>				UPL species 0 $x = 0$
3				Column Totals: <u>30</u> (A) <u>95</u> (B)
4		·		Brouglance Index B/A 317
5				
6				Hydrophytic Vegetation Indicators:
7				1 - Rapid Test for Hydrophytic Vegetation
	25%	= Total Cov	/er	✓ 2 - Dominance Test is >50%
Harb Stratum (Distainer 5 ft r				$_$ 3 - Prevalence Index is $\leq 3.0^1$
1.				4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
2.				Problematic Hydrophytic Vegetation ¹ (Explain)
3				
			·	¹ Indicators of hydric soil and wetland hydrology must
4				be present, unless disturbed or problematic.
5				Definitions of Vegetation Strata:
6				Tree – Woody plants 3 in. (7.6 cm) or more in diameter
7				at breast height (DBH), regardless of height.
8				Sapling/shrub – Woody plants less than 3 in DBH
9.				and greater than or equal to 3.28 ft (1 m) tall.
10	_			Herb - All berbaceous (non-woody) plants, regardless
11				of size, and woody plants less than 3.28 ft tall.
···				Weedy vince All weedy vince greater than 2.29 ft in
12		·		height.
		= Total Cov	/er	
Woody Vine Stratum (Plot size: 30 ft r)				
1				
2.				
3	_			Undeenhadie
				Vegetation
4		·		Present? Yes 🖌 No
		= Total Cov	/er	
Remarks: (Include photo numbers here or on a separate	sheet.)			

(inches) (0 - 16 7.5 - - - - -	5YR 2.5/1		Color (moist)	%	Ivna	. /	L ovturo		Remarks	
0 - 16 7.5 	5YR 2.5/1				турс	Loc ²	Texture		rtomanto	
- - - -		- <u> </u>								
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- - -										
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				·	<u> </u>					
				. <u></u>						
-										
	ntration D-Don	lotion PM-P	Anduced Matrix MS	-Mackad	Sand Gr		² Location:	PL-Poro Li	ining M-Mat	iv
vdric Soil Indic	ators:					airið.	Indicators	for Problem	atic Hvdric S	in.
Histosol (A1)			Polyvalue Belov	v Surface	(S8) (L R F	R.	2 cm M	luck (A10) (L	RR K. L. ML	RA 149B)
Histic Epiped	on (A2)	_	MLRA 149B)	Cunace	(00) (11	,	Coast F	Prairie Redo	x (A16) (LRR	K. L. R)
Black Histic (A3)		_ Thin Dark Surfa	ce (S9) (L	.RR R, MI	LRA 149B)	5 cm M	lucky Peat of	r Peat (S3) (L	RR K, L,
_ Hydrogen Su	lfide (A4)	_	Loamy Mucky M	lineral (F1) (LRR K	, L)	Dark Surface (S7) (LRR K, L)			
Stratified Lay	ers (A5)	_	Loamy Gleyed N	Matrix (F2)		Polyvalue Below Surface (S8) (LRR K, L)			
_ Depleted Bel	ow Dark Surface	e (A11)	Depleted Matrix	: (F3)			Thin Da	ark Surface (S9) (LRR K,	L)
_ Thick Dark S	urface (A12)	_	_ Redox Dark Sur	face (F6)			Iron-Ma	anganese Ma	asses (F12) (I	_RR K, L,
Sandy Mucky	/ Mineral (S1)		_ Depleted Dark S	Surface (F	7)		Piedmo	ont Floodplai	n Soils (F19)	(MLRA 14
_ Sandy Gleye	d Matrix (S4)	—	_ Redox Depress	ions (F8)				Spodic (TA6)) (INILKA 1447	A, 145, 14
Sandy Redox Stripped Metric	((33) riv (86)						Red Pa	arent Materia	l (FZ1) Surfaco (TE1:	2)
_ Supped Mail	(S7) (IPPP N		2)				Very Shallow Dark Surface (1F12) Other (Explain in Remarks)			
		ALIXA 1430)							entarks	
ndicators of hvd	rophytic vegetat	tion and wetla	and hvdrology mus	t be prese	ent. unless	s disturbed o	or problematic			
estrictive Lave	r (if observed):		, , , , , , , , , , , , , , , , , , , ,		.,					
Type:	· · ·									
Death (inches)							Hydric Soil	Prosont?	Ves 🗸	No
Depth (Inches)):		_					i resent :	103	
Depth (inches) Remarks:	:						Hydric Soil	Present?	Yes 🥢	I

City/County: Westfield	Sampling Date: 20)22-05-17
S	ate: Massachusetts Sampling Point:	P12
Section, Township, Range:		
al relief (concave, convex, none):	None Slope	(%): 4
Long: <u>-72.70</u>	Datum:	WGS 84
cent slopes	NWI classification: None	
ar? Yes 🔽 No (If no	, explain in Remarks.)	
disturbed? Are "Normal Cire	umstances" present? Yes	No
blematic? (If needed, expla	in any answers in Remarks.)	
	City/County: <u>Westfield</u> St. Section, Township, Range: al relief (concave, convex, none): Long:72.706 cent slopes ar? Yes No (If no disturbed? Are "Normal Circo blematic? (If needed, expla	City/County: Westfield Sampling Date: 20 State: Massachusetts Sampling Point: 20 Section, Township, Range: Sampling Point: 20 al relief (concave, convex, none): None Slope Long: -72.7061743 Datum: cent slopes NWI classification: None ar? Yes V No disturbed? Are "Normal Circumstances" present? Yes V blematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes Yes	No 🔽	Is the Sampled Area within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No 🔽	If yes, optional Wetland Site ID:
Remarks: (Explain alternative proced	lures here or in a	a separate report.)	

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)		
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)		
Surface Water (A1) Water-Stained Leaves (B9)	Drainage Patterns (B10)		
High Water Table (A2) Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3) Marl Deposits (B15)	Dry-Season Water Table (C2)		
Water Marks (B1) Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2) Oxidized Rhizospheres on Living F	Roots (C3) Saturation Vis ble on Aerial Imagery (C9)		
Drift Deposits (B3) Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled So	ils (C6) Geomorphic Position (D2)		
Iron Deposits (B5) Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)	FAC-Neutral Test (D5)		
Field Observations:			
Surface Water Present? Yes No 🖌 Depth (inches):			
Water Table Present? Yes No 🖌 Depth (inches):			
Saturation Present? Yes No 🖌 Depth (inches):	Wetland Hydrology Present? Yes No _		
(includes capillary fringe)	1		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect	ions), if available:		
Remarks:			

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30 ft r</u>)	<u>% Cover</u>	Species?	<u>Status</u>	Number of Dominant Species
1. Quercus rubra	10	~	FACU	That Are OBL, FACW, or FAC: $\underline{1}$ (A)
2. Quercus velutina	10	~		Total Number of Dominant
3. Pinus resinosa	5	~	FACU	Species Across All Strata: <u>6</u> (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: <u>16.7</u> (A/B)
6.				Brovolonoo Indox workshooti
7.				Total % Cover of: Multiply by:
	25%	- Total Cov	ver	$\begin{array}{c} \hline \hline \\ $
Sopling/Shrub Stratum (Plot size: 15 ft r)				FACW species 0 $x^2 = 0$
Acer rubrum	10	~	FAC	FAC species 10 $x_3 = 30$
- Binus strobus	5		EACU	FACU species 30 x 4 = 120
2. <u>Finds strobus</u>			TACO	UPL species $0 \times 5 = 0$
3				Column Totals: <u>40</u> (A) <u>150</u> (B)
4			. <u> </u>	5 5 5 75
5				Prevalence Index = B/A =
6				Hydrophytic Vegetation Indicators:
7	<u> </u>			1 - Rapid Test for Hydrophytic Vegetation
	15%	= Total Cov	ver	2 - Dominance Test is >50%
Herb Stratum (Plot size: 5 ft r)				3 - Prevalence Index is $\leq 3.0^1$
1. Dendrolycopodium dendroideum	5	~	FACU	4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
2. Vaccinium angustifolium	5	~	FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
3	<u> </u>			
4				be present, unless disturbed or problematic.
5.				Definitions of Vagatation Strata
6				Deminions of Vegetation Strata.
7				Tree – Woody plants 3 in. (7.6 cm) or more in diameter
·				at bleast height (DBH), regardless of height.
o				Sapling/shrub – Woody plants less than 3 in. DBH
9			·	
10				Herb – All herbaceous (non-woody) plants, regardless
11			<u> </u>	
12				Woody vines – All woody vines greater than 3.28 ft in height.
	10%	= Total Cov	ver	
Woody Vine Stratum (Plot size: 30 ft r)				
1				
2				
3.				Hydrophytic
4.				Vegetation
		= Total Cov	ver	Present? Yes No
Remarks: (Include photo numbers here or on a separate	sheet.)	- 10101 000		
	,			

Profile Dese	cription: (Describe	to the dep	th needed to docu	ment the	indicator	or confirn	n the absence of inc	licators.)	
(inches)	Color (moist)	%	Color (moist)	<u> </u>	<u>Type¹</u>	Loc ²	Texture	Remarks	S
0 - 6	10YR 3/3	100					Sandy Loam		
6 - 16	7.5YR 4/6	100			·		Loamy Sand		
					. <u> </u>				
					<u> </u>	·	·		
						. <u> </u>			
					<u> </u>		,		
-									
-									
					·				
							· · · · · · · · · · · · · · · · · · ·		
-	. <u> </u>				·		·		
-									
-									
¹ Type: C=C	oncentration D=Der	oletion RM=	-Reduced Matrix M	IS=Masker	d Sand Gr	ains	² Location: PL =	Pore Lining M=M	latrix
Hydric Soil	Indicators:						Indicators for P	roblematic Hydri	ic Soils ³ :
Histosol	I (A1)		Polyvalue Belo	w Surface	(S8) (LRF	RR,	2 cm Muck (A10) (LRR K, L, I	MLRA 149B)
Histic E	pipedon (A2)		MLRA 149B	B)			Coast Prairie	Redox (A16) (LF	RR K, L, R)
Black H Hydroge	istic (A3) en Sulfide (A4)		Thin Dark Surf	ace (S9) (I Mineral (F	LRR R, MI 1) (LRR K	_RA 149B . L)	 5 cm Mucky Dark Surface 	Peat or Peat (S3) e (S7) (LRR K. L)) (LRR K, L, R)
Stratifie	d Layers (A5)		Loamy Gleyed	Matrix (F2	<u>2)</u>	, _/	Polyvalue Be	elow Surface (S8)	(LRR K, L)
Deplete	d Below Dark Surfac	ce (A11)	Depleted Matri	x (F3)			Thin Dark Su	urface (S9) (LRR	K, L)
Thick D	ark Surface (A12)		Redox Dark Su	urface (F6)			Iron-Mangan	ese Masses (F12	2) (LRR K, L, R)
Sandy M	Sleved Matrix (S1)		Depleted Dark Redox Depress	Surface (F sions (F8)	-7)		Pleamont Fig	c (TA6) (MI RA 1 4	9) (MLRA 149B) 44A, 145, 149B)
Sandy F	Redox (S5)						Red Parent I	Material (F21)	· · · · · · · · · · · · · · · · · · ·
Stripped	d Matrix (S6)						Very Shallov	Dark Surface (T	F12)
Dark Su	urface (S7) (LRR R,	MLRA 149E	8)				Other (Expla	in in Remarks)	
³ Indicators o	of hydrophytic vegeta	ation and we	tland hydrology mu	st be pres	ent, unless	s disturbed	d or problematic.		
Restrictive	Layer (if observed)	:							
Туре:									,
Depth (in	ches):						Hydric Soil Prese	ent? Yes	No
Remarks:									

Project/Site: Barnes ANG	City/County: Westfield Sampling	Date: 2022-05-18
Applicant/Owner: Barnes ANG	State: <u></u> State: Sampli	ng Point: P13
Investigator(s): Josh M, Madison V	Section, Township, Range:	
Landform (hillslope, terrace, etc.): Flat Lo	al relief (concave, convex, none): <u>None</u>	Slope (%):
Subregion (LRR or MLRA): <u>S</u> Lat: <u>42.1725470</u>	Long: -72.7206015	Datum: WGS 84
Soil Map Unit Name: 253A, Hinckley loamy sand, 0 to 3 perc	nt slopes NWI classification: No	ne
Are climatic / hydrologic conditions on the site typical for this time of ye	r? Yes <u> </u>	
Are Vegetation, Soil, or Hydrology significantly	listurbed? Are "Normal Circumstances" present?	Yes 🖌 No
Are Vegetation, Soil, or Hydrology naturally pr	lematic? (If needed, explain any answers in Rema	arks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes Yes	No 🔽 No 🔽	Is the Sampled Area within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	If yes, optional Wetland Site ID:
Remarks: (Explain alternative proced	ures here or in a	a separate report.)	

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) Water-Stained Leaves (B9)	Drainage Patterns (B10)
High Water Table (A2) Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3) Marl Deposits (B15)	Dry-Season Water Table (C2)
Water Marks (B1) Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2) Oxidized Rhizospheres on Living F	Roots (C3) Saturation Vis ble on Aerial Imagery (C9)
Drift Deposits (B3) Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled So	ils (C6) Geomorphic Position (D2)
Iron Deposits (B5) Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No 🖌 Depth (inches):	
Water Table Present? Yes No 🖌 Depth (inches):	
Saturation Present? Yes No 🖌 Depth (inches):	Wetland Hydrology Present? Yes No _
(includes capillary fringe)	ione) if available:
Describe Recorded Data (stream gauge, mornitoring weil, aenai photos, previous inspect	ions), il avallable.
Remarks:	

00.5	Absolute	Dominant	Indicator	Dominance Test worksheet
<u>Tree Stratum</u> (Plot size: <u>30 ft r</u>)	<u>% Cover</u>	<u>Species?</u>	<u>Status</u>	Number of Dominant Species
	20		FACU	That Are OBL, FACW, or FAC: 2 (A)
2. Pinus strobus	15	<u> </u>	FACU	Total Number of Dominant
3. Quercus alba	5		FACU	Species Across All Strata: <u>6</u> (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 33.3 (A/B)
6	<u> </u>			Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
	40%	= Total Cov	/er	$OBL \text{ species } 0 \qquad x_1 = 0$
Sapling/Shrub Stratum (Plot size: 15 ft r)				FACW species 5 $x_2 = 10$
1. Acer rubrum	10	~	FAC	FAC species 10 x 3 = 30
2 Quercus alba	5	~	FACU	FACU species $\frac{77}{2}$ x 4 = $\frac{308}{2}$
3 Quercus bicolor	5	~	FACW	UPL species $\frac{0}{20}$ x 5 = $\frac{0}{240}$
				Column Totals: <u>92</u> (A) <u>348</u> (B)
45				Prevalence Index = B/A =
6				Hydrophytic Vegetation Indicators:
7				1 - Rapid Test for Hydrophytic Vegetation
/	20%			2 - Dominance Test is >50%
5 ft r	2078	= Total Cov	/er	3 - Prevalence Index is ≤3.0 ¹
Herb Stratum (Plot size: 51(1))	30		EACU	4 - Morphological Adaptations ¹ (Provide supporting
2 Pinus strobus	2		FACU	Problematic Hydrophytic Vegetation ¹ (Explain)
2			1400	
3				¹ Indicators of hydric soil and wetland hydrology must
4				be present, unless disturbed or problematic.
5			·	Definitions of Vegetation Strata:
6			. <u></u>	Tree – Woody plants 3 in. (7.6 cm) or more in diameter
7				at breast height (DBH), regardless of height.
8				Sapling/shrub – Woody plants less than 3 in. DBH
9				and greater than or equal to 3.28 ft (1 m) tall.
10				Herb – All herbaceous (non-woody) plants, regardless
11	<u> </u>			of size, and woody plants less than 3.28 ft tall.
12				Woody vines – All woody vines greater than 3.28 ft in
	32%	= Total Cov	/er	height.
Woody Vine Stratum (Plot size: 30 ft r)				
1.				
2				
3				Hydrophytic
4				Vegetation
		- Total Cov		Present? Yes No V
Remarks: (Include photo numbers here or on a separate s	sheet.)			
	,			

(inchos)	Matrix	•	Rod	ox Feature	s				
	Color (moist)	%	Color (moist)	<u>%</u>	Type ¹	Loc ²	Texture	Remarks	
0 - 12	10YR 3/3	100					Sandy Loam		
12 - 16	7.5YR 4/6	100			·		Sandy Loam		
					·	·			
			·		·		·		
						<u> </u>			
-									
_									
					·				
					·				
-					·				
-									
-									
_					·				
	oncentration D-Der	letion RM	-Reduced Matrix M	IS-Masker	A Sand Gr	ains	² Location: PL	-Pore Lining M-M	atrix
Hydric Soil	Indicators:						Indicators for F	Problematic Hydric	: Soils ³ :
<u> </u>	(A1)		Polyvalue Belc	w Surface	(S8) (LRF	R,	2 cm Muck	(A10) (LRR K, L, M	LRA 149B)
Histic Ep	bipedon (A2)		MLRA 149B	B)			Coast Prairi	e Redox (A16) (LR	R K, L, R)
Black Hi Hydroge	stic (A3) en Sulfide (A4)		Thin Dark Surf	ace (S9) (I Mineral (F	LKK K, MI 1) (I RR K	_RA 149B) . I.)	Dark Surfac	(S3) (IRR K I)	(LRR K, L, R)
Stratified	d Layers (A5)		Loamy Gleyed	Matrix (F2	?)	, _/	Polyvalue B	elow Surface (S8)	(LRR K, L)
Depleted	d Below Dark Surfac	ce (A11)	Depleted Matri	x (F3)			Thin Dark S	Surface (S9) (LRR M	K, L)
Thick Da	ark Surface (A12)		Redox Dark Su	urface (F6)			Iron-Manga	nese Masses (F12)	(LRR K, L, R)
Sandy N	lucky Mineral (S1)		Depleted Dark Redox Depres	Surface (F8)	-7)		Mesic Spod	loodplain Solis (F19 lic (TA6) (MI RA 14	9) (MILRA 149B) 4A. 145. 149B)
Sandy R	Redox (S5)						Red Parent	Material (F21)	
Stripped	Matrix (S6)						Very Shallo	w Dark Surface (TF	12)
Dark Su	rface (S7) (LRR R,	MLRA 149E	3)				Other (Expl	ain in Remarks)	
		ation and we	etland hydrology mu	st be pres	ent, unless	disturbed	or problematic.		
³ Indicators of	f hvdrophytic vegeta		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
³ Indicators of Restrictive I	f hydrophytic vegeta Layer (if observed)	:							
³ Indicators of Restrictive I Type:	f hydrophytic vegeta L ayer (if observed)	:							
³ Indicators of Restrictive I Type:	f hydrophytic vegeta Layer (if observed) ches):	:	_				Hydric Soil Pres	ent? Yes	No 🖌
³ Indicators of Restrictive I Type: Depth (ind Remarks:	f hydrophytic vegeta Layer (if observed) ches):	:					Hydric Soil Pres	ent? Yes	No
³ Indicators of Restrictive I Type: Depth (ind Remarks:	f hydrophytic vegeta L ayer (if observed) ches):	:					Hydric Soil Pres	ent? Yes	No 🖌
³ Indicators of Restrictive I Type: Depth (ind Remarks:	f hydrophytic vegeta Layer (if observed) ches):	: 					Hydric Soil Pres	ent? Yes	_ No <u>/</u>
³ Indicators of Restrictive I Type: Depth (ind Remarks:	f hydrophytic vegeta Layer (if observed) ches):						Hydric Soil Pres	ent? Yes	_ No
³ Indicators of Restrictive I Type: Depth (ind Remarks:	f hydrophytic vegeta Layer (if observed) ches):						Hydric Soil Pres	ent? Yes	_ No _ 🗸 _
³ Indicators of Restrictive I Type: Depth (ind Remarks:	f hydrophytic vegeta Layer (if observed) ches):	:					Hydric Soil Pres	ent? Yes	_ No <u>/</u>
³ Indicators of Restrictive I Type: Depth (ind Remarks:	f hydrophytic vegeta Layer (if observed) ches):	:					Hydric Soil Pres	ent? Yes	_ No <u> </u>
³ Indicators of Restrictive I Type: Depth (ind Remarks:	f hydrophytic vegeta Layer (if observed) ches):	:					Hydric Soil Pres	ent? Yes	_ No _ 🗸 _
³ Indicators of Restrictive I Type: Depth (ind Remarks:	f hydrophytic vegeta Layer (if observed) ches):	:					Hydric Soil Pres	ent? Yes	_ No <u> </u>
³ Indicators of Restrictive I Type: Depth (ind Remarks:	f hydrophytic vegeta Layer (if observed) ches):	:					Hydric Soil Pres	ent? Yes	_ No _ 🗸 _
³ Indicators of Restrictive I Type: Depth (ind Remarks:	f hydrophytic vegeta Layer (if observed) ches):	:					Hydric Soil Pres	ent? Yes	_ No <u>/</u>
³ Indicators of Restrictive I Type: Depth (ind Remarks:	f hydrophytic vegeta Layer (if observed) ches):	:					Hydric Soil Pres	ent? Yes	_ No <u> </u>
³ Indicators of Restrictive I Type: Depth (ind Remarks:	f hydrophytic vegeta Layer (if observed) ches):	:					Hydric Soil Pres	ent? Yes	_ No _ Ľ _
³ Indicators of Restrictive I Type: Depth (ind Remarks:	f hydrophytic vegeta Layer (if observed) ches):	:					Hydric Soil Pres	ent? Yes	_ No _ 🗸 _
³ Indicators of Restrictive I Type: Depth (ind Remarks:	f hydrophytic vegeta Layer (if observed) ches):	:					Hydric Soil Pres	ent? Yes	_ No <u> </u>

Sampling Date: 2022-05-18
State: Massachusetts Sampling Point: P14
none): None Slope (%):
72.7246157 Datum: WGS 84
NWI classification: None
(If no, explain in Remarks.)
mal Circumstances" present? Yes 🖌 No
d, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes Yes	No No	Is the Sampled Area within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No 🔽	If yes, optional Wetland Site ID:
Remarks: (Explain alternative proce	Jures here or in	a separate report.)	

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) Water-Stained Leaves (B9)	Drainage Patterns (B10)
High Water Table (A2) Aquatic Fauna (B13)	Moss Trim Lines (B16)
Saturation (A3) Marl Deposits (B15)	Dry-Season Water Table (C2)
Water Marks (B1) Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2) Oxidized Rhizospheres on Living R	Roots (C3) Saturation Vis ble on Aerial Imagery (C9)
Drift Deposits (B3) Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled So	ils (C6) Geomorphic Position (D2)
Iron Deposits (B5) Thin Muck Surface (C7)	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks)	Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No 🖌 Depth (inches):	
Water Table Present? Yes No 🖌 Depth (inches):	
Saturation Present? Yes No 🖌 Depth (inches):	Wetland Hydrology Present? Yes No _
Saturation Present? Yes No V Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect	Wetland Hydrology Present? Yes No
Saturation Present? Yes No Concern Present? Yes No Concern Present? No Concern Present? Depth (inches): Concern Present Presen	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No <u>✓</u>
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No <u>✓</u>
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No <u>✓</u>
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks: Remarks:	Wetland Hydrology Present? Yes No <u>✓</u>
Saturation Present? Yes No _ ✓ _ Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No <u>*</u>
Saturation Present? Yes No _ ✓ _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No <u>*</u>
Saturation Present? Yes No <u>v</u> Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No <u>'</u> Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No _✔ tions), if available:
Saturation Present? Yes No <u>'</u> Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No

Trop Stratum (Plot size: 30 ft r)	Absolute	Dominant	Indicator	Dominance Test worksheet:
		<u>opecies:</u>		Number of Dominant Species
1				That Are OBL, FACW, or FAC: \bigcirc (A)
2				Total Number of Dominant
3				Species Across All Strata: (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: (A/B)
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
		= Total Co	ver	OBL species 0 $x_1 = 0$
Sapling/Shrub Stratum (Plot size: 15 ft r)				FACW species <u>15</u> x 2 = <u>30</u>
1.				FAC species $0 x 3 = 0$
2				FACU species 75 x 4 = 300
2		-		UPL species $\frac{11}{x 5} = \frac{55}{x 5}$
3				Column Totals: <u>101</u> (A) <u>385</u> (B)
4				Prevalence Index = B/A = -3.81
5				
6				Hydrophytic Vegetation Indicators:
7				1 - Rapid Test for Hydrophytic Vegetation
		= Total Co	ver	2 - Dominance Test is >50%
Herb Stratum (Plot size: 5 ft r)				3 - Prevalence Index is ≤3.0°
1. Dactylis glomerata	75	~	FACU	 4 - Morphological Adaptations' (Provide supporting data in Remarks or on a separate sheet)
2 Anthoxanthum hirtum	15		FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
3 Rumex acetosa	10		UPI	
Artemisia ludoviciana	1			¹ Indicators of hydric soil and wetland hydrology must
				be present, unless disturbed or problematic.
5				Definitions of Vegetation Strata:
6				Tree – Woody plants 3 in. (7.6 cm) or more in diameter
7				at breast height (DBH), regardless of height.
8				Sapling/shrub – Woody plants less than 3 in. DBH
9				and greater than or equal to 3.28 ft (1 m) tall.
10				Herb – All herbaceous (non-woody) plants, regardless
11				of size, and woody plants less than 3.28 ft tall.
12.				Woody vines – All woody vines greater than 3.28 ft in
	101%	= Total Co	ver	height.
Weedy Vine Stratum (Plot size: 30 ft r)		- 1010100		
1				
2				
3				Hydrophytic
4				Present? Yes No V
		= Total Co	ver	
Remarks: (Include photo numbers here or on a separate	sheet.)			

Profile Desc	cription: (Describe	to the dep	th needed to docu	ment the	indicator	or confirm	the absence of	indicators.)
Depth (inches)	<u>Matrix</u>	%	Color (moist)	ox Feature %	S Type ¹		Texture	Remarks
<u>0</u> - 14	10YR 3/3	100		70	_туре		Sandy Loam	Remains
14 - 16	10YR 4/6	100					Sandy Loam	
-								
-								
-								
-								
-								
_								
¹ Type: C=C	oncentration, D=Dep	oletion, RM=	Reduced Matrix, M	IS=Masked	d Sand Gr	ains.	² Location: F	PL=Pore Lining, M=Matrix.
Histosol			Polyvalue Belo	w Surface	(S8) (I R	R	2 cm Mur	r (A10) (I RR K I MIRA 149R)
Histic E	pipedon (A2)		MLRA 149E		(00) (ER	、 ι、,	Coast Pra	airie Redox (A16) (LRR K, L, R)
Black H	istic (A3)		Thin Dark Surf	, ace (S9) (I	LRR R, MI	LRA 1498) 5 cm Mud	cky Peat or Peat (S3) (LRR K, L, R)
Hydroge	en Sulfide (A4)		Loamy Mucky	Mineral (F	1) (LRR K	, L)	Dark Sur	face (S7) (LRR K, L)
Stratifie	d Layers (A5)	(() () ()	Loamy Gleyed	Matrix (F2	2)		Polyvalue	e Below Surface (S8) (LRR K, L)
Deplete	a Below Dark Surface	ce (A11)	Depleted Math	x (F3) urface (F6)			Inin Dan	A SUITACE (S9) (LRR A, L)
Sandy M	Mucky Mineral (S1)		Redux Dark St	Surface (F0)	-7)		Piedmont	t Floodplain Soils (F19) (MLRA 149B)
Sandy C	Gleved Matrix (S4)		Redox Depres	sions (F8)	')		Mesic Sp	odic (TA6) (MLRA 144A, 145, 149B)
Sandy F	Redox (S5)						Red Pare	ent Material (F21)
Stripped	d Matrix (S6)						Very Sha	Illow Dark Surface (TF12)
Dark Su	urface (S7) (LRR R,	MLRA 149E	8)				Other (E>	kplain in Remarks)
³ Indicators o	of hydrophytic vegeta	tion and we	tland hydrology mu	st be pres	ent, unless	s disturbed	or problematic.	
Restrictive	Layer (if observed)	:						
Depth (in	iches):						Hydric Soil Pr	resent? Yes No 🖌
Remarks:	,							

Sampling Date: 2022-05-18
State: Massachusetts Sampling Point: P15
one): None Slope (%):
2.7231525 Datum: WGS 84
NWI classification: None
_ (If no, explain in Remarks.)
al Circumstances" present? Yes 🔽 No
, explain any answers in Remarks.)
1

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Hydric Soil Present?	Yes Yes	No 🔽 No 🔽	Is the Sampled Area within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	If yes, optional Wetland Site ID:
Remarks: (Explain alternative proced	ures here or in a	a separate report.)	

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)		
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)		
Surface Water (A1) Water-Stained Leaves (B9)	Drainage Patterns (B10)		
High Water Table (A2) Aquatic Fauna (B13)	Moss Trim Lines (B16)		
Saturation (A3) Marl Deposits (B15)	Dry-Season Water Table (C2)		
Water Marks (B1) Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)		
Sediment Deposits (B2) Oxidized Rhizospheres on Living R	Roots (C3) Saturation Vis ble on Aerial Imagery (C9)		
Drift Deposits (B3) Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)		
Algal Mat or Crust (B4) Recent Iron Reduction in Tilled So	ils (C6) Geomorphic Position (D2)		
Iron Deposits (B5) Thin Muck Surface (C7)	Shallow Aquitard (D3)		
Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks)	Microtopographic Relief (D4)		
Sparsely Vegetated Concave Surface (B8)	FAC-Neutral Test (D5)		
Field Observations:			
Surface Water Present? Yes No 🖌 Depth (inches):			
Water Table Present? Yes No 🖌 Depth (inches):			
Saturation Present? Yes No 🖌 Depth (inches):	Wetland Hydrology Present? Yes No _		
Saturation Present? Yes No V Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No		
Saturation Present? Yes No Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect	Wetland Hydrology Present? Yes No		
Saturation Present? Yes No Concern Present? Yes No Concern Present? No Concern Present? Depth (inches): Concern Present Presen	Wetland Hydrology Present? Yes No		
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No <u>*</u>		
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No <u>✓</u>		
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No <u>✓</u>		
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No <u>✓</u>		
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks: Remarks:	Wetland Hydrology Present? Yes No <u>✓</u>		
Saturation Present? Yes No _ ✓ _ Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No <u>*</u>		
Saturation Present? Yes No _ ✓ _ Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No <u>*</u>		
Saturation Present? Yes No <u>v</u> Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No		
Saturation Present? Yes No <u>'</u> Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No _✔ tions), if available:		
Saturation Present? Yes No <u>'</u> Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No _✔ tions), if available:		
Saturation Present? Yes No _ Depth (inches): (includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect Remarks:	Wetland Hydrology Present? Yes No		

Tree Stratum (Plot size: 30 ft r)	Absolute	Dominant	Indicator	Dominance Test worksheet:
(FIOLSIZE. OURT)	<u>/// COVEL</u>	<u>Species</u> :	Status	Number of Dominant Species
1				That Are OBL, FACW, or FAC: (A)
2				Total Number of Dominant
3				Species Across All Strata: 0 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: (A/B)
6				Prevalence Index worksheet:
7				Total % Cover of:Multiply by:
		= Total Cov	/er	OBL species 0 x 1 = 0
Sapling/Shrub Stratum (Plot size: 15 ft r)				FACW species 0 $x_2 = 0$
1.				FAC species 0 x 3 = 0
2				FACU species 0 $x 4 = 0$
3				UPL species $\frac{1}{4}$ x 5 = $\frac{5}{5}$
3				Column Totals: <u>1</u> (A) <u>5</u> (B)
4				Prevalence index = $B/A = 5.00$
5				
6				Hydrophytic Vegetation Indicators:
7				1 - Rapid Lest for Hydrophytic Vegetation
		= Total Cov	/er	2 - Dominance Test is >50%
Herb Stratum (Plot size: 5 ft r)				3 - Prevalence Index is ≤3.0
1. Bromus tectorum	75	~		data in Remarks or on a separate sheet)
2. Artemisia ludoviciana	1		UPL	Problematic Hydrophytic Vegetation ¹ (Explain)
3 Pvrus communis	1			
				¹ Indicators of hydric soil and wetland hydrology must
				be present, unless disturbed of problematic.
5				Definitions of Vegetation Strata:
6				Tree – Woody plants 3 in. (7.6 cm) or more in diameter
7				at breast height (DBH), regardless of height.
8				Sapling/shrub – Woody plants less than 3 in. DBH
9				and greater than or equal to 3.28 ft (1 m) tall.
10				Herb – All herbaceous (non-woody) plants, regardless
11				of size, and woody plants less than 3.28 ft tall.
12				Woody vines – All woody vines greater than 3.28 ft in
	77%	= Total Cov	/er	height.
Woody Vine Stratum (Plot size: 30 ft r)				
1				
·				
2				
3				Hydrophytic Vegetation
4				Present? Yes No
		= Total Cov	/er	
Remarks: (Include photo numbers here or on a separate	sheet.)			

Depth	Matriv	to the dep	Red	ox Feature	s			indicator 5.)	
(inches)	Color (moist)	%	Color (moist)	<u>%</u>	Type ¹	Loc ²	Texture	Remar	ks
0 - 14	10YR 3/4	100					Loamy Sand		
14 - 16	10YR 4/6	100					Loamy Sand		
	· · ·								
-									
-									
-				_					
-									
-									
1 Type: C=Cc	ncentration D=Der	letion RM	=Reduced Matrix M	IS=Maske	d Sand Gr	ains	² Location: P	L=Pore Lining M=	Matrix
Hydric Soil I	ndicators:						Indicators for	Problematic Hyd	Iric Soils ³ :
Histosol	(A1)		Polyvalue Belo	w Surface	(S8) (LRF	R,	2 cm Mucl	k (A10) (LRR K, L	, MLRA 149B)
Histic Ep	ipedon (A2)		MLRA 149B	B)			Coast Pra	irie Redox (A16) (I	LRR K, L, R)
Black His Hydroger	stic (A3) n Sulfide (A4)		Thin Dark Suff	ace (S9) (I Mineral (F	1) (I RR K	LRA 149B) . I.)) 5 cm Mucl Dark Surfa	ky Peat or Peat (S ace (S7) (I RR K I	3) (LRR K, L, R)
Stratified	Layers (A5)		Loamy Gleyed	Matrix (F2	2)	, _/	Polyvalue	Below Surface (Sa	-/ 8) (LRR K, L)
Depleted	Below Dark Surfac	e (A11)	Depleted Matri	x (F3)			Thin Dark	Surface (S9) (LRF	R K, L)
Thick Da	rk Surface (A12)		Redox Dark Su	urface (F6)) 		Iron-Mang	anese Masses (F1	12) (LRR K, L, R)
Sandy M Sandy G	lucky Mineral (S1) leved Matrix (S4)		Depleted Dark Redox Depres	Surface (i sions (F8)	-7)		Mesic Spo	dic (TA6) (MLRA	-19) (MLRA 149B 144A, 145, 149B)
Sandy R	edox (S5)			0.01.0 (1.0)			Red Parer	nt Material (F21)	,,,
	Matrix (S6)						Very Shall	ow Dark Surface ((TF12)
Stripped		MIRA 1498	3)				Other (Exp	plain in Remarks)	
Stripped Dark Sur	face (S7) (LRR R, I						or problematic		
Stripped Dark Sur ³ Indicators of	face (S7) (LRR R, I	ition and we	etland hydrology mu	ist be pres	ent. unless	s disturbed	or proplematic.		
Stripped Dark Sur ³ Indicators of Restrictive L	face (S7) (LRR R, I hydrophytic vegeta .ayer (if observed)	ition and we	etland hydrology mu	ist be pres	ent, unless	s disturbed	or problematic.		
Stripped Dark Sur ³ Indicators of Restrictive L Type:	face (S7) (LRR R, I hydrophytic vegeta ayer (if observed)	ition and we	etland hydrology mu	st be pres	ent, unless	s disturbed			
Stripped Dark Sur ³ Indicators of Restrictive L Type: Depth (inc	face (S7) (LRR R, I hydrophytic vegeta ayer (if observed)	ition and we	etland hydrology mu	ist be pres	ent, unless	s disturbed	Hydric Soil Pre	esent? Yes	No
Stripped Dark Sur ³ Indicators of Restrictive L Type: Depth (inc Remarks:	face (S7) (LRR R, I hydrophytic vegeta .ayer (if observed)	ition and we	etland hydrology mu	st be pres	ent, unless	s disturbed	Hydric Soil Pre	esent? Yes	No
Stripped Dark Sur ³ Indicators of Restrictive L Type: Depth (inc Remarks:	face (S7) (LRR R, I hydrophytic vegeta ayer (if observed)	ition and we	etland hydrology mu	ist be pres	ent, unless	s disturbed	Hydric Soil Pre	esent? Yes	No
Stripped Dark Sur ³ Indicators of Restrictive L Type: Depth (inc Remarks:	face (S7) (LRR R, I hydrophytic vegeta .ayer (if observed) 	ition and we	etland hydrology mu	ist be pres	ent, unless	s disturbed	Hydric Soil Pre	esent? Yes	No
Stripped Dark Sur ³ Indicators of Restrictive L Type: Depth (inc Remarks:	face (S7) (LRR R, I hydrophytic vegeta ayer (if observed)	ition and we	etland hydrology mu	st be pres	ent, unless	s disturbed	Hydric Soil Pre	esent? Yes	No
Stripped Dark Sur ³ Indicators of Restrictive L Type: Depth (inc Remarks:	face (S7) (LRR R, I hydrophytic vegeta ayer (if observed) thes):	tion and we	etland hydrology mu	st be pres	ent, unless	s disturbed	Hydric Soil Pre	esent?Yes	No∕′
Stripped Dark Sur ³ Indicators of Restrictive L Type: Depth (inc Remarks:	face (S7) (LRR R, I hydrophytic vegeta .ayer (if observed)	tion and we	etland hydrology mu	ist be pres	ent, unless	s disturbed	Hydric Soil Pre	esent? Yes	No
Stripped Dark Sur ³ Indicators of Restrictive L Type: Depth (inc Remarks:	face (S7) (LRR R, I hydrophytic vegeta ayer (if observed)	tion and we	etland hydrology mu	st be pres	ent, unless	s disturbed	Hydric Soil Pre	esent? Yes	No <u> </u>
Stripped Dark Sur ³ Indicators of Restrictive L Type: Depth (inc Remarks:	face (S7) (LRR R, I hydrophytic vegeta ayer (if observed) thes):	tion and we	etland hydrology mu	ist be pres	ent, unless	s disturbed	Hydric Soil Pre	esent? Yes	No
Stripped Dark Sur ³ Indicators of Restrictive L Type: Depth (inc Remarks:	face (S7) (LRR R, I hydrophytic vegeta ayer (if observed)	tion and we	etland hydrology mu	st be pres	ent, unless	s disturbed	Hydric Soil Pre	esent? Yes	No
Stripped Dark Sur ³ Indicators of Restrictive L Type: Depth (inc Remarks:	face (S7) (LRR R, I hydrophytic vegeta ayer (if observed) thes):	tion and we	etland hydrology mu	ist be pres	ent, unless	s disturbed	Hydric Soil Pre	esent? Yes	No <u></u>
Stripped Dark Sur ³ Indicators of Restrictive L Type: Depth (inc Remarks:	face (S7) (LRR R, I hydrophytic vegeta ayer (if observed) thes):	tion and we	etland hydrology mu	ist be pres	ent, unless	s disturbed	Hydric Soil Pre	esent? Yes	No
Stripped Dark Sur ³ Indicators of Restrictive L Type: Depth (inc Remarks:	face (S7) (LRR R, I hydrophytic vegeta ayer (if observed)	tion and we	etland hydrology mu	ist be pres	ent, unless	s disturbed	Hydric Soil Pre	esent? Yes	No
Stripped Dark Sur ³ Indicators of Restrictive L Type: Depth (inc Remarks:	face (S7) (LRR R, I hydrophytic vegeta .ayer (if observed) 	tion and we	etland hydrology mu	ist be pres	ent, unless	s disturbed	Hydric Soil Pre	esent? Yes	No
Stripped Dark Sur ³ Indicators of Restrictive L Type: Depth (inc Remarks:	face (S7) (LRR R, I hydrophytic vegeta .ayer (if observed) .hes):	tion and we	etland hydrology mu	ist be pres	ent, unless	s disturbed	Hydric Soil Pre	esent? Yes	No
Stripped Dark Sur ³ Indicators of Restrictive L Type: Depth (inc Remarks:	face (S7) (LRR R, I hydrophytic vegeta ayer (if observed)	tion and we	etland hydrology mu	ist be pres	ent, unless	s disturbed	Hydric Soil Pre	esent? Yes	No

APPENDIX C 2014 PREVIOUS JURISDICTIONAL DETERMINATION

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DEPARTMENT OF THE ARMY US ARMY CORPS OF ENGINEERS NEW ENGLAND DISTRICT 696 VIRGINIA ROAD CONCORD MA 01742-2751

November 7, 2014

Regulatory Division CENAE-R-PEC Permit Number: NAE-2014-01568

Felicia Johnson NEPA Program Manager National Guard Bureau Plans & Requirements Branch (NGB/A7AM) 3501 Fetchet Avenue Joint Base Andrews, Maryland 20762

Dear Ms. Johnson:

This letter responds to your request for a determination of jurisdiction for wetlands on the east side of the Barnes Air National Guard Base located off of Falcon Drive in Westfield, Massachusetts.

Richard Kristoff of our Regulatory Division conducted a field inspection on October 29, 2014 with Erica Sachs of the Environmental Protection Agency. During this site visit, wetlands on the east side of the Base (labeled "WO1A/WO1B", "WO2","WO3", and "WO4" on the attached plans, on two sheet, entitled "Figure 4B" and "Figure 4C"), were reviewed for potential jurisdiction. Mr. Kristoff concluded that these wetlands are geographically isolated from another water. The wetlands are non-navigable and isolated.

We have determined that the wetlands shown on the aforementioned attached plans do not meet the definition of a water of the United States and are therefore not within federal jurisdiction.

The Corps of Engineers has implemented an administrative appeals process for permit denials, proffered permits for which you object to the terms, conditions and jurisdictional determinations. A Notification of Administrative Appeal Options form and flow charts explaining the appeals process and your options are enclosed with this letter. However, in order to retain your right to appeal, you must submit the attached NAAO form within 60 days of this letter's date. For this Initial Proferred Permit, the completed form should be sent to me, Regulatory Division Chief, at 696 Virginia Road, Concord, Massachusetts 01742. Questions regarding the Corps of Engineers appeals process should be directed to Ms. Ruth Ladd, Chief, Policy and Technical Analysis Branch at (978) 318-8818 or at the above address. Attached to this letter are forms explaining the basis for our jurisdictional determinations. If you have any questions please contact Richard Kristoff of my staff, at (978) 318-8171.

Sincerely,

Robert J. Desista Acting Chief, Regulatory Division

Enclosures

MFR:

In accordance with procedures developed for coordination of jurisdictional determinations, the JD for this site was posted for comment on 9/19/14. The "elevate or not deadline" was 10/10/14. In a 10/30/14 e-mail, EPA indicated that they concur with the Corps JD.

SR. PROJECT MANAGER:

BRANCH CHIEF:

CH, REGULATORY DIVISION:

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Appli	cant: Barnes Air National Guard Base	File Number:NAE-2014-	Date: 12
		01568	November 2014
Attached is:			See Section
			below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of		A
	permission)		
	PROFFERED PERMIT (Standard Permit	or Letter of permission)	В
	PERMIT DENIAL		C
Х	APPROVED JURISDICTIONAL DETERM	INATION	D
	PRELIMINARY JURISDICTIONAL DETER	RMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://usace.army.mil/inet/functions/cw/cecwo/reg or

Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the District Engineer for final authorization in care of "Regulatory Division." If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the District Engineer, in care of the Chief, Regulatory Division, as specified in the last paragraph of the cover letter. Your objections must be received within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the District Engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the District Engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the District Engineer for final authorization in care of "Regulatory Division." If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the Division Engineer in care of: James W. Haggerty, Regulatory Appeals Review Officer, US Army Engineer Division, North Atlantic Fort Hamilton Military Community, Bldg. 301, General Lee Avenue, Brooklyn, NY 11252-6700

Telephone: (718) 765-7150, E-mail: James.W.Haggerty@nad02.usace.army.mil. The Division Engineer must receive this form within 60 days of the date of this notice.

• C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the Division Engineer in care of: James W. Haggerty, Regulatory Appeals Review Officer, US Army Engineer Division, North Atlantic Fort Hamilton Military Community, Bldg. 301, General Lee Avenue, Brooklyn, NY 11252-6700. Telephone: (718) 765-7150, E-mail: James.W.Haggerty@nad02.usace.army.mil. The Division Engineer must receive this form within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the Division Engineer in care of: James W. Haggerty, Regulatory Appeals Review Officer, US Army Engineer Division, North Atlantic Fort Hamilton Military Community, Bldg. 301, General Lee Avenue, Brooklyn, NY 11252-6700. Phone: (718) 765-7150, E-mail: James.W.Haggerty@nad02.usace.army.mil. The Division Engineer must receive this form within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district at the address below for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact

Ms. Ruth Ladd at:

Chief, Policy Analysis/Technical Support Branch Corps of Engineers 696 Virginia Road

Concord, MA 01742 or by calling (978) 318-8818

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
Signature of appellant or agent.		



APPROVED JURISDICTIONAL DETERMINATION FORM U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: NAE-2014-01568, Barnes Airforce Base, W01

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State:MA County/parish/borough: Hampden City: Westfield

Center coordinates of site (lat/long in degree decimal format): Lat. 42d 09m 42.14s° N, Long. 072d 42m 57.78s° W. Universal Transverse Mercator:

Name of nearest waterbody: Buck Pond

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows:

Name of watershed or Hydrologic Unit Code (HUC): Westfield

- Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
- Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

- Office (Desk) Determination. Date: July 25, 2014
 - Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There Are no "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide. Waters are presently used, or have been used i

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There Are no "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

- a. Indicate presence of waters of U.S. in review area (check all that apply): ¹
 - TNWs, including territorial seas
 - Wetlands adjacent to TNWs
 - Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
 - Non-RPWs that flow directly or indirectly into TNWs
 - Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
 - Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
 - Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
 - Impoundments of jurisdictional waters
 - Isolated (interstate or intrastate) waters, including isolated wetlands
- b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: _____linear feet: _____width (ft) and/or _____ acres.

- c. Limits (boundaries) of jurisdiction based on: Pick List Elevation of established OHWM (if known):
- 2. Non-regulated waters/wetlands (check if applicable):³
 - Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: Wetland is isolated within a depression being surrounded by a 20 foot change in elvation and lacks a nexus to interstate commerce. The closest Non-TNW waterway is 1078 feet away (Buck Pond). The closest Non-TNW flowing waterbody is 3160 feet away (Pond Brook).

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

 $^{^{2}}$ For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

 TNW Identify TNW: _____.
 Summarize rationale supporting determination: _____.
 Wetland adjacent to TNW Summarize rationale supporting conclusion that wetland is "adjacent": _____.

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size:	Pi	ck List	
Drainage area:	Pi	ck List	
Average annual	rainfall:	i	inches
Average annual	snowfall	:	inches

(ii) Physical Characteristics:

(a) <u>Relationship with TNW:</u>

 ☐ Tributary flows directly into TNW.
 ☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are	Pick List	river miles from TNW.	
Project waters are	Pick List	river miles from RPW.	
Project waters are	Pick List	aerial (straight) miles from T	NW.
Project waters are	Pick List	aerial (straight) miles from R	PW.
Project waters cros	s or serve	as state boundaries. Explain:	

Identify flow route to TNW⁵: _____. Tributary stream order, if known:

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

	(b)	General Tributary Characteristics (check all that apply): Tributary is: Natural Artificial (man-made). Explain: Manipulated (man-altered). Explain:
		Tributary properties with respect to top of bank (estimate): Average width: feet Average depth: feet Average side slopes: Pick List.
		Primary tributary substrate composition (check all that apply): Silts Sands Concrete Cobbles Gravel Muck Bedrock Vegetation. Type/% cover: Huck
		Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Presence of run/riffle/pool complexes. Explain: Tributary geometry: Pick List Tributary gradient (approximate average slope):%
	(c)	<u>Flow:</u> Tributary provides for: Pick List Estimate average number of flow events in review area/year: Pick List Describe flow regime: Other information on duration and volume:
		Surface flow is: Pick List. Characteristics:
		Subsurface flow: Pick List . Explain findings: Dye (or other) test performed:
		Tributary has (check all that apply): Bed and banks OHWM ⁶ (check all indicators that apply): clear, natural line impressed on the bank changes in the character of soil shelving vegetation matted down, bent, or absent leaf litter disturbed or washed away sediment deposition water staining other (list): Discontinuous OHWM. ⁷ Explain:
		If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply): High Tide Line indicated by: oil or scum line along shore objects fine shell or debris deposits (foreshore) physical markings/characteristics tidal gauges other (list):
(iii)	Che Cha	emical Characteristics: racterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: _____. Identify specific pollutants, if known: _____.

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break. ⁷Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

 (a) <u>General Wetland Characteristics:</u> Properties: Wetland size: acres Wetland type. Explain: . Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain:

(b) <u>General Flow Relationship with Non-TNW</u>: Flow is: **Pick List**. Explain:

> Surface flow is: Pick List Characteristics:

Subsurface flow: **Pick List**. Explain findings: _____.

- (c) Wetland Adjacency Determination with Non-TNW:
 - Directly abutting
 - □ Not directly abutting
 - Discrete wetland hydrologic connection. Explain:
 - Ecological connection. Explain:
 - Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW. Project waters are **Pick List** aerial (straight) miles from TNW. Flow is from: **Pick List**. Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:

(iii) Biological Characteristics. Wetland supports (check all that apply):

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List** Approximately () acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:



C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

- 1. Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
- 2. Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
- **3. Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

- **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
 TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.
- 2. <u>RPWs that flow directly or indirectly into TNWs.</u>
 - Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:
 - Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:
Provide estimates for jurisdictional waters in the review area (check all that apply):

acres.

- Tributary waters: linear feet width (ft).
- Other non-wetland waters:
 - Identify type(s) of waters:
- 3. Non-RPWs⁸ that flow directly or indirectly into TNWs.
 - Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters:
 - Identify type(s) of waters:
- 4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.
 - Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
 - Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:
 - Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

Provide acreage estimates for jurisdictional wetlands in the review area:

- 5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.
 - Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: _____acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area:

- 7. Impoundments of jurisdictional waters.⁹
 - As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
 - Demonstrate that impoundment was created from "waters of the U.S.," or
 - Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
 - Demonstrate that water is isolated with a nexus to commerce (see E below).

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain:
- Other factors. Explain:

Identify water body and summarize rationale supporting determination:

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

⁸See Footnote # 3.

⁹ To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰ Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos*.

Provide estimates	for	jurisdi	ctional	waters in	the 1	review	area	(chec	k all	that	appl	ly)	:
-------------------	-----	---------	---------	-----------	-------	--------	------	-------	-------	------	------	-----	---

Tributary waters: linear feet width (ft).

l	Other non-wetland	waters:	acres	•••

- Identify type(s) of waters:
- Wetlands: acres.

NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY): F.

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce. \bowtie
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).

Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: The wetland is located within a depression over 1000 feet from the nearest body of water. The nexus has been cut off from the distance between the wetland and the water body. Additionally the wetland is at approximately elevation 239 feet which elevates to roughly 263 feet before it drops back down to Buck Pond. This elevation change surrounds the wetland cutting off water from flowing out of the system.

Other: (explain, if not covered above):

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
 - Lakes/ponds: acres.
- Other non-wetland waters: _____acres. List type of aquatic resource:

Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
 - Lakes/ponds: acres.
 - Other non-wetland waters: _____acres. List type of aquatic resource: _____.
- \square Wetlands: 3.84 acres.

SECTION IV: DATA SOURCES.

B. ADDITIONAL COMMENTS TO SUPPORT JD: W01 is a rather large wetland that originates at an upslope point and there are a couple of spots where groundwater was daylighting in the upslope portions (also maybe in downslope, but too much water to verify). On the downslope end, there is a bowl with no outflow, so it is considered a closed system due to the terrain, primarily. The groundwater seep is flowing into W01.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Barnes Air National Guard Base	_ City/County: <u>Hampden County</u> Sampling Date: 05/19/2014				
Applicant/Owner: Air National Guard	State: Massachusetts Sampling Point: W01A				
Investigator(s): Jameli/Davanzo	Section, Township, Range: NA				
Landform (hillslope, terrace, etc.) Depression Loc	al relief (concave, convex, none): concave				
Slope (%): 2 Lat: 42° 9' 54.835" N	Long: 72° 42' 29.177" W Datum: WGS84				
Soil Map Unit Name: <u>Hinckley Loamy Sand, 15-25% slopes</u>	NWI Classification: PEM				
Are climatic / hydrologic conditions on the site typical for this time of year?	Yes X No (If no, explain in Remarks.)				
Are Vegetation, Soil, or Hydrologysignificantly disturbed	? N Are "Normal Circumstances" present? Yes X No				
Are Vegetation, Soil, or Hydrology naturally problematic?	N (If needed, explain any answers in Remarks.)				
SUMMARY OF FINDINGS – Attach site map showing san	npling point locations, transects, important features, etc.				
Hydrophytic Vegetation Present? Yes X No	is the Sampled Area				
Hydric Soil Present? Yes X No	within a Wetland? Yes X No				
Wetland Hydrology Present? Yes X No	If yes, optional Wetland Site ID:				
Remarks:					
Likely a natural pond though could be an old borrow pit for airport					
· · · · · · · · · · · · · · · · · · ·					
HYDROLOGY					
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)				
Primary Indicators (minimum of one is required; check all that apply) X Surface Water (A1) Water-Stained Leave High Water Table (A2) Aquatic Fauna (B13) X Saturation (A3) Marl Deposits (B15) Water Marks (B1) X Hydrogen Sulfide Od Sediment Deposits (B2) Oxidized Rhizospher Drift Deposits (B3) Presence of Reduced Algal Mat or Crust (B4) Recent Iron Reduction Iron Deposits (B5) Thin Muck Surface (0 X Inundation Visible on Aerial Imagery (B7) Other (Explain in Ref Sparsely Vegetated Concave Surface (B8) Field Observations: 4	 Surface Soil Cracks (B6) Drainage Patterns (B10) Moss Trim Lines (B16) Dry-Season Water Table (C2) Crayfish Burrows (C8) es on Living Roots (C3) X Saturation Visible on Aerial Imagery (C9) d Iron (C4) X Stunted or Stressed Plants (D1) on in Tilled Soils (C6) X Geomorphic Position (D2) C7) Shallow Aquitard (D3) Microtopographic Relief (D4) X FAC-Neutral Test (D5) 				
Water Table Present? Yes X No Depth (inches): 4					
Saturation Present? Yes X No Depth (inches): 3	Wetland Hydrology Present? Yes X No				
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre-	vious inspections), if available:				
Remarks: Pond with wetland fringe.					
· · · · · · · · · · · · · · · · · · ·					

VEGETATION - Use scientific names of plants.

Sampling Point: W01A

· · · · · · · · · · · · · · · · · · ·				
	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size:)	% Cover	Species?	Status	
1. Acer rubrum	40	Yes	FAC	Number of Dominant Species
ງ				That Are OBL, FACW, or FAC: 2 (A)
	-	,		
3.	_		,	Total Number of Densis and
4.				Protein Number of Dominant
5		•		Species Across All Strata: (B)
0,		•		Percent of Dominant Species
7	_			That Are OBL, FACW, or FAC: 100% (A/B)
	40	= Total Co	ver	
		-		Provalance Index worksheet
Sanling/Shrub Stratum (Diat size)				Total % Covor of: Multiply by
1. Vaccinium corymbosum	20	Yes	FACW	OBL species x 1 =
2. Cephalanthus occidentalia	4		OBL	FACW/species X 2 -
3 Rhampus alnifola	1		OBI	X Z ~
				FAC species X 3 =
4,			,	FACIL species X 4 =
5				
6.				UPL species X 5 =
7		• • • • • • • • • • • • • • • • • • • •		Column Totals: (A)
· ·				
	25	= Total Co	ver	
•				Brousianaa Index = B/A =
Herb Stratum (Plot size:)				
1 Carey sp	6			
1. Calex sp.	- <u> </u>	·		
2. Onoclea sensibilis	1		FACW	
3.				Hydrophytic Vegetation Indicators:
4		· · · · · · · · · · · · · · · · · · ·		Denid Test for Under halfe Mensteller
				Rapid Test for Hydrophytic Vegetation
5	• • • • • • • • • • • • • • • • • • • •			X Dominance Test is > 50%
6				Prevalence Test is < 3.01
7.				
0				Morphological Adaptations ¹ (Provide supporting
o		,		data in Remarks or on a separate sheet)
9		·,		Problematic Hydrophytic Vagatation1 (Evaluin)
10.				
11	• • • • • • • • • • • • • • • • • • • •			
		,		Indicators of hydric soil and wetland hydrology must
12		<u></u> ,		be present, unless disturbed or problematic.
	6	= Total Co	ver	Hydrophytic
	•			Vegetation
Woody Vine Stratum (Plot size)				Present? Yes X No
1				• •
2				
3.				· · ·
1		_		
4				
	0	= Total Cov	ver	
	······································			
·				
•				
Remarks: (Include photo numbers here or on a separate	sheet.)			
Nymphaea odorata in pond	,			
			-	
,			•	
				([']

Profile Desc	cription: (Describe	to the dept	h needed to docur	ment the ir	ndicator o	r confirm	the absence	of indicators	.)	
Depth (inches)	Color (moist)	%	Re Color (moist)	dox Featur %	Type ¹		Texture		Remark	re .
0-2	7.5 2 5/1	100							Remain	
2-14	7.5.3/1	80	7525/1	20	MS N	Λ	Sand			
	1.0 0/1					·				
		<u></u> ,	·							
	·					·	<u> </u>			
		<u> </u>		,			· ·			
		·					<u> </u>			
Type: C=C	oncentration, D=De	pletion, RM=	Reduced Matrix, C	 S=Covered	or Coated	d Sand Gr	ains. ² Lo	ocation: PL=	Pore Linin	g, M=Matrix.
vdric Soil I	Indicators:	•					Indicato	s for Proble	matic Hyr	tric Soils ³
Histos	ol (A1)		Polyvalue Bel	ow Surface	(S8) (LRF	R R,	2 cm l	Auck (A10) (I		MLRA 149B)
Histic E	Epipedon (A2)		MLRA 149	B)	. , .		Coast	Prairie Redo	x (A16) (LI	RR K. L. R)
Black I	Histic (A3)		Thin Dark Sur	face (S9) (I	RR R, MI	LRA 149E	3)5 cm M	/lucky Peat o	r Peat (S3) (LRR K. L. R)
X Hydrog	gen Sulfide (A4)		Loamy Mucky	Mineral (F	1) (LRR K	, L)	Dark S	Surface (S7)	LRR K, L	
Stratifie	ed Layers (A5)		Loamy Gleyed	Matrix (F2)		Polyva	lue Below Si	urface (S8)	(LRR K, L)
Deplet	ed Below Dark Surf	ace (A11)	Depleted Matr	ix (F3)			Thin D	ark Surface	(S9) (LRR	K, L)
Thick [Dark Surface (A12)		Redox Dark S	urface (F6)			Iron-M	angenese M	asses (F12	2) (LRR K, L, R)
Sandy	Mucky Mineral (S1)) .	Depleted Dark	: Surface (F	7)		Piedm	ont Floodplai	n Soils (F1	9) (MLRA 149B
Sandy	Gleyed Matrix (S4)		Redox Depres	sions (F8)			Mesic	Spodic (TA6)	(MLRA 1	44A, 145, 149B)
Sandy	Redox (S5)						Red P	arent Materia	l (TF2)	
Strippe	ed Matrix (S6)						Very S	hallow Dark	Surface (T	F12)
Dark S	urface (S7) (LRR R	, MLRA 149	В)				Other	(Explain in R	em arks)	
				st be prese	nt, uniess	aisturbea	or problematic			
estrictive L Type:	₋ayer (if observed)	:								
estrictive L Type: Depth (ind	-ayer (if observed)	:			Hydr	ic Soil Pr	esent?	Yes	x	No
estrictive L Type: Depth (ind	.ayer (if observed)	:		·	Hydr	ic Soil Pr	esent?	Yes	<u>x</u>	No
estrictive L Type: Depth (ind emarks: it located at	ayer (if observed) ches):	: is occasiona	Ily flooded and has	a high wat	Hydr er table.	ic Soil Pr	esent?	Yes _	<u>x</u>	No
estrictive L Type: Depth (ind emarks: it located al	ayer (if observed)	: is occasiona	Ily flooded and has	a high wat	Hydr er table.	ic Soil Pr	esent?	Yes _	<u>x</u>	No
estrictive L Type: Depth (ind emarks: it located at	ayer (if observed).	: is occasiona	Ily flooded and has	a high wat	Hydr er table.	ic Soil Pr	esent?	Yes _	<u>x</u>	No
estrictive L Type: Depth (ind emarks: it located at	ayer (if observed)	: is occasiona	Ily flooded and has	a high wat	Hydr	ic Soil Pr	esent?	Yes _	X	No
estrictive L Type: Depth (ind emarks: it located al	.ayer (if observed) ches): t edge of pond that	: is occasiona	Ily flooded and has	a high wat	Hydr er table.	ic Soil Pr	esent?	Yes	X	No
estrictive L Type: Depth (ind emarks: it located at	.ayer (if observed) ches): t edge of pond that	: is occasiona	Ily flooded and has	a high wat	Hydr	ic Soil Pr	esent?	Yes _	X	No
estrictive L Type: Depth (ind emarks: it located at	ayer (if observed)	: is occasiona	Ily flooded and has	a high wat	Hydr	ic Soil Pr	esent?	Yes _	X	No
estrictive L Type: Depth (ind emarks: it located at	ayer (if observed)	: is occasiona	lly flooded and has	a high wat	Hydr	ic Soil Pr	esent?	Yes	<u>x</u>	No
estrictive L Type: Depth (ind emarks: it located al	.ayer (if observed) ches): t edge of pond that	: is occasiona	Ily flooded and has	a high wat	Hydr er table.	ic Soil Pr	esent?	Yes	X	No
estrictive L Type: Depth (ind emarks: it located at	.ayer (if observed) ches): t edge of pond that	is occasiona	Ily flooded and has	a high wat	Hydr	ic Soil Pr	esent?	Yes	X	No
estrictive L Type: Depth (ind emarks: it located at	.ayer (if observed) ches): t edge of pond that	is occasiona	Ily flooded and has	a high wat	Hydr	ic Soil Pr	esent?	Yes	X	No
estrictive L Type: Depth (ind emarks: it located at	_ayer (if observed)	is occasiona	Ily flooded and has	a high wat	Hydr	ic Soil Pr	esent?	Yes	X	No
estrictive L Type: Depth (ind emarks: it located at	Layer (if observed)	: is occasiona	Ily flooded and has	a high wat	Hydr	ic Soil Pr	esent?	Yes	X	No
estrictive L Type: Depth (ind emarks: it located at	Layer (if observed)	: is occasiona	Ily flooded and has	a high wat	Hydr er table.	ic Soil Pr	esent?	Yes	X	No
estrictive L Type: Depth (ind emarks: it located at	.ayer (if observed) ches): t edge of pond that	is occasiona	lly flooded and has	a high wat	Hydr er table.	ic Soil Pr	esent?	Yes	X	No
estrictive L Type: Depth (ind emarks: it located at	_ayer (if observed)	: is occasiona	Ily flooded and has	a high wat	Hydr	ic Soil Pr	esent?	Yes	X	No
estrictive L Type: Depth (ind emarks: it located at	.ayer (if observed) ches): t edge of pond that	: is occasiona	Ily flooded and has	a high wat	Hydr er table.	ic Soil Pr	esent?	Yes	X	No
estrictive L Type: Depth (ind emarks: it located at	_ayer (if observed)	is occasiona	Ily flooded and has	a high wat	Hydr	ic Soil Pr	esent?	Yes	X	No
estrictive L Type: Depth (ind emarks: it located at	_ayer (if observed)	: is occasiona	Ily flooded and has	a high wat	Hydr	ic Soil Pr	esent?	Yes	X	No
estrictive L Type: Depth (ind emarks: it located at	_ayer (if observed)	: is occasiona	Ily flooded and has	a high wat	Hydr	ic Soil Pr	esent?	Yes	X	No
estrictive L Type: Depth (ind emarks: it located at	_ayer (if observed)	is occasiona	lly flooded and has	a high wat	Hydr er table.	ic Soil Pr	esent?	Yes	X	No
estrictive L Type: Depth (ind emarks: it located at	_ayer (if observed)	: is occasiona	Ily flooded and has	a high wat	Hydr	ic Soil Pr	esent?	Yes	X	No
estrictive L Type: Depth (ind emarks: it located at	_ayer (if observed)	is occasiona	Ily flooded and has	a high wat	Hydr er table.	ic Soil Pr	esent?	Yes	X	No
estrictive L Type: Depth (ind emarks: it located at	_ayer (if observed)	is occasiona	Ily flooded and has	a high wat	Hydr er table.	ic Soil Pr	esent?	Yes	X	No

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Barnes Air National Guard Base	City/County: Hampden County Sampling Date: 05/19/2014				
Applicant/Owner: Air National Guard	State: Massachusetts Sampling Point: W01B				
.nvestigator(s): Jamell/Davanzo	Section, Township, Range:NA				
Landform (hillslope, terrace, etc.) terrace Loc	al relief (concave, convex, none): Slightly concave				
Slope (%): 2 Lat:42° 9' 59.778" N	Long; 72° 42' 29.657" W Datum: WGS84				
Soil Map Unit Name:Hinckley Loamy Sand, 15-25% slopes	NWI Classification: PFO/PSS				
Are climatic / hydrologic conditions on the site typical for this time of year?	Yes X No (If no, explain in Remarks.)				
Are Vegetation, Soil, or Hydrologysignificantly disturbed	? N Are "Normal Circumstances" present? Yes X No				
Are Vegetation, Soil, or Hydrologynaturally problematic?	N (If needed, explain any answers in Remarks.)				
SUMMARY OF FINDINGS – Attach site map showing san	npling point locations, transects, important features, etc.				
Hydrophytic Vegetation Present? Yes X No	Is the Sampled Area				
Hydric Soil Present? Yes X No	within a Wetland? Yes X No				
Wetland Hydrology Present? Yes X No	If yes, optional Wetland Site ID:				
Remarks:	· · · · ·				
Second wetland point was taken because of the change in vegeta	ition.				
HYDROLOGY Wetland Hydrology Indicators:					
	Secondary indicators (minimum of two required)				
X Surface Water (A1) X Water-Stained Leave X High Water Table (A2) Aquatic Fauna (B13) X Saturation (A3) Marl Deposits (B15) Water Marks (B1) X Hydrogen Sulfide Oc Sediment Deposits (B2) Oxidized Rhizospher Drift Deposits (B3) Presence of Reduce Algal Mat or Crust (B4) Recent Iron Reduction Iron Deposits (B5) Thin Muck Surface (G Inundation Visible on Aerial Imagery (B7) Other (Explain in Ref	Sufface Soil Cracks (B6) Ass (B9) X Drainage Patterns (B10) Moss Trim Lines (B16) Dry-Season Water Table (C2) lor (C1). Crayfish Burrows (C8) es on Living Roots (C3) Saturation Visible on Aerial Imagery (C9) d Iron (C4) Stunted or Stressed Plants (D1) on in Tilled Soils (C6) X C7) Shallow Aquitard (D3) marks) X X FAC-Neutral Test (D5)				
Field Observations:	· · · · · · · · · · · · · · · · · · ·				
Surface Water Present? Yes X No Depth (inches);<	1				
Water Table Present? Yes X No Depth (inches):	3				
Saturation Present? Yes X No Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes X No				
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre	vious inspections), if available:				
Remarks:					

VEGETATION - Use scientific names of plants.

Sampling Point: W01B

	Absolute	Dominant	Indicator	Dominance Test worksheet:		
Tree Stratum (Plot size:)	% Cover	Species?	Status			
1. Acer rubrum	60	Y	FAC	Number of Dominant Species		• (
2				That Are OBL, FACW, or FAC:	4	(A) (
3		<u></u>	·			
а. 		·		Total Number of Dominant		
4.	- <u></u>	. <u> </u>		Species Across All Strata:	4	(B)
5						_ (-)
6				Percent of Dominant Species		
7				That Are OBL, FACW, or FAC:	100%	(A/B)
	60	= Total Co	ver	, , , , , , , , , , , , , , , , , , , ,		_ (''
				Prevalence Index worksheet:		
Sapling/Shrub Stratum (Plot size:)				Total % Cover of:	Multiply by:	
1 Viburnum dentatum	30	Y	FAC			
2 Atopio molonocomo	<u>50</u>	<u> </u>			x 1 =	<u> </u>
		·	FAC	FACW species	X 2 =	
			FACW	FAC species	X 3 =	
4. Vaccinium corymbosum	. 15	<u> </u>	FACW	FACILspecies	× 4 -	
5. <u>Viburnum lentago</u>	2		FAC		<u> </u>	
6.				UPL species	X 5 =	
7.				Column Totals:	(A)	(B)
	60	= Total Co	Ver			
		10(0100	VCI			
Herb Stratum (Plot size:				Prevalence Index = I	B/A =	
	50		51011			
	50	<u> </u>	FACW			,
2. Medeola virginiana	1	·	FACU			
3. Osmunda regalis	3		OBL	Hydrophytic Vegetation Indicat	ors:	
4. Impatiens sp.	3		FACW	Rapid Test for Hydrophytic V	eaetation	
5. Maianthemum canadense	2		FACU	X Dominance Test is > 50%	- 9	
6.	•	··			•	
7	· · · · · · · · · · · · · · · · · · ·		······	Prevalence lest is $\leq 3.0^{\circ}$		
8	•	·		Morphological Adaptations ¹	(Provide sup	porting /
0.	·		. <u> </u>	data in Remarks or on a se	parate sheet)	· (
9		·,		Problematic Hydrophytic Ve	eqetation ¹ (E)	(niala)
10		,			J (·P·)
11:				¹ Indicators of hydric soil and we	fland hydrolo	ov must
12.				be present, unless disturbed or	problematic.	gymaor
	59	= Total Co	ver	Hydrophytic		
				Vegetation		
Woody Vine Stratum (Plot size:				Present? Yes	X No	
(i for bize)						
0	·	·				
2.						
3						
4						
	· 0	= Total Cov	ver			
		10101-00				
•						
	•					
Demonstrati (Include state southers have a second	1					
Remarks: (Include photo numbers here or on a separate	sheet.)					
						(

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\mathbf{v}	ັ		ᄂ

Sampling Point: W01B

Profile Des Depth	cription: (Describe Matrix	e to the dept	h needed to docu Re	ment the i edox Featu	ndicator o ^{res}	r confirm	the absence of	indicators.)	
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Rema	ırks
0-10	10YR 2/1	100					Sandy loam		
10-14	10YR 3/2	100					Sand		•
		· · · · · · ·		•					
				•	·····			• • • • •	
				·	<u> </u>	<u> </u>	<u> </u>		
		· ·		• ••••		·	·		
					<u> </u>	,			•
¹Type: C=C	Concentration, D=De	epletion, RM=	Reduced Matrix, C	S≓Covere	d or Coate	d Sand G	rains. ² Loo	cation: PL=Pore Lin	ing, M≕Matrix.
Hydric Soil	Indicators:						Indicators	for Problematic H	ydric Soils ³ :
- Histos	sol (A1)		Polyvalue Be	low Surface	e (S8) (LR I	R R,	· 2 cm M	uck (A10) (LRR K, I	, MLRA 149B)
Histic	Epipedon (A2)	-		9B)			Coast F	Prairie Redox (A16)	(LRR K, L, R)
Black	Histic (A3)		Thin Dark Su	rface (S9) ((LRR R, M	LRA 1498	3) 5 cm M	ucky Peat or Peat (S	63) (LRR K, L, R)
X Hvdro	gen Sulfide (A4)	-	Loamv Mucky	v Mineral (F	- -1) (LRR K	(, L)	Dark Su	urface (S7) (LRR K.	L)
Stratif	ied Lavers (A5)	-	Loamy Gleve	d Matrix (F	2)	, _,	Polvval	ue Below Surface (S	-, 68) (LRR K. L)
Outur Denle	ted Below Dark Sur	face (A11)	Denleted Mat	trix (F3)			Thin Da	irk Surface (S9) /I R	R K. L)
Thick	Dark Surface (A12)		Reday Dark	Surface (F6	6)		Iron-Ma	ngenese Masses (F	12) (LRR K 1 R
Sand	/ Mucky Mineral /91)	Denleted Dar	k Surface (, F7)		Piedmo	nt Floodolain Soile /	F19) (MI RA 149
Gandy	/ Gleved Matriv (CA)	· .	Beday Depre	esione /FR	· · /)		Meein S	Spodic (TA6) /MI PA	144A 145 149
Gandy	/ Redox (95)				,		Red Pa	rent Material (TE2)	
Oanu) Otrinn	ad Matrix (SS)							allow Dark Surface	(TE12)
Suipp	Cu Wallix (OD) Curfooo (C7) /I BB F	. MI DA 440	<u>م</u>						(1114)
		X, MILIXA 143	וסו						
Depth (ir	nches):		· · · · · · · · · · · · · · · · ·		Hydi	ric Soil P	resent?	Yes X	No
Remarks:					I				
	•							•	
		•							
	•								
	·								
				•					
									•
					•				

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Barnes Air National Guard Base	City/County: Hampden County Sampling Date: 05/19/2014					
Applicant/Owner: Air National Guard	State: Massachusetts _ Sampling Point: U01A					
nvestigator(s): Jamell/Davanzo	Section, Township, Range:					
Landform (hillslope, terrace, etc.) hillslope Loc	al relief (concave, convex, none): <u>none</u>					
Slope (%): 2 Lat: 42° 9' 54.864" N	Long: 72° 42' 29.516" W Datum: WGS84					
Soil Map Unit Name: Hinckley Loamy Sand, 15-25% slopes	NWI Classification: none					
Are climatic / hydrologic conditions on the site typical for this time of year?	Yes X No (If no, explain in Remarks.)					
Are Vegetation, Soil, or Hydrologysignificantly disturbed	? N Are "Normal Circumstances" present? Yes X No					
Are Vegetation, Soil, or Hydrologynaturally problematic?	N (If needed, explain any answers in Remarks.)					
SUMMARY OF FINDINGS – Attach site map showing san	npling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present? Yes NoX	Is the Sampled Area					
Hydric Soil Present? Yes No _X	within a Wetland? Yes NoX					
Wetland Hydrology Present? Yes NoX_	If yes, optional Wetland Site ID:					
Remarks:						
Flat area near edge of wetland dominated by upland plants and a	slight rise in elevation from the wetland.					
HYDROLOGY						
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)					
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)					
Surface Water (A1) Water-Stained Leav	es (B9) Drainage Patterns (B10)					
High Water Table (A2) Aquatic Fauna (B13 Saturation (A3) Marl Deposits (B15)) Moss Trim Lines (B16) Dry-Season Water Table (C2)					
Water Marks (B1)	dor (C1) Crayfish Burrows (C8)					
Sediment Deposits (B2) Oxidized Rhizosphe	res on Living Roots (C3) Saturation Visible on Aerial Imagery (C9) Stunted or Stressed Plants (D1)					
Algal Mat or Crust (B4)	on in Tilled Soils (C6) Geomorphic Position (D2)					
Iron Deposits (B5) Thin Muck Surface (C7) Shallow Aquitard (D3)					
Sparsely Vegetated Concave Surface (B8)	FAC-Neutral Test (D5)					
Field Observations:						
Surface Water Present? Yes No X Depth (inches);						
Water Table Present? Yes No X Depth (inches):						
Saturation Present? Yes No X Depth (inches):	Wetland Hydrology Present? Yes No _X					
(includes capillary fringe)						
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre	evious inspections), if available:					
· ·						
Remarks:						
· · ·						

VEGETATION - Use scientific names of plants.

Sampling Point: U01A

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Plot size:)	<u>% Cover</u>	Species?	Status	
1. Acer rubrum	60	<u> </u>	FAC	Number of Dominant Species
2. Pinus rigida	20		FACU	That Are OBL, FACW, or FAC: _1 (A)
3.				
4.			······	Total Number of Dominant
5			· · · · · · · · · · · · · · · · · · ·	Species Across All Strata: <u>3</u> (B)
6				
0				Percent of Dominant Species
1	-			That Are OBL, FACW, or FAC: 33% (A/B)
	80	= Total Co	ver	
				Prevalence index worksheet:
Sapling/Shrub Stratum (Plot size: 0)				Total % Cover of: Multiply by:
1. Prunus virginiana	10		FACU	
2. Quercus alba			EACU	
3 Viburnum dentatum			TACO	FACW species 5 X 2 = 10
		·	FAC	FAC species 67 X 3 = 201
4. Kaima angustitolia	2		FAC	FACIL species 57 X 4 - 225
5. Populus tremuloides	7		FACU	1 Act species 57 A 4 = 225
6. Vaccinium pallidum	25	Х	UPL	UPL species _25 X 5 = _125
7. Amelanchier arborea	15	Х	FACU	Column Totals: 154 (A) 561 (B)
	69			
		- 10tai C0	vei	· ·
Herb Stratum (Plot size:				Prevalence Index = B/A = 3.64
1. Rubus hispidus	5		FACW	
2. Diphasiastrum tristachyum	2	(NR	
3				Hydrophytic Vegetation Indicators:
4.	• •			Donid Toot for Lludronhutic Manadalian
5.	• • • • • • • • • • • • • • • • • • • •			Rapid Test for Hydrophytic Vegetation
6	· ····································			Dominance Test is > 50%
7		·		Prevalence Test is ≤ 3.0 ¹
1	·			Morphological Adaptations ¹ (Provide supporting
8		-		data in Remarks or on a separate sheet)
9				
10.				Problematic Hydrophytic Vegetation' (Explain)
11.				1. H. J.
12		·····		Indicators of hydric soil and wetland hydrology must
12.				be present, unless disturbed or problematic.
1	7	= Total Cov	er	Hydrophytic
				Vegetation
Woody Vine Stratum (Plot size:)				Present? Yes <u>No X</u>
1	•			
2.	· · · · · · · · · · · · · · · · · · ·			
3	<u> </u>			
A.				
4.				
	0	= Total Cov	er	
	·			
			· ·	
Pemarka: (Include photo numbers here as an a series	-1()			
Remarks. Unclude photo numbers here or on a separate	sneet.)			
			• •	
·				
				(

SOIL

Sampling Point: ____U01A

.

Depth	Matrix		F	<u>Redox F</u> eatu	res			· /		
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Re	marks	
0-2	10YR 2/2	100					Silt loam	Some organic mat	ter	
2-14	10YR 3/3	80					Silty sand			
								· · · · · · · · · · · · · · · · · · ·		
······································	·									
						·				
	·						· · · · · ·	· · · · ·		
	·····					<u> </u>	·	·		
「ype: C≒Cor	ncentration, D=Dep	oletion, RM≕	Reduced Matrix,	CS=Covered	d or Coate	d Sand Gr	rains.	² Location: PL=Pore	Lining, M≕Ma	ıtrix.
ydric Soil In	dicators:		· · · · · · · · · · · · · · · · · · ·				Indica	tors for Problemation	: Hydric Soil	s³:
Histosol	(A1)	-	Polyvalue Be	elow Surface	e (S8) (LR	R R,	2 cn	n Muck (A10) (LRR I	K, L, MLRA 1	49B)
Histic Ep	oipedon (A2)		MLRA 14	9B)			Coa	st Prairie Redox (A1	6) (LRR K, L,	, R)
Black Hi	stic (A3)	-	Thin Dark S	urface (S9) ((LRR R, M	LRA 149E	3) 5 cm	n Mucky Peat or Pea	t (S3) (LRR K	(, L,
Hydroge	en Sulfide (A4)	-	Loamy Muck	y Mineral (F	⁻ 1) (LRR M	(, L)	Darl	< Surface (S7) (LRR	K, L)	
Stratified	d Layers (A5)	_	Loamy Gleye	ed Matrix (F	2)		Poly	value Below Surface	e (S8) (LRR K	(, L)
Depleted	d Below Dark Surfa	ace (A11)	Depleted Ma	trix (F3)			Thir	ı Dark Surface (S9) (LRR K, L)	
Thick Da	ark Surface (A12)	-	Redox Dark	Surface (F6	i)		Iron	-Mangenese Masses	s (F12) (LRR I	K, L,
Sandy N	luck y Mineral (S1)	_	Depleted Da	rk Surface ((F7)		Piec	lmont Floodplain Soi	ls (F19) (MLR	RA 14
Sandy G	Bleyed Matrix (S4)	-	Redox Depre	essions (F8))	•	Mes	ic Spodic (TA6) (ML	RA 144A, 148	5, 14
Sandy R	Redox (S5)					•	Red	Parent Material (TF	2)	
Stripped	Matrix (S6)						Very	/ Shallow Dark Surfa	ce (TF12)	
Dark Su	rface (S7) (LRR R	, MLRA 149	В)				Oth	er (Explain in Remar	ks)	
ndicators of H	-lydrophytic vegeta	ation and we	tland hydrology m	ust be pres	ent, unless	s disturbec	l or problema	tic.		
ostrictivo I c	wor (if obsorved)									
estrictive La Type: Depth (inch	ayer (if observed) nes):				Hyd	ric Soil Pi	resent?	Yes	No	x
estrictive La Type: Depth (inch emarks:	ayer (if observed) nes):	:	 		Hyd	ric Soil P∣	resent?	Yes	No	<u>x</u>
estrictive La Type: Depth (inch emarks:	ayer (if observed) nes):	:			Hyd	ric Soil P	resent?	Yes	No	<u>x</u>
estrictive La Type: Depth (inch emarks:	ayer (if observed) nes):	:	· ·		Hyd	ric Soil Pi	resent?	Yes	No	X
estrictive La Type: Depth (inch emarks:	ayer (if observed)	:			Hyd	ric Soil P	resent?	Yes	No	X
estrictive La Type: Depth (inch emarks:	ayer (if observed)	:	· ·		Hyd	ric Soil P	resent?	Yes	No	<u>x</u>
estrictive La Type: Depth (inch emarks:	ayer (if observed) nes):	:	· · ·		Hyd	ric Soil P	resent?	Yes	No	<u>x</u>
estrictive La Type: Depth (inch emarks:	ayer (if observed)	:	· ·		Hyd	ric Soil P	resent?	Yes	No	
estrictive La Type: Depth (inch emarks:	ayer (if observed)	:			Hyd	ric Soil P	resent?	Yes	No	X
estrictive La Type: Depth (inch emarks:	ayer (if observed)	:	· ·		Hyd	ric Soil P	resent?	Yes	No	<u>×</u>
estrictive La Type: Depth (inch emarks:	ayer (if observed)	:	· · ·		Hyd	ric Soil P	resent?	Yes	No	<u>×</u>
estrictive La Type: Depth (inch emarks:	ayer (if observed)	:			Hyd	ric Soil P	resent?	Yes	No	X
estrictive La Type: Depth (inch emarks:	ayer (if observed)	:	· ·		Hyd	ric Soil P	resent?	Yes	No	X
estrictive La Type: Depth (inch emarks:	ayer (if observed)	:	· · ·		Hyd	ric Soil P	resent?	Yes	No	X
estrictive La Type: Depth (inch emarks:	ayer (if observed)	:			Hyd	ric Soil P	resent?	Yes	No	X
estrictive La Type: Depth (inch emarks:	ayer (if observed)	:	· · ·		Hyd	ric Soil P	resent?	Yes	No	X
estrictive La Type: Depth (inch emarks:	ayer (if observed)	:			Hyd	ric Soil P	resent?	Yes	No	X
estrictive La Type: Depth (inch emarks:	ayer (if observed)	:			Hyd	ric Soil P	resent?	Yes	No	X
estrictive La Type: Depth (inch emarks:	ayer (if observed)	:			Hyd	ric Soil P	resent?	Yes	No	X
estrictive La Type: Depth (inch emarks:	ayer (if observed)	:			Hyd	ric Soil P	resent?	Yes	No	X
estrictive La Type: Depth (inch emarks:	ayer (if observed)				Hyd	ric Soil P	resent?	Yes	No	
estrictive La Type: Depth (inch emarks:	ayer (if observed)				Hyd	ric Soil P	resent?	Yes	No	
estrictive La Type: Depth (inch emarks:	ayer (if observed)				Hyd	ric Soil P	resent?	Yes	No	
estrictive La Type: Depth (inch emarks:	ayer (if observed)				Hyd	ric Soil P	resent?	Yes	No	X
estrictive La Type: Depth (inch emarks:	ayer (if observed)	:			Hyd	ric Soil P	resent?	Yes	No	X

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Barnes Air National Guard Base	City/County: Hampden County Sampling Date: 05/19/2014
Applicant/Owner: Air National Guard	State: Massachusetts _ Sampling Point: U01B
Investigator(s): Jamell/Davanzo	Section, Township, Range:
Landform (hillslope, terrace, etc.) hillslope Loc	al relief (concave, convex, none): none
Slope (%): 2 Lat: 42° 9' 59.449" N	Long: 72° 42' 29.424" W Datum: WGS84
Soil Map Unit Name:Hinckley Loamy Sand	NWI Classification: none
Are climatic / hydrologic conditions on the site typical for this time of year?	Yes X No (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrologysignificantly disturbed	? N Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrology naturally problematic?	N (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showing sam	npling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes No X	Is the Sampled Area
Hydric Soil Present? Yes No X	within a Wetland? Yes <u>No X</u>
Wetland Hydrology Present? Yes X No	If yes, optional Wetland Site ID:
Remarks:	
×	
,	
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
X High Water Table (A2) Aquatic Fauna (B13)	Moss Trim Lines (B16)
X Saturation (A3) Marl Deposits (B15)	Dry-Season Water Table (C2)
Water Marks (B1) Hydrogen Sulfide Od Sediment Denosits (B2) Oxidized Bhizospher	lor (C1) Crayfish Burrows (C8) Saturation Visible on Aerial Imagony (C0)
Drift Deposits (B3)	d Iron (C4) Stunted or Stressed Plants (D1)
Algal Mat or Crust (B4) Recent Iron Reduction	on in Tilled Soils (C6) Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7) Other (Explain in Rer	marks) Sitaliow Aquitata (D3) marks) Microtopographic Relief (D4)
Sparsely Vegetated Concave Surface (B8)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No _X_ Depth (inches):	
Water Table Present? Yes X No Depth (inches): 13	
Saturation Present? Yes X No Depth (inches): 7	Wetland Hydrology Present? Yes X No
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre-	vious inspections), if available:
Remarks:	
Not much of an increase in elevation between upland point and wetland point	nt, which likely contributes to the high water table.

VEGETATION - Use scientific names of plants.

Sampling Point: U01B

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size:)	% Cover	Species?	Status	
1: Pinus strobus	15	Х	FACU	Number of Dominant Species
2. Quercus velutina	5		UPL	That Are OBL, FACW, or FAC: _0 (A)
3				
4				I otal Number of Dominant
5				B) Species Across Air Strata. (B)
6				Percent of Dominant Species
7				That Are OBL, FACW, or FAC: 0% (A/B)
	20	= Total Co	ver	
				Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: 0)				Total % Cover of: Multiply by:
1. Prunus serotina	5	·	FACU	OBL species x 1 =
2. Amelanchier arborea	5	· ······	FACU	FACW species 6 X 2 = 12
3. Viburnum lentago	2		FAC	FAC species $2 \times 3 = 6$
4. Kalmia angustifolia	7		FACU	$\frac{1}{2} = \frac{1}{2} = \frac{1}{2}$
5. Kalmia latifolia	5		FACU	PACO species 41 $x 4 = 164$
6. Vaccinium pallidum	25	Χ	UPL	UPL species $\underline{74}$ X 5 = $\underline{370}$
7				Column Totals: <u>123</u> (A) <u>552</u> (B)
	89	= Total Co	<i>i</i> er	
				Prevalence Index = $B/A = -4.48$
Herb Stratum (Plot size:)				
1. Dennstaedtia punctilobula	3		UPL	Popid Toot for Hudronbutic Venetation
2. Cypripedium acaule	1		FACW	
3. <u>Uvularia sessolifolia</u>	3	·	FACU	Dominance Test is > 50%
4. Diphasiastrum tristachyum	1		UPL	Prevalence Test is ≤ 3.0 ¹
5. Osmundastrum cinnamomeum	5	<u> </u>	FACW	Morphological Adaptations ¹ (Provide supporting
6. Medeola virginiana	1		FACU	data in Remarks or on a separate sheet)
7				Problematic Hydrophytic Vegetation ¹ (Explain)
8				
9	•	· · · · · · · · · · · · · · · · · · ·		Indicators of hydric soil and wetland hydrology must
10				Hydrophytic
11				Vegetation
12	······································			Present? Yes <u>No X</u>
	14	= Total Cov	/er	
	·			
Woody Vine Stratum (Plot size:)				
1				
2				
3				
4	-	·		
	0	= Total Cov	er	
	·			
Remarks: (Include photo numbers here or on a separate	sheet.)			
				•
		•		
				·
				· · · · (

SOIL

Sampling Point: U01B

Depth	Matrix			Redox Featu	res	comm	the absence	of mulcators.)		
inches) C	olor (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Re	emarks	
0-2					<u> </u>			Organic layer		
2-7 7.5	<u>YR 2.5/1</u>		· · · ·				Loamy sand			
<u>/-14</u> <u>10Y</u>	<u>R 4/3</u>	100			<u> </u>		sand			
	·	·								
						·				
		······					· · · · · ·			
vpe: C=Concer	ntration, D=De	pletion, RM=	Reduced Matrix,	CS=Covered	d or Coated	Sand Gra	ains. ²L	ocation: PL=Pore	Lining, M=Ma	atrix.
dric Soil Indic	ators:						Indicato	rs for Problematio	c Hvdric Soil	s ³ :
Histosol (A1)	-	Polyvalue B	elow Surface	e (S8) (LRR	R,	2 cm	Muck (A10) (LRR I	K, L, MLRA 1	49B)
Histic Epipe	don (A2)		MLRA 14	19B)			Coast	Prairie Redox (A1	6) (LRR K, L	, R)
Black Histic	(A3)	-	Thin Dark S	urface (S9) (LRR R, MLI	RA 149B)	5 cm	Mucky Peat or Pea	it (S3) (LRR P	<, L,
Hydrogen S	ulfide (A4)	-	Loamy Much	ky Mineral (F	1) (LRR K,	L)	Dark	Surface (S7) (LRR	K, L)	
Stratified La	yers (A5)	-	Loamy Gley	ed Matrix (F2	2)		Polyv	alue Below Surface	e (S8) (LRR K	(, L)
Depleted Be	now Dark Surf	race (A11)	Depleted Ma	atrix (F3)			Thin I	Dark Surface (S9) (LRR K, L)	
THICK DATK S	Surface (A12)		Redox Dark	Sunace (F6)) - \		Iron-N	langenese Masses	s (F12) (LRR	K, L,
_ Sandy Muck	d Matrix (SA)) -	Depieted Da	Irk Sufface (I	-7)		Piedm	iont Floodplain Soi	ls (F19) (MLF	RA 14
_ Sandy Bedo	x (S5)	-	Redux Depi	65510115 (FO)			IVIESIC	Spodic (TA6) (ML	RA 144A, 14	5, 14
Stripped Ma	trix (S6)	•						arent waterial (15)	2) ar (TE40)	
Dark Surface	e (S7) (LRR R	. MI RA 1491	B)				Very a	Function in Demod	ce (TF12)	
strictive Layer	(if observed)): .				0				
s trictive Layer Type: Depth (inches):	(if observed)	:			Hydric	: Soil Pre	sent?	Yes	No	X
trictive Layer Type: Depth (inches):	(if observed)				Hydric	: Soil Pre	sent?	Yes	No	X
strictive Layer Type: Depth (inches): narks:	(if observed)	:			Hydric	c Soil Pre	sent?	Yes	No	X
strictive Layer Type: Depth (inches): narks:	(if observed)				Hydric	c Soil Pre	sent?	Yes	No	X
strictive Layer Type: Depth (inches): narks:	(if observed)				Hydric	: Soil Pre	sent?	Yes	No	X
trictive Layer Type: Depth (inches): narks:	(if observed)				Hydric	e Soil Pre	sent?	Yes	No	X
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trictive Layer Type: Depth (inches): narks:	(if observed)		· ·		Hydric	Soil Pre	sent?	Yes	No	X
trictive Layer Type: Depth (inches): narks:	(if observed)		· ·		Hydric	Soil Pre	sent?	Yes	No	X
htrictive Layer Type: Depth (inches): narks:	(if observed)		· · ·		Hydric	Soil Pre	sent?	Yes	No	X
strictive Layer Type: Depth (inches): narks:	(if observed)		· · ·		Hydric	Soil Pre	isent?	Yes	No	X
htrictive Layer Type: Depth (inches): narks:	(if observed)				Hydric	Soil Pre	sent?	Yes	No	X
htrictive Layer Type: Depth (inches): narks:	(if observed)	Σ			Hydric	e Soil Pre	sent?	Yes	No	X
htrictive Layer Type: Depth (inches): narks:	(if observed)	Σ 			Hydric	Soil Pre	sent?	Yes	No	X
strictive Layer Type: Depth (inches): narks:	(if observed)	ξ 			Hydric	Soil Pre	sent?	Yes	No	X

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THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS FOR SALE BY U.S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092 A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST UTM GRID AND 1979 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET Revisions shown in purple compiled in cooperation with the State of Massachusetts agencies from aerial photographs taken 1975 and other source data. This information not field checked. Map edited 1979







APPROVED JURISDICTIONAL DETERMINATION FORM U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: NAE-2014-01568, Barnes Airforce Base, Wetland 2

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State:MA County/parish/borough: Hampden City: Westfield

Center coordinates of site (lat/long in degree decimal format): Lat. 42d 09m 58.37s° N, Long. 072d 42m 23.45s° W. Universal Transverse Mercator:

Name of nearest waterbody: Buck Pond

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows:

Name of watershed or Hydrologic Unit Code (HUC): Westfield

- Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
- Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

- Office (Desk) Determination. Date: July 28, 2014
 - Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There Are no "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide. Waters are presently used, or have been used i

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There Are no "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

- a. Indicate presence of waters of U.S. in review area (check all that apply): ¹
 - TNWs, including territorial seas
 - Wetlands adjacent to TNWs
 - Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
 - Non-RPWs that flow directly or indirectly into TNWs
 - Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
 - Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
 - Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
 - Impoundments of jurisdictional waters
 - Isolated (interstate or intrastate) waters, including isolated wetlands
- b. Identify (estimate) size of waters of the U.S. in the review area: Non-wetland waters: linear feet: width (ft) and/or acres.

- **c. Limits (boundaries) of jurisdiction** based on: **Pick List** Elevation of established OHWM (if known):
- 2. Non-regulated waters/wetlands (check if applicable):³
 - Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: Wetland is isolated within a depression and lacks a nexus to interstate commerce. The closest Non-TNW waterway is approximately 1006 feet away (Buck Pond). The closet Non-TNW flowing waterbody is 3150 feet away (Pond Brook).

Wetlands: acres.

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

 $^{^{2}}$ For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

 TNW Identify TNW: _____.
 Summarize rationale supporting determination: _____.
 Wetland adjacent to TNW Summarize rationale supporting conclusion that wetland is "adjacent": _____.

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size:	Pi	ck List	
Drainage area:	Pi	ck List	
Average annual	rainfall:	i	inches
Average annual	snowfall	:	inches

(ii) Physical Characteristics:

(a) <u>Relationship with TNW:</u>

 ☐ Tributary flows directly into TNW.
 ☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are	Pick List	river miles from TNW.	
Project waters are	Pick List	river miles from RPW.	
Project waters are	Pick List	aerial (straight) miles from T	NW.
Project waters are	Pick List	aerial (straight) miles from R	PW.
Project waters cros	s or serve	as state boundaries. Explain:	

Identify flow route to TNW⁵: _____. Tributary stream order, if known:

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

	(b)	General Tributary Characteristics (check all that apply): Tributary is: Natural Artificial (man-made). Explain: Manipulated (man-altered). Explain:
		Tributary properties with respect to top of bank (estimate): Average width: feet Average depth: feet Average side slopes: Pick List.
		Primary tributary substrate composition (check all that apply): Silts Sands Concrete Cobbles Gravel Muck Bedrock Vegetation. Type/% cover: Other. Explain:
		Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Presence of run/riffle/pool complexes. Explain: Tributary geometry: Pick List Tributary gradient (approximate average slope):%
	(c)	<u>Flow:</u> Tributary provides for: Pick List Estimate average number of flow events in review area/year: Pick List Describe flow regime: Other information on duration and volume:
		Surface flow is: Pick List. Characteristics:
		Subsurface flow: Pick List . Explain findings: Dye (or other) test performed:
		Tributary has (check all that apply): Bed and banks OHWM ⁶ (check all indicators that apply): clear, natural line impressed on the bank changes in the character of soil shelving vegetation matted down, bent, or absent leaf litter disturbed or washed away sediment deposition water staining other (list): Discontinuous OHWM. ⁷ Explain:
		If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply): High Tide Line indicated by: oil or scum line along shore objects fine shell or debris deposits (foreshore) physical markings/characteristics tidal gauges other (list):
(iii)	Che Cha	emical Characteristics: racterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: _____. Identify specific pollutants, if known: _____.

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break. ⁷Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

- (a) <u>General Wetland Characteristics:</u> Properties: Wetland size: acres Wetland type. Explain:
 - Wetland quality. Explain:

Project wetlands cross or serve as state boundaries. Explain:

(b) <u>General Flow Relationship with Non-TNW</u>: Flow is: **Pick List**. Explain:

> Surface flow is: Pick List Characteristics:

Subsurface flow: **Pick List**. Explain findings: _____.

- (c) Wetland Adjacency Determination with Non-TNW:
 - Directly abutting
 - Not directly abutting
 - Discrete wetland hydrologic connection. Explain:
 - Ecological connection. Explain:

Separated by berm/barrier. Explain: The wetland sits at elevation 220-229 feet. Immediately surrounding the waterbody is a ridge line that extends to 259 +/- feet in elevation. No streams are apparent going into or out of the depression.

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW. Project waters are **Pick List** aerial (straight) miles from TNW. Flow is from: **Pick List**. Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:

Identify specific pollutants, if known:

(iii) Biological Characteristics. Wetland supports (check all that apply):

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List** Approximately () acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:



C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

- 1. Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
- Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
- **3. Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

- **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
 TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.
- 2. <u>RPWs that flow directly or indirectly into TNWs.</u>
 - Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:
 - Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):

acres.

- Tributary waters: linear feet width (ft).
- Other non-wetland waters:
 - Identify type(s) of waters:
- 3. Non-RPWs⁸ that flow directly or indirectly into TNWs.
 - Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters:
 - Identify type(s) of waters:
- 4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.
 - Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
 - Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:
 - Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

Provide acreage estimates for jurisdictional wetlands in the review area:

- 5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.
 - Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area:

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area:

- 7. Impoundments of jurisdictional waters.⁹
 - As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
 - Demonstrate that impoundment was created from "waters of the U.S.," or
 - Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
 - Demonstrate that water is isolated with a nexus to commerce (see E below).

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain:
- Other factors. Explain:

Identify water body and summarize rationale supporting determination:

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

⁸See Footnote # 3.

⁹ To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰ Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos*.

Pro	vid	e es	stimates	for	jur	isd	ictional	waters	in	the	review	area	(check	c all	that	app	ly):
																	~ /

Tributary waters: linear feet width (ft).

Other non-wetland	waters:	acres	5.

- Identify type(s) of waters:
- Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based <u>solely</u> on the "Migratory Bird Rule" (MBR).
 - Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain:
 - Other: (explain, if not covered above):

Provide acreage estimates for non-jurisdictional waters in the review area, where the <u>sole</u> potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

Non-wetland	waters (i.	.e., rivers,	streams):		linear feet		width (ft).	
Lakes/ponds:	aci	res.						
Other non-we	tland wat	ters:	acres. Lis	st type	of aquatic	resou	rce:	
Wetlands:	acres.							

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- Lakes/ponds: acres.

Other non-wetland waters:	acres. List type of aquatic resource:	
---------------------------	---------------------------------------	--

Wetlands: 0.17 acres.

SECTION IV: DATA SOURCES.

- A. SUPPORTING DATA. Data reviewed for JD (check all that apply checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
 - Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Data sheets prepared/submitted by or on behalf of the applicant/consultant. \boxtimes Office concurs with data sheets/delineation report. Office does not concur with data sheets/delineation report. Data sheets prepared by the Corps: Corps navigable waters' study: U.S. Geological Survey Hydrologic Atlas: USGS NHD data. USGS 8 and 12 digit HUC maps. U.S. Geological Survey map(s). Cite scale & quad name: Mount Tom 1:25000. USDA Natural Resources Conservation Service Soil Survey. Citation: National wetlands inventory map(s). Cite name:24k Quad Name: Mount Tom. State/Local wetland inventory map(s): FEMA/FIRM maps:25013C0190E. 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929) Photographs: Aerial (Name & Date): Aerial View From Google Earth 3/29/2012. or Other (Name & Date): Previous determination(s). File no. and date of response letter: Applicable/supporting case law: Applicable/supporting scientific literature: Other information (please specify):

B. ADDITIONAL COMMENTS TO SUPPORT JD:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Barnes Air National Guard Base	City/County: Hampden County Sampling Date: 05/19/2014
Applicant/Owner: Air National Guard	State: Massachusetts Sampling Point: W02
nvestigator(s): Jamell/Davanzo	Section, Township, Range: NA
Landform (hillslope, terrace, etc.) depression Lo	cal relief (concave, convex, none): <u>concave</u>
Slope (%); <u>3</u> Lat: <u>42° 9′ 58.727" N</u>	_Long; 72° 42' 23.216" W Datum; WGS84
Soil Map Unit Name: <u>Hinckley Loamy Sand, 15-25% slopes</u>	NWI Classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of year?	Yes X No (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrologysignificantly disturbed	d? N Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrologynaturally problematic	? N (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showing sa	mpling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes X No	Is the Sampled Area
Hydric Soil Present? Yes X No	within a Wetland? Yes X No
Wetland Hydrology Present? Yes X No	If yes, optional Wetland Site ID:
Remarks:	<u> </u>
· · ·	
HYDROLOGY	· · · · · · · · · · · · · · · · · · ·
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
X Surface Water (A1) X Water-Stained Leav X High Water Table (A2) X Aquatic Fauna (B13) X Saturation (A3) Marl Deposits (B15) Water Marks (B1) X Hydrogen Sulfide O Sediment Deposits (B2) Oxidized Rhizosphe Drift Deposits (B3) Presence of Reduct Algal Mat or Crust (B4) Recent Iron Reduct Iron Deposits (B5) Thin Muck Surface X Inundation Visible on Aerial Imagery (B7) X Sparsely Vegetated Concave Surface (B8)	res (B9) Drainage Patterns (B10) b) Moss Trim Lines (B16) c) Dry-Season Water Table (C2) dor (C1) Crayfish Burrows (C8) eres on Living Roots (C3) X stunted or Stressed Plants (D1) Stunted or Stressed Plants (D1) ion in Tilled Soils (C6) X (C7) Shallow Aquitard (D3) emarks) Microtopographic Relief (D4) X FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes X No Depth (inches):	0-14
Water Table Present? Yes <u>X</u> No Depth (inches):	
Saturation Present? Yes <u>X</u> No Depth (inches): <u>Sur</u> (includes capillary fringe)	face
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pr	evious inspections), if available:
Remarks: A bowl area with no inlets or outlets that holds water with little to no wetlan	d fringe.

VEGETATION - Use scientific names of plants.

Sampling Point: W02

				Gamping		
	Absolute	Dominant	Indicator	Dominance Test worksheet:		,
Thee Stratum (Plot size: 20x30)	% Cover	Species?	Status			
1. Acer rubrum	60	X	FAC	Number of Dominant Species		(
2				I hat Are OBL, FACW, or FAC:	_2	_ (A) 🛝
3						
4				Total Number of Dominant		
5.		· ·····		Species Across All Strata:	_2	_ (B)
6.						
7				Percent of Dominant Species		
				I hat Are OBL, FACW, or FAC:	100%	_ (A/B)
· · ·	00		ver			
Sanling/Shrub Stratum (Blot size: 20,20)				Prevalence Index worksheet:		
1 Viburoum Iontage	_			Iotal % Cover of:	Multiply by:	
	5		FAC	OBL species	x 1 =	
	80	X	FAC	FACW species	X2=	
3				EAC species	× 0	
4					× 3 =	
5				FACU species	X 4 =	
6.				UPL species	X 5 =	
7.				Column Totals:	(A)	(B)
		- Total Ca			(~)	(D)
			ver			
Herb Stratum (Plot size:				Prevalence Index =	B/A =	
	-					
			OBL			
2. Calex sp.	20					
3.				Hydrophytic Vegetation Indicat	iors:	
4				Rapid Test for Hydrophytic	Vegetation	
5				X Dominance Test is > 50%		
6						
7.	-			Prevalence lest is $\leq 3.0^{\circ}$		
8.				Morphological Adaptations ¹	(Provide supp	oorting
9.				data in Remarks or on a sep	parate sheet)	÷
10				Problematic Hydrophytic Ve	getation ¹ (Exr	olain)
11						
10				¹ Indicators of hydric soil and we	tland hydrolog	y must
12.				be present, unless disturbed or	problematic.	-
	25	= Total Cov	er	Hydrophytic		
				Propert2	V N	
voody Vine Stratum (Plot size:)				riesent? fes	<u>X</u> NO _	
1	-					
2		·				
3						
4.						
		- Tatal Cau				
		= Total Cove	er			
				• •		
Remarks: (Include photo numbers here or on a congrate	aboot)					
Tree stratum – majority of the red maple overhund the s	ample plot					
and the second						
				•		

SO	I	L
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Sampling Point: W02

Profile Desc	ription: (Describe Matrix	to the depth	needed to docur	nent the inc	dicator o	r confirm	the absence	of indicators.)	
(inches)	Color (moist)		Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0.2								Organic laver	
0.2				· ·	<u> </u>		Condu oilt	Deste mede it difficult to dia deen	
2-8	7.5YR 2.5/1			M	<u> </u>		Sandy slit	Roots made it difficult to dig deep	<u> </u>
			*	······································		·	·		
	· · · · · · · · ·			· •					
¹ Type: C=C	oncentration, D=De	pletion, RM=F	Reduced Matrix, C	S=Covered	or Coated	d Sand G	rains. ²	Location: PL=Pore Lining, M=Matrix.	
Hydric Soil	Indicators:					•	Indicat	ors for Problematic Hydric Soils ³ :	
Histos	ol (A1)		Polyvalue Belo	ow Surface ((S8) (LR	RR,	2 cm	Muck (A10) (LRR K, L, MLRA 149B)	
Histic	Epipedon (A2)		MLRA 149	B)			Coa	st Prairie Redox (A16) (LRR K, L, R)	
Black	Histic (A3)		Thin Dark Sur	, face (S9) (L	RR R. MI	LRA 1498	3) 5 cm	Mucky Peat or Peat (S3) (LRR K. L. I	א)
X Hydrod	ien Sulfide (A4)	—	Loamy Mucky	Mineral (F1) (I RR K		_,Oark	Surface (S7) (I RR K I)	·/
Hydrog	ad Lavers (A5)		Loamy Glever	Matrix (F2)	, (=,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	, –,	Boly	value Below Surface (S8) (I PP K 1)	
Oualin	ed Layers (AJ) od Bolow Dark Surf	-	Loany Gleyed	iv (E2)			T Oly	Dark Surface (S0) (LRR K, L)	
Depier	eu Below Dark Sun		Depieted Mati	urfana (EG)				Mangapaga Massag (E12) (LRR K, E)	ח
	Dark Sunace (A12)	· —	Redux Dalk S		7)		1011-	mangenese masses (F12) (LRR R, L,	
Sandy	Nucky Mineral (S1)	, –			()		Pied		9B)
Sandy	Gleyed Matrix (54)		Redox Depres	sions (Fo)				C Spodic (TAB) (WERA 144A, 145, 145	3B)
	Redox (S5)						Rea		
Strippe	Matrix (S6)						Very	Shallow Dark Surface (1F12)	
Dark S	urface (S7) (LRR R	, MLRA 149E	5)				Othe	r (Explain in Remarks)	
³ Indicators of	f Hydrophytic vegeta	ation and wetl	and hydrology mu	st be preser	nt, unless	disturbed	d or problemat	ic.	
Restrictive I	_ayer (if observed)):							·. · ·
Type:									
Depth (in	ches):				Нуа	ric Soll P	resent?	Yes <u>X</u> No	
D				······································					
Remarks: There was n roots and am	ot so much of a soil ount of water in pit.	l restrictive lay	ver, but rather an i	mpenetrable	e zone wi	th roots a	nd vegetation	Pit was only dug to 8 inches because	of
					•				
								-	
									ŀ

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Barnes Air National Guard Base	City/County: Hampden County Sampling Date: 05/19/2014				
Applicant/Owner: Air National Guard	State: Massachusetts Sampling Point: U02				
nvestigator(s): Jamell/Davanzo	Section, Township, Range: NA				
Landform (hillslope, terrace, etc.) hillslope Loc	cal relief (concave, convex, none): none				
Slope (%): 3 Lat:42' 29.424" N	Long: 72° 42' 23.216" W Datum: WGS84				
Soil Map Unit Name:Hinkley Loamy Sand, 15-25% slopes	NWI Classification: none				
Are climatic / hydrologic conditions on the site typical for this time of year?	Yes X No (If no, explain in Remarks.)				
Are Vegetation, Soil, or Hydrology significantly disturbed	? N Are "Normal Circumstances" present? Yes X No				
Are Vegetation, Soil, or Hydrology naturally problematic?	P N (If needed, explain any answers in Remarks.)				
SUMMARY OF FINDINGS – Attach site map showing sam	ppling point locations, transects, important features, etc.				
Hydrophytic Vegetation Present? Yes X No	Is the Sampled Area				
Hydric Soil Present?	within a Wetland? Yes NoX				
Wetland Hydrology Present? Yes X No	If yes, optional Wetland Site ID:				
Remarks:					
·.					
HYDROLOGY					
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)				
Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Water-Stained Leav High Water Table (A2) Aquatic Fauna (B13) Saturation (A3) Marl Deposits (B15) Water Marks (B1) Hydrogen Sulfide Od Sediment Deposits (B2) Oxidized Rhizosphe Drift Deposits (B3) Presence of Reduce Algal Mat or Crust (B4) Recent Iron Reduction Inundation Visible on Aerial Imagery (B7) Other (Explain in Response) Sparsely Vegetated Concave Surface (B8) State (B8)	es (B9)				
Field Observations:	· · · ·				
Surface Water Present? Yes No _X_ Depth (inches):					
Water Table Present? Yes No _X_ Depth (inches):	Watland Hudvalagu Brasant2 - Var - V - Na				
Saturation Present? Yes <u>No X</u> Depth (inches): (includes capillary fringe)	Yes X No				
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre	vious inspections), if available:				
Remarks:					
,					

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VEGETATION - Use scientific names of plants.

Sampling Point: U02

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a mar	Absolute	Dominant	Indicator	Dominance Test worksheet:							
ree Stratum (Plot size:)	% Cover	Species?	Status								
. Quercus rubra	15	X	FACU	Number of Dominant Species							
. Quercus alba	5		FACU	That Are OBL, FACW, or FAC: <u>3</u> (A)							
. Quercus coccinea	5		NR								
. Acer rubrum	10	X	FAC	Total Number of Dominant							
· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·		Species Across All Strata: (B)							
				Percent of Dominant Species							
·				That Are OBL, FACW, or FAC: (A/B)							
		- 10tal C0	vei								
anling/Shrub Stratum (Plot size)				Total % Cover of:							
	F	v									
Amelonobies orberes		<u> </u>	FACW	OBL species 3 $x 1 = 3$							
Pine stat		·	FACU	FACW species <u>5</u> X 2 = 10							
Pinus strobus	4		FACU	FAC species 19 X 3 = 57							
. Quercus rubra	3		FACU								
. Acer rubrum	33	· · · · · · · · · · · · · · · · · · ·	FAC	TACO species 34 $A 4 = 136$							
. Vaccinium pallidum	1		NR	UPL species X 5 =							
Viburnum lentago	5	Х	FAC	Column Totals: 61 (A) 206 (B)							
	24	= Total Co	/er								
	<u> </u>										
erb Stratum (Plot size:)				Prevalence Index = B/A = 3.37							
Micaithemum canadense	1		FACU								
Virbirnum dentatum			1700								
			FAC								
			FACU	Hydrophytic Vegetation Indicators:							
Carex sp.		·····,	OBL	Rapid Test for Hydrophytic Vegetation							
Monotropa uniflora	1	<u> </u>	FACU	X Dominance Test is > 50%							
· · · · · · · · · · · · · · · · · · ·				Prevalence Test is < 3.01							
	•			Membeleziael Adentational (Durat Landaria							
				data in Remarks or on a concrete sheet)							
· · · · · · · · · · · · · · · · · · ·		·		data in riemarks of on a separate sneet)							
).	· · · · · · · · · · · · · · · ·			Problematic Hydrophytic Vegetation ¹ (Explain)							
1	· · · · · · · · · · · · · · · · · · ·										
>	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		Indicators of hydric soil and wetland hydrology must							
••		- T-1-1 0-1		be present, unless disturbed or problematic.							
			er	Vegetation							
(oody Vino Stratym (Plot aize)				Present? Yes X No							
		·	<u> </u>								
		·									
	0	= Total Cov	er								
			01	· ·							
emarks: (Include photo numbers here or on a separate	sheet)										
emarks: (Include photo numbers here or on a separate	sheet.)										
OIL								Sam	pling Point:	U02	
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Profile Des	cription: (Describe	to the dept	h needed to doci	ument the in	dicator o	r confirm	the absen	ce of indica	tors.)		
Depth (inches)	Matrix	0/	F	Redox Featur	es Trans 1						
		70		%	Type.	_Loc ²	lexture		Rema	rks	
1-6	10YR 4/3	80			······		Loamv sa	Organic I nd	ayer		
1-6	10YR 2/2	20				·					
6-14	10YR 4/4	100					cond				
	101111 111						sanu				
		· · · · · ·							· · · · · · · · · · · · · · · · · · ·		
ſype: C=C	oncentration, D=Dep	oletion, RM=	Reduced Matrix, (CS=Covered	or Coated	Sand Gr	ains.	² Location: I	PL=Pore Lini	ing, M≕Ma	atrix.
ydric Soil	Indicators:						Indic	ators for Pro	blematic H	vdric Soi	 Is³:
Histos	ol (A1)	-	Polyvalue Be	elow Surface	(S8) (LRF	₹R,	2 c	m Muck (A1	0) (LRR K, L	, MLRA 1	49B)
Histic I	Epipedon (A2)		MLRA 14	9B)			Cc	ast Prairie R	edox (A16) (LRR K, L	, R)
Black I	Histic (A3)	-	Thin Dark Sι	Irface (S9) (L	.RR R, ML	RA 1498	3) <u>5</u> 6	m Mucky Pe	at or Peat (S	3) (LRR I	K, Ĺ, F
Hydrog	gen Sulfide (A4)	-	Loam y Muck	y Mineral (F1) (LRR K,	L)	Da	rk Surface (S	67) (LRR K, I	L)	
Stratin	ed Layers (A5)	· -	Loamy Gleye	ed Matrix (F2))	•	Po	lyvalue Belov	v Surface (S	8) (LRR 🖌	<, L)
Depiet	Dark Surface (A12)		Depieted Ma	Trix (F3)			Th	in Dark Surfa	ice (S9) (LRI	R K, L)	
Sandv	Mucky Mineral (S1)	-	Depleted Dark	sunace (Fo) rk Surface (F	• 7)		Iro	n-Mangenese	e Masses (F	12) (LRR	K, L, I
Sandy	Gleved Matrix (S4)	-	Bedox Depre	essions (F8)	')		PIE	sic Spodie (1	piain Solis (I	-19) (MLF	KA 14
Sandy	Redox (S5)	-					Re	d Parent Mat	erial (TE2)	144A, 14	5, 148
Strippe	ed Matrix (S6)						Ve	rv Shallow Da	ark Surface (TF12)	
Dark S	urface (S7) (LRR R,	MLRA 1491	B)				Oth	ner (Explain i	n Remarks)	,	
ndicators of	Hydrophytic vegeta	tion and wet	land hydrology m	ust be preser	nt, unless	disturbed	or problem	atic.	ŕ.		
estrictive L	_ayer (if observed):										
Туре:			· .								
Depth (ind	ches):				Hyari	c Soil Pr	esent?	Ye	es	_ No	<u>X</u>
marks:					_l						
						-					
								· ·			
						•					•
							t				

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THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS FOR SALE BY U.S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092 A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST UTM GRID AND 1979 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET Revisions shown in purple compiled in cooperation with the State of Massachusetts agencies from aerial photographs taken 1975 and other source data. This information not field checked. Map edited 1979







Aerial View From Google Earth 3/29/2012 Wetland 2

APPROVED JURISDICTIONAL DETERMINATION FORM U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: NAE-2014-01568, Barnes Airforce Base, Wetland 3

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: MA County/parish/borough: Hampden City: Westfield

Center coordinates of site (lat/long in degree decimal format): Lat. 42d 09m 46.99s° N, Long. 072d 42m 22.69s° W. Universal Transverse Mercator:

Name of nearest waterbody: Buck Pond

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows:

Name of watershed or Hydrologic Unit Code (HUC): Westfield

- Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
- Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

- Office (Desk) Determination. Date: July 29, 2014
 - Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There Are no "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide. Waters are presently used, or have been used i

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There Are no "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

- a. Indicate presence of waters of U.S. in review area (check all that apply): ¹
 - TNWs, including territorial seas
 - Wetlands adjacent to TNWs
 - Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
 - Non-RPWs that flow directly or indirectly into TNWs
 - Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
 - Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
 - Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
 - Impoundments of jurisdictional waters
 - Isolated (interstate or intrastate) waters, including isolated wetlands
- b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: _____linear feet: _____width (ft) and/or _____ acres.

- **c. Limits (boundaries) of jurisdiction** based on: **Pick List** Elevation of established OHWM (if known):
- 2. Non-regulated waters/wetlands (check if applicable):³
 - Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: Wetland is isolated, closed off from discharging water and lacks a nexus to insterstate commerce. The closest Non-TNW waterway is approximately 650 feet away (Unnamed Wetland System to the south).

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

 $^{^{2}}$ For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

 TNW Identify TNW: _____.
 Summarize rationale supporting determination: _____.
 Wetland adjacent to TNW Summarize rationale supporting conclusion that wetland is "adjacent": _____.

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size:	Pi	ck List	
Drainage area:	Pi	ck List	
Average annual	rainfall:	i	inches
Average annual	snowfall	:	inches

(ii) Physical Characteristics:

(a) <u>Relationship with TNW:</u>

 ☐ Tributary flows directly into TNW.
 ☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are	Pick List	river miles from TNW.	
Project waters are	Pick List	river miles from RPW.	
Project waters are	Pick List	aerial (straight) miles from T	NW.
Project waters are	Pick List	aerial (straight) miles from R	PW.
Project waters cros	s or serve	as state boundaries. Explain:	

Identify flow route to TNW⁵:

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

	(b)	General Tributary Characteristics (check all that apply): Tributary is: Natural Artificial (man-made). Explain: Manipulated (man-altered). Explain:
		Tributary properties with respect to top of bank (estimate): Average width: feet Average depth: feet Average side slopes: Pick List.
		Primary tributary substrate composition (check all that apply): Silts Sands Concrete Cobbles Gravel Muck Bedrock Vegetation. Type/% cover: Other. Explain:
		Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Presence of run/riffle/pool complexes. Explain: Tributary geometry: Pick List Tributary gradient (approximate average slope):%
	(c)	<u>Flow:</u> Tributary provides for: Pick List Estimate average number of flow events in review area/year: Pick List Describe flow regime: Other information on duration and volume:
		Surface flow is: Pick List. Characteristics:
		Subsurface flow: Pick List . Explain findings: Dye (or other) test performed:
		Tributary has (check all that apply): Bed and banks OHWM ⁶ (check all indicators that apply): clear, natural line impressed on the bank changes in the character of soil shelving vegetation matted down, bent, or absent leaf litter disturbed or washed away sediment deposition water staining other (list): Discontinuous OHWM. ⁷ Explain:
		If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply): High Tide Line indicated by: oil or scum line along shore objects fine shell or debris deposits (foreshore) physical markings/characteristics tidal gauges other (list):
(iii)	Che Cha	emical Characteristics: racterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: _____. Identify specific pollutants, if known: _____.

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break. ⁷Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

 (a) <u>General Wetland Characteristics:</u> Properties: Wetland size: acres Wetland type. Explain: . Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain:

(b) <u>General Flow Relationship with Non-TNW</u>: Flow is: **Pick List**. Explain:

> Surface flow is: Pick List Characteristics:

Subsurface flow: **Pick List**. Explain findings: _____.

- (c) Wetland Adjacency Determination with Non-TNW:
 - Directly abutting
 - □ Not directly abutting
 - Discrete wetland hydrologic connection. Explain:
 - Ecological connection. Explain:
 - Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW. Project waters are **Pick List** aerial (straight) miles from TNW. Flow is from: **Pick List**. Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:

(iii) Biological Characteristics. Wetland supports (check all that apply):

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List** Approximately () acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:



C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

- 1. Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
- Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
- **3. Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

- **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
 TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.
- 2. <u>RPWs that flow directly or indirectly into TNWs.</u>
 - Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:
 - Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):

acres.

- Tributary waters: linear feet width (ft).
- Other non-wetland waters:
 - Identify type(s) of waters:
- 3. Non-RPWs⁸ that flow directly or indirectly into TNWs.
 - Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters:
 - Identify type(s) of waters:
- 4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.
 - Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
 - Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:
 - Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

Provide acreage estimates for jurisdictional wetlands in the review area:

- 5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.
 - Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: _____acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area:

- 7. Impoundments of jurisdictional waters.⁹
 - As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
 - Demonstrate that impoundment was created from "waters of the U.S.," or
 - Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
 - Demonstrate that water is isolated with a nexus to commerce (see E below).

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain:
- Other factors. Explain:

Identify water body and summarize rationale supporting determination:

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

⁸See Footnote # 3.

⁹ To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰ Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos*.

Pro	vid	e es	stimates	for	jur	isd	ictional	waters	in	the	review	area	(check	c all	that	app	ly):
																	~ /

Tributary waters: linear feet width (ft).

Other non-wetland waters:	acres	s .

- Identify type(s) of waters:
- Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- \bowtie Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
 - Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain:
 - Other: (explain, if not covered above):

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

Non-wetland	waters (i.	.e., rivers,	streams):		linear feet		width (ft).	
Lakes/ponds:	aci	res.						
Other non-we	tland wat	ters:	acres. Lis	st type	of aquatic	resou	rce:	
Wetlands:	acres.							

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- Lakes/ponds: acres.

Other non-wetland waters:	acres. List type of aquatic resource:	
---------------------------	---------------------------------------	--

 $\overline{\boxtimes}$ Wetlands: 0.06 acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

	Mans, plans, plots or plat submitted by or on behalf of the applicant/consultant
	waps, plans, plots of plat submitted by of on behalf of the appreciate onsultant.
\bowtie	Data sheets prepared/submitted by or on behalf of the applicant/consultant.
	Office concurs with data sheets/delineation report.
	Office does not concur with data sheets/delineation report.
	Data sheets prepared by the Corps:
	Corps navigable waters' study
H	U.S. Geological Survey Hydrologic Atlast
	USGS 8 and 12 digit HUC maps.
\boxtimes	U.S. Geological Survey map(s). Cite scale & quad name: Mount Tom 1:25000.
	USDA Natural Resources Conservation Service Soil Survey. Citation:
\boxtimes	National wetlands inventory map(s). Cite name:24k Quad Name: Mount Tom.
	State/Local wetland inventory map(s):
\boxtimes	FEMA/FIRM maps:25013C0190E.
	100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
\boxtimes	Photographs: Aerial (Name & Date): Aerial View From Google Earth 3/29/2012 Wetland 3.
	or Other (Name & Date):
	Previous determination(s). File no. and date of response letter:
	Applicable/supporting case law:
	Applicable/curporting scientific literature
	Other information (please specify):

B. ADDITIONAL COMMENTS TO SUPPORT JD:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Barnes Air National Guard Base	City/County: Hampden County Sampling Date: 05/19/2014
Applicant/Owner: Air National Guard	State: Massachusetts Sampling Point: W04
nvestigator(s): Jamell/Davanzo	Section, Township, Range: NA
Landform (hillslope, terrace, etc.) depression	Local relief (concave, convex, none): concave
Slope (%): 2 Lat: 42° 9' 50.067" N	Long: 72° 42' 25.879" W Datum: WGS84
Soil Map Unit Name: <u>Hinckley Loamy Sand, 15-25% slopes</u>	NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year	ar? Yes_X_ No(If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrologysignificantly distur	rbed? N Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrologynaturally problem	atic? N (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 X No	is the Sampled Area
Hydric Soil Present? Yes X No	within a Wetland? Yes X No
Wetland Hydrology Present? Yes X No	If yes, optional Wetland Site ID:
Remarks: Likely an old man-made trench, that now holds water.	
HYDROLOĠY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required: check all that apply)	Surface Soil Cracks (B6)
X Surface Water (A1) X Water-Stained L	eaves (B9) Drainage Patterns (B10)
X High Water Lable (A2) X Aquatic Fauna (E X Saturation (A3) Marl Deposits (B	B13) Moss Trim Lines (B16)
X Water Marks (B1) X Hydrogen Sulfide	e Odor (C1) Crayfish Burrows (C8)
Sediment Deposits (B2) Oxidized Rhizos	pheres on Living Roots (C3) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	uction in Tilled Soils (C6) X Geomorphic Position (D2)
Iron Deposits (B5) Thin Muck Surfac	ce (C7) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes X No Depth (inches)	0-6
Water Table Present? Yes X No Depth (inches):	0.5
Saturation Present? Yes X No Depth (inches):	Wetland Hydrology Present? Yes X No
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos	previous inspections) if available:
Remarks	
Remarks:	

.

VEGETATION - Use scientific names of plants.

Sampling Point: W04

Tree Stratum (Plot size: 10x30) 1. Ulmus americana	<u>% Cover</u> 15	Species?		
1. Ulmus americana 2. 3. 4. 5. 6.	15	0000001	Status	
2 3 4 5 6		X	FACW	Number of Dominant Species
3 4 5 6				That Are OBL, FACW, or FAC: 1 (A)
4 5 6				Total Number of Dominant
6.			· · · · ·	Species Across All Strata: 1 (B)
6.				
7		· · · · · · · · · · · · · · · · · · ·		Percent of Dominant Species
/,		·	·····	That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
	15	= Total Co	ver	
Sanling/Shrub Stratum (Plot size:				Prevalence Index worksheet:
1				
2.				
3.	,	•		FACW species X 2 =
4.				FAC species X 3 =
5.		•		FACU species X 4 =
а. Э.		·		UPL species X 5 =
7.		· · · · · · · · · · · · · · · · · · ·		Column Totals: (A) (B)
		= Total Cov	/er	
			· •	Drevelance Indust D/A
Herb Stratum (Plot size:)			•	Prevalence Index = B/A =
. Carex sp.	3	· · · · · · · · · · · · · · · · · · ·		
2. Sphagnum	1			
3		_		Hydrophytic Vegetation Indicators:
		• • • • • • • • • • • • • • • • • • •		X Rapid Test for Hydrophytic Vegetation
				X Dominance Test is > 50%
		· · · · · · · · · · · · · · · · · · ·		Prevalence Test is $\leq 3.0^{1}$
·				Morphological Adaptations ¹ (Provide supporting
				data in Remarks or on a separate sheet)
				Problematic Hydrophytic Vegetation ¹ (Explain)
0			·	
1	· .			¹ Indicators of hydric soil and wetland hydrology must
2				be present, unless disturbed or problematic.
· _		= Total Cov	er	Hydrophytic
Voody Vino Strotum (Distaine)				Present? Yes X No
(Plot size:)				
·				
. –	0 =	= Total Cove	er	

Profile Dec	· · · · · · · · · · · · · · · · · · ·							
Denth	Scription: (Describe	e to the depth	n needed to docu	ument the indicator	or confirm the	absence of	indicators.)	
(inches)	Color (moist)	%	Color (moist)	% Type ¹	Loc ² 1	Texture	Rem	arks
0-2		······				<u> </u>	ranic laver	
2 1/	7 5VD 2 5/1	100			Sa	ndv loam	ganic layer	
	<u>7.51K 2,5/1</u>							
		······ · ·			· ····· ····· ·····			,
					·	<u> </u>		
	<u> </u>		• •		·			
	• • • • • • • • • • • • • • • • •	<u></u>						
	·							
¹ Type: C=0	Concentration, D=De	pletion, RM=I	Reduced Matrix, C	CS=Covered or Coate	ed Sand Grains	s. ² Loc	ation: PL≕Pore Li	ning, M=Matrix.
Hydric Soil	Indicators:	· · · · · · · · · · · · · · · · · · ·				Indicators	for Problematic I	-lydric Soils ³ :
Histo	sol (A1)		Polyvalue Be	low Surface (S8) (LF	RR,	2 cm Mu	ck (A10) (LRR K.	L. MLRA 149B
Histic	Epipedon (A2)	-	MLRA 149	9B)	· -	Coast P	airie Redox (A16)	(LRR K. L. R)
Black	Histic (A3)		Thin Dark Su	rface (S9) (LRR R. N	LRA 149B)	5 cm Mu	cky Peat or Peat ((S3) (LRR K. L.
X Hydro	ogen Sulfide (A4)	-	Loamv Muck	v Mineral (F1) (LRR I	κ. L)	Dark Su	face (S7) (I RR K	.])
Strati	fied Lavers (A5)	-	Loamv Gleve	d Matrix (F2)		Polyvalu	e Below Surface (, -, S8) (I RR K I)
Deple	ted Below Dark Surf	ace (A11)	Depleted Mat	trix (F3)		Thin Dar	k Surface (S9) (I F	RR K. L)
Thick	Dark Surface (A12)	• / _	 Redox Dark S	Surface (F6)		Iron-Mar	idenese Masses (I	E12) (I RR K. L.
Sandv	Mucky Mineral (S1)) _	Depleted Dar	k Surface (F7)	_	Piedmon	it Floodplain Soils	(E19) (MI RA 1
Sandy	y Gleyed Matrix (S4)	· · _	Redox Depre	ssions (F8)	-	Mesic Sr	odic (TA6) (MI RA	4 144A 145 14
Sandy	Redox (S5)	-			-	Red Par	ent Material (TF2)	
aaintS	ed Matrix (S6)					Verv Sha	allow Dark Surface	(TE12)
Dark S	Surface (S7) (LRR R	. MLRA 1498	3)			Other (F	volain in Remarks')
estrictive	Layer (if observed)	:					-	
Туре:								
Type: Depth (ir	nches):			Hyd	ric Soil Prese	nt?	Yes X	No
Type: Depth (ir	nches):			Hyd	ric Soil Presei	nt?	Yes X	No
Type: Depth (ir Remarks:	nches):			Hyd	ric Soil Prese	nt?	Yes X	No
Type: Depth (ir Remarks:	nches):		_	Hyd	ric Soil Prese	nt?	Yes X	No
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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Barnes Air National Guard Base	City/County: Hampden County Sampling Date: 05/19/2014
Applicant/Owner: Air National Guard	State: Massachusetts Sampling Point: U04
nvestigator(s): Jamell/Davanzo	Section, Township, Range: <u>NA</u>
Landform (hillslope, terrace, etc.) terrace	_ Local relief (concave, convex, none): none
Slope (%): 3 Lat: 42° 9' 50.175" N	Long: 72° 42' 25.779" W Datum: WGS84
Soil Map Unit Name: <u>Hinckley Loamy Sand, 0-3% slopes</u>	NWI Classification: none
Are climatic / hydrologic conditions on the site typical for this time of ye	ar? Yes X No (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrologysignificantly dist	urbed? N Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrologynaturally problem	natic? N (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	X Is the Sampled Area
Hydric Soil Present? Yes No	x within a Wetland? Yes NoX
Wetland Hydrology Present? Yes No	If yes, optional Wetland Site ID:
Remarks:	
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required: check all that apply)	Surface Sail Oracles (DO)
	Leaves (B9) Drainage Patterns (B10)
High Water Table (A2) Aquatic Fauna Aquatic Fauna	(B13) Moss Trim Lines (B16)
Water Marks (B1)	de Odor (C1) Dry-Season Water Table (C2) Cravfish Burrows (C8)
Sediment Deposits (B2) Oxidized Rhizos	spheres on Living Roots (C3) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Presence of Re Recent Iron Rec	duced Iron (C4) Stunted or Stressed Plants (D1) duction in Tilled Soils (C6) Geomorphic Position (D2)
Iron Deposits (B5)	ace (C7) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8)	n Remarks) Microtopographic Relief (D4)
Field Observations:	
Surface Water Present? Yes No Y Donth (inchoo)	
Water Table Present? Ves No X Dopth (inches).	
Saturation Present? Vec No X Depth (inches);	Wetland Hydrology Present? Yes No X
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos	, previous inspections), if available:
Remarks:	
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VEGETATION - Use scientific names of plants.

Sampling Point: <u>U04</u>

	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size:)	% Cover	Species?	Status		
1. Acer rubrum	40	Х	FAC	Number of Dominant Species	(
2. Quercus rubra	25	Х	FACU	That Are OBL, FACW, or FAC: _1	(A) (
3. Pinus strobus	10		FACU		
4				Total Number of Dominant	
5.				Species Across All Strata: 5	(B)
6.	-			Decreant of Deminent Curreis	
7.				That Are OBI EACW or EAC: 20%	(///
	75	= Total Co	ver		, л о)
				Prevalence index worksheet:	
Sapling/Shrub Stratum (Plot size: 0)				Total % Cover of: Multiply by:	
1. Pinus strobus	15	х	FACU	OBL species x 1 =	•
2. Vaccinium corymbosum	5		FACW		-
3. Corylus americana	10	X	FACU	FACW species 5 $X = 10$	-
4. Quercus rubra	4		FACU	FAC species 41 X 3 = 123	-
5. Vaccinium pallidum	10	X	NR-UPI	FACU species <u>133</u> X 4 = <u>532</u>	-
6. Prunus virginiana	2		FACU	UPL species X 5 =	
7		·	17100	Column Totals: 179 (A) 665	(B)
	46	= Total Co			. (0)
			VGI	•• .	
Herb Stratum (Plot size)				Prevalence Index = B/A = 3.7	-
1 Majanthemum canadense	65	Y	FACU	Hydrophytic Vegetation Indicators:	
2 Uvularia sessilifolia			EACU	Rapid Test for Hydrophytic Vegetation	
3 Chimanhila maculata	<u>_</u>			Dominance Test is > 50%	
4 Lyconodium clavatum		<u> </u>	NR-UPL	$\frac{1}{2}$	
5 Lycopedium chavatum	10			Morphological Adoptational (Dravide surpho	et in a
			NK-UPL	data in Remarks or on a separate sheet)	rung
7		·			
/		······································	······································	Problematic Hydrophytic Vegetation' (Expla	an) j
0				Indicators of hydric soil and wotland hydrology	must (
9		· · · · · · · · · · · · · · · · · · ·		be present, unless disturbed or problematic	must
				Hydrophytic	
	<u> </u>			Vegetation	
12				Present? Yes No _X	<u> </u>
	79	= Total Cov	/er		
Moody Vine Stratum (Distaire)					
1	<u></u>	·······			
2					
3.		. <u> </u>			
4.		·			
	0	= Total Cov	er	,	
Remarks: (Include photo numbers here or on a separate s	sheet.)				
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	19) (IWLKA 14)
Sandy Redox (S5) Red Parent Material (TF2)	-77, 140, 149
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Dark Surface (S7) (LRR R, MLRA 149B)Other (Explain in Remarks)	· · · · · · · · · · · · · · · · · · ·
Depth (inches): Yes	No <u>X</u>
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THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS FOR SALE BY U.S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092 A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST UTM GRID AND 1979 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET Revisions shown in purple compiled in cooperation with the State of Massachusetts agencies from aerial photographs taken 1975 and other source data. This information not field checked. Map edited 1979





Aerial View From Google Earth 3/29/2012 Wetland 3

3/29/2012

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Wetland 3

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APPROVED JURISDICTIONAL DETERMINATION FORM U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: NAE-2014-01568, Barnes Airforce Base, Wetland 4

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State:MA County/parish/borough: Hampden City: Westfield

Center coordinates of site (lat/long in degree decimal format): Lat. 42d 09m 50.14s° N, Long. 072d 42m 25.30s° W. Universal Transverse Mercator:

Name of nearest waterbody: Buck Pond

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows:

Name of watershed or Hydrologic Unit Code (HUC): Westfield

- Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
- Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

- Office (Desk) Determination. Date: July 29, 2014
 - Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There Are no "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide. Waters are presently used, or have been used i

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There Are no "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

- a. Indicate presence of waters of U.S. in review area (check all that apply): ¹
 - TNWs, including territorial seas
 - Wetlands adjacent to TNWs
 - Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
 - Non-RPWs that flow directly or indirectly into TNWs
 - Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
 - Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
 - Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
 - Impoundments of jurisdictional waters
 - Isolated (interstate or intrastate) waters, including isolated wetlands
- b. Identify (estimate) size of waters of the U.S. in the review area: Non-wetland waters: linear feet: width (ft) and/or acres.
 - Wetlands: acres.
- c. Limits (boundaries) of jurisdiction based on: Pick List Elevation of established OHWM (if known):
- 2. Non-regulated waters/wetlands (check if applicable):³
 - Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
 Explain: Wetland is isolated, closed off from discharging water and lacks a nexus to interstate commerce. The closest
 Non-TNW waterway is approximately 670 feet away (Unnamed Wetland System to the south).

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

 $^{^{2}}$ For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1.	TNW Identify TNW:
	Summarize rationale supporting determination:
2.	Wetland adjacent to TNW Summarize rationale supporting conclusion that wetland is "adjacent":

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size:	Pi	ck List	
Drainage area:	Pi	ck List	
Average annual	rainfall:	i	inches
Average annual	snowfall	:	inches

(ii) Physical Characteristics:

(a) <u>Relationship with TNW:</u>

 ☐ Tributary flows directly into TNW.
 ☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are	Pick List	river miles from TNW.	
Project waters are	Pick List	river miles from RPW.	
Project waters are	Pick List	aerial (straight) miles from T	NW.
Project waters are	Pick List	aerial (straight) miles from R	PW.
Project waters cros	ss or serve	as state boundaries. Explain:	

Identify flow route to TNW⁵:

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

	(b)	General Tributary Characteristics (check all that apply): Tributary is: Natural Artificial (man-made). Explain: Manipulated (man-altered). Explain:
		Tributary properties with respect to top of bank (estimate): Average width: Average depth: Average side slopes: Pick List.
		Primary tributary substrate composition (check all that apply):
		Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Presence of run/riffle/pool complexes. Explain: Tributary geometry: Pick List Tributary gradient (approximate average slope):%
	(c)	<u>Flow:</u> Tributary provides for: Pick List Estimate average number of flow events in review area/year: Pick List Describe flow regime: Other information on duration and volume:
		Surface flow is: Pick List. Characteristics:
		Subsurface flow: Pick List. Explain findings: Dye (or other) test performed:
		Tributary has (check all that apply): Bed and banks OHWM ⁶ (check all indicators that apply): clear, natural line impressed on the bank changes in the character of soil shelving vegetation matted down, bent, or absent leaf litter disturbed or washed away sediment deposition water staining other (list): Discontinuous OHWM. ⁷ Explain:
		If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply): High Tide Line indicated by: oil or scum line along shore objects fine shell or debris deposits (foreshore) physical markings/characteristics tidal gauges other (list):
(iii)	Che Cha	emical Characteristics: racterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: _____. Identify specific pollutants, if known: _____.

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break. ⁷Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

 (a) <u>General Wetland Characteristics:</u> Properties: Wetland size: _____acres Wetland type. Explain: _____. Wetland quality. Explain: _____.

Project wetlands cross or serve as state boundaries. Explain:

(b) <u>General Flow Relationship with Non-TNW</u>: Flow is: **Pick List**. Explain:

> Surface flow is: Pick List Characteristics:

Subsurface flow: **Pick List**. Explain findings: _____.

- (c) Wetland Adjacency Determination with Non-TNW:
 - Directly abutting
 - □ Not directly abutting
 - Discrete wetland hydrologic connection. Explain:
 - Ecological connection. Explain:
 - Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are Pick List river miles from TNW.
Project waters are Pick List aerial (straight) miles from TNW.
Flow is from: Pick List.
Estimate approximate location of wetland as within the Pick List floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:

(iii) Biological Characteristics. Wetland supports (check all that apply):

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List** Approximately () acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:



C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

- 1. Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
- Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
- **3. Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

- **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
 TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.
- 2. <u>RPWs that flow directly or indirectly into TNWs.</u>
 - Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:
 - Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):

acres.

- Tributary waters: linear feet width (ft).
- Other non-wetland waters:
 - Identify type(s) of waters:
- 3. Non-RPWs⁸ that flow directly or indirectly into TNWs.
 - Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters:
 - Identify type(s) of waters:
- 4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.
 - Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
 - Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:
 - Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

Provide acreage estimates for jurisdictional wetlands in the review area:

- 5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.
 - Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area:

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area:

- 7. Impoundments of jurisdictional waters.⁹
 - As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
 - Demonstrate that impoundment was created from "waters of the U.S.," or
 - Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
 - \Box Demonstrate that water is isolated with a nexus to commerce (see \tilde{E} below).

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain:
- Other factors. Explain:

Identify water body and summarize rationale supporting determination:

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

⁸See Footnote # 3.

⁹ To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰ Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos*.

Provide estimates	for	jurisdiction	al waters in	the review ar	ea (check all that apply):
		./			

Tributary waters: linear feet width (ft).

Other non-wetland	waters:	acres	

- Identify type(s) of waters:
- Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce. \bowtie
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
 - Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain:
 - Other: (explain, if not covered above):

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

	II V /			
Non-wetland	waters (i.e., ri	vers, streams):	linear feet	width (ft).
Lakes/ponds:	acres.			
Other non-we	tland waters:	acres. Lis	t type of aquatic	resource:
Wetlands:	acres.			

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- Lakes/ponds: acres.

Other non-wetland waters:	acres. List type of aquatic resource:	
---------------------------	---------------------------------------	--

 $\overline{\boxtimes}$ Wetlands: 0.02 acres.

SECTION IV: DATA SOURCES.

- A. SUPPORTING DATA. Data reviewed for JD (check all that apply checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
 - Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:

\bowtie	Data sheets prepared/submitted by or on behalf of the applicant/consultant.
	Office concurs with data sheets/delineation report.
	Office does not concur with data sheets/delineation report.
	Data sheets prepared by the Corps:
	Corps navigable waters' study:
	U.S. Geological Survey Hydrologic Atlas:
	USGS NHD data.
	USGS 8 and 12 digit HUC maps.
\bowtie	U.S. Geological Survey map(s). Cite scale & quad name: Mount Tom 1:25000.
	USDA Natural Resources Conservation Service Soil Survey. Citation:
\square	National wetlands inventory map(s). Cite name:24k Quad Name: Mount Tom.
	State/Local wetland inventory map(s):
\bowtie	FEMA/FIRM maps:25013C0190E
	100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
\bowtie	Photographs: Aerial (Name & Date): Aerial View From Google Earth 3/29/2012 Wetland 4
	or Other (Name & Date):
	Previous determination(s). File no. and date of response letter:
	Applicable/supporting case law:
	Applicable/supporting scientific literature:
	Other information (please specify):
_	

B. ADDITIONAL COMMENTS TO SUPPORT JD: Though there were mistakes in the delineation report submitted on behalf of the Applicant, the mistakes did not change the outcome of the determination.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Barnes Air National Guard Base	City/County: Hampden County Sampling Date: 05/19/2014
Applicant/Owner: Air National Guard	State: Massachusetts Sampling Point: W04
nvestigator(s): Jamell/Davanzo	Section, Township, Range: NA
Landform (hillslope, terrace, etc.) depression	Local relief (concave, convex, none): concave
Slope (%): 2 Lat: 42° 9' 50.067" N	Long: 72° 42' 25.879" W Datum: WGS84
Soil Map Unit Name: <u>Hinckley Loamy Sand, 15-25% slopes</u>	NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of y	/ear? Yes X No (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrologysignificantly dis	turbed? N Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrology naturally proble	ematic? N (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showin	g sampling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Ves X No	In the Semulad Area
Hydric Soil Present?	within a Wetland? Yes X No
Wetland Hydrology Present?	If yes, optional Wetland Site ID:
Remarks' Likely an old man-made trench that now holds water	
remarke. Energian ou man made tenen, that now hous water.	
HYDROLOGY Wetland Hydrology Indicatoro:	
	Secondary Indicators (minimum of two required)
X Surface Water (A1) X Water-Stained	Leaves (B9) Surface Soil Cracks (B6)
X High Water Table (A2) X Aquatic Fauna	a (B13) Moss Trim Lines (B16)
X Saturation (A3) Marl Deposits	(B15) Dry-Season Water Table (C2)
Sediment Deposits (B2)	ospheres on Living Roots (C3) Saturation Visible on Aerial Imagery (C9)
Drift Deposits (B3) Presence of R Algal Mat or Crust (B4) Recent Iron Presence of R	educed Iron (C4) X Stunted or Stressed Plants (D1)
Iron Deposits (B5) Thin Muck Sur	face (C7) Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7) Other (Explain	in Remarks) X Microtopographic Relief (D4)
Field Observations:	
Surface Water Present? Yes X No Depth (inches):	0.6
Water Table Present? Yes X No Depth (inches):	0.5
Saturation Present? Yes X No Depth (inches):	Wetland Hydrology Present? Yes X No
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photo	os, previous inspections), if available:
Remarks:	
	· .

VEGETATION - Use scientific names of plants.

Sampling Point: W04

ree Stratum (Plot size, 10y30)	Absolute % Covor	Dominant Indicator	Dominance Test worksheet:
. Ulmus americana	<u>15</u>	X FACW	Number of Dominant Species
·			That Are OBL, FACW, or FAC: _1(A)
·			Total Number of Densin and
		· · · · · · · · · · · · · · · · · · ·	Species Across All Strata; 1 (B)
			Percent of Dominant Species
		= Total Cover	That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
anling/Shrub Stratum (Plot cize)			Prevalence Index worksheet:
			FACW species $X 2 = $
			FAC species X 3 =
			FACU species X 4 =
			OPL species X5=
			Column Totals: (A) (B)
	<u> </u>	- Total Cover	
erb Stratum(Plot size:)			Prevalence Index = B/A =
Carex sp.	3		
Sphagnum	1		
			Hydrophytic Vegetation Indicators:
		· · · · · · · · · · · · · · · · · · ·	X Rapid Test for Hydrophytic Vegetation
		· · · · · · · · · · · · · · · · · · ·	X Dominance Test is > 50%
			Prevalence Test is $\leq 3.0^1$
		·	Morphological Adaptations ¹ (Provide supporting
			data in Remarks or on a separate sheet)
•			Problematic Hydrophytic Vegetation ¹ (Explain)
			¹ Indicators of hydric soil and wotland hydrology must
· · · · · · · · · · · · · · · · · · ·			be present, unless disturbed or problematic.
	4	= Total Cover	Hydrophytic
ody Vine Stratum (Plot size:			Present? Yes X No
	- <u> </u>		
	0 =	= Total Cover	
		1	

Profile Des	scription: (Describe	to the depti	h needed to docu	ment the indicator	or confirm the	absence of	indicators)	
Depth	Matrix		R	edox Features			maioators.)	
(inches)	Color (moist)	%	Color (moist)	<u>%</u> Type ¹	Loc ² Te	exture	Ren	narks
0-2	· · · · · · · · · · · · · · · · · · ·					0	rganic laver	
2-14	7 5YR 2 5/1	100			San	dy loam	iguino lajoi	······································
4-14			· · · · · · · · · · · · · · · · · · ·		·			
				-				
					·			
			· .					
					·			
¹ Type: C=0	Concentration, D=De	pletion, RM=	Reduced Matrix, C	CS=Covered or Coate	ed Sand Grains.	2Loc	ation: PL=Pore L	ining, M=Matrix.
Hydric Soil	Indicators:					Indicators	for Problematic	Hydric Soils ³ :
Histo	sol (A1)	_	Polyvalue Be	low Surface (S8) (LF	RR,	2 cm Mi	uck (A10) (LRR K,	, L, MLRA 149B
Histic	Epipedon (A2)		MLRA 149	9B)		Coast P	rairie Redox (A16) (LRR K. L. R)
Black	Histic (A3)		Thin Dark Su	, Inface (S9) (LRR R. M	1 RA 149B)	5 cm Mi	icky Peat or Peat	
X Hydro	an Sulfide (A4)	-	Loamy Muck	Mineral (E1) (LPP I		Oork Su		(00) (ENR N, E,
Hyuru		-			Λ, L)			(, L) (0 -) (1) (1 -) (1
			Loamy Gleye	eu watrix (F2)		Polyvalu	e Below Sufface	(58) (LRR K, L)
Deple	ted Below Dark Surfa	ace (A11)	Depleted Mat	trix (F3)		Thin Da	rk Surface (S9) (L	RR K, L)
Thick	Dark Surface (A12)	_	Redox Dark S	Surface (F6)		Iron-Ma	igenese Masses ((F12) (LRR K, L
Sandy	y Mucky Mineral (S1))	Depleted Dar	k Surface (F7)		Piedmo	nt Floodplain Soils	s (F19) (MLRA 1
Sand	y Gleyed Matrix (S4)	-	Redox Depre	ssions (F8)		Mesic S	podic (TA6) (MLR	A 144A. 145. 14
Sandy	v Redox (S5)	-		. /		Red Par	ent Material (TF2))
Strinn	ed Matrix (S6)					Von/ Ch	allow Dark Surfee	/ の (TE1つ)
Dark (2)					e(IΓI ∠)
	Gunade (Gr) (LRR R	, WILITA 1490	-,			Other (E	xplain in Remarks	<i>i)</i>
Type:			<u> </u>	Lud	via Call Dragoni	<i>1</i> 0	V V	N.
Type: Depth (ir	nches):			Hyd	ric Soil Presen	t?	Yes X	No
Type: _ Depth (ir Remarks:	nches):			Hyd	ric Soil Presen	1?	Yes X	No
Type: Depth (ir Remarks:	nches):		_	Hyd	ric Soil Presen	1?	Yes X	No
Type: Depth (ir Remarks:	nches):			Hyd	ric Soil Presen	t?	Yes X	No
Type: _ Depth (ir Remarks:	nches):			Hyd	ric Soil Presen	1?	Yes X	No
Type: _ Depth (ir Remarks:	nches):		 	Hyd	ric Soil Presen	1?	Yes X	No
Type: _ Depth (ir Remarks:	nches):		 	Hyd	ric Soil Presen	1?	Yes X	No
Type: _ Depth (ir Remarks:	nches):		 	Hyd	ric Soil Presen	ł?	Yes X	No
Type: _ Depth (ir Remarks:	nches):		 	Hyd	ric Soil Presen	ł?	Yes X	No
Type: _ Depth (ir Remarks:	nches):		 	Hyd	ric Soil Presen	ł?	Yes X	No
Type: _ Depth (ir Remarks:	nches):		 	Hyd	ric Soil Presen	ł?	Yes X	No
Type: _ Depth (ir Remarks:	nches):		 	Hyd	ric Soil Presen	t?	Yes X	No
Type: _ Depth (ir Remarks:	nches):			Hyd	ric Soil Presen	ł?	Yes X	No
Type: _ Depth (ir Remarks:	nches):			Hyd	ric Soil Presen	t?	Yes X	No
Type: _ Depth (ir Remarks:	nches):			Hyd	ric Soil Presen	ł?	Yes <u>X</u>	No
Type: _ Depth (ir Remarks:	nches):			Hyd	ric Soil Present	ł?	Yes <u>X</u>	No
Type: _ Depth (ir Remarks:	nches):			Hyd	ric Soil Present	ł?	Yes <u>X</u>	No
Type: _ Depth (ir Remarks:	nches):			Hyd	ric Soil Present	ł?	Yes X	No
Type: _ Depth (ir Remarks:	nches):			Hyd	ric Soil Present	ł?	Yes X	No
Type: _ Depth (ir Remarks:	nches):			. Hyd	ric Soil Present	£?	Yes X	No
Type: _ Depth (ir Remarks:	nches):			Hyd	ric Soil Present	£?	Yes <u>X</u>	No
Type: _ Depth (ir Remarks:	nches):			Hyd	ric Soil Present	£?	Yes <u>X</u>	No
Type: _ Depth (ir Remarks:	nches):			Hyd	ric Soil Present	£?	Yes <u>X</u>	No
Type: _ Depth (ir Remarks:	nches):			Hyd	ric Soil Present	£?	Yes <u>X</u>	No
Type: _ Depth (ir Remarks:	nches):			Hyd	ric Soil Present	£?	Yes <u>X</u>	No
Type: _ Depth (ir Remarks:	nches):			. Hyd	ric Soil Presen	£?	Yes <u>X</u>	No
Type: _ Depth (ir Remarks:	nches):			. Hyd	ric Soil Presen	£?	Yes <u>X</u>	No
Type: _ Depth (ir Remarks:	nches):			. Hyd	ric Soil Present	£?	Yes <u>X</u>	No
Type: _ Depth (ir Remarks:	nches):			. Hyd	ric Soil Present	£?	Yes <u>X</u>	No
Type: _ Depth (ir emarks:	nches):			. Hyd	ric Soil Present	£?	Yes <u>X</u>	No

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Barnes Air National Guard Base	City/County: Hampden County Sampling Date: 05/19/2014
Applicant/Owner: Air National Guard	State: Massachusetts Sampling Point: U04
nvestigator(s): Jamell/Davanzo	Section, Township, Range: <u>NA</u>
Landform (hillslope, terrace, etc.) terrace	_ Local relief (concave, convex, none): none
Slope (%): 3 Lat: 42° 9' 50.175" N	Long: 72° 42' 25.779" W Datum: WGS84
Soil Map Unit Name: <u>Hinckley Loamy Sand, 0-3% slopes</u>	NWI Classification: none
Are climatic / hydrologic conditions on the site typical for this time of ye	ar? Yes_X_ No(If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrologysignificantly dist	urbed? N Are "Normal Circumstances" present? Yes X No
Are Vegetation, Soil, or Hydrologynaturally problem	natic? N (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	X Is the Sampled Area
Hydric Soil Present? Yes No	x within a Wetland? Yes NoX
Wetland Hydrology Present? Yes No	If yes, optional Wetland Site ID:
Remarks:	
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required: check all that apply)	Surface Sail Oracles (DO)
	Leaves (B9) Drainage Patterns (B10)
High Water Table (A2) Aquatic Fauna ((B13) Moss Trim Lines (B16)
Water Marks (B1)	de Odor (C1) Dry-Season Water Table (C2) Cravfish Burrows (C8)
Sediment Deposits (B2) Oxidized Rhizos	spheres on Living Roots (C3) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Presence of Re Recent Iron Rec	duced Iron (C4) Stunted or Stressed Plants (D1) duction in Tilled Soils (C6) Geomorphic Position (D2)
Iron Deposits (B5)	ace (C7) Shallow Aquitard (D3)
Sparsely Vegetated Concave Surface (B8)	n Remarks) Microtopographic Relief (D4)
Field Observations:	
Surface Water Present? Yes No X Don'th (inchoo)	
Water Table Present? Vos No X Dopth (inches).	
Saturation Present? Vec No X Depth (inches):	Wetland Hydrology Present? Yes No X
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos	, previous inspections), if available:
Remarks:	
	· · ·
i i i i i i i i i i i i i i i i i i i	

VEGETATION - Use scientific names of plants.

Sampling Point: <u>U04</u>

	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size:)	% Cover	Species?	Status		
1. Acer rubrum	40	Х	FAC	Number of Dominant Species	(
2. Quercus rubra	25	Х	FACU	That Are OBL, FACW, or FAC: _1	(A) \
3. Pinus strobus	10		FACU		
4				Total Number of Dominant	
5.				Species Across All Strata: 5	(B)
6.				Demont of Deminent Curries	
7.	<u> </u>			That Are OBLEACIAL or EAC: 20% ((A/B)
	75	= Total Co	ver		л о)
				Prevalence Index worksheet:	
Sapling/Shrub Stratum (Plot size: 0)				Total % Cover of: Multiply by:	
1. Pinus strobus	15	х	FACU	OBL species x 1 =	
2. Vaccinium corymbosum	5		FACW		
3. Corylus americana	10	X	FACU	FACW species 5 $X = 10$	
4. Quercus rubra	4		FACU	FAC species 41 X 3 = 123	
5. Vaccinium pallidum	10	X	NR-UPI	FACU species <u>133</u> X 4 = <u>532</u>	
6. Prunus virginiana	2		FACU	UPL species X 5 =	
7		·	17.00	Column Totals: 179 (A) 665	(B)
	46	= Total Co			
	40		vei	- · · ·	
Herb Stratum (Plot size:				Prevalence Index = B/A = 3.7	
1 Majanthemum canadense	65	Y	FACU	Hydrophytic Vegetation Indicators:	
2 Uvularia sessilifolia			EACU	Rapid Test for Hydrophytic Vegetation	
3 Chimanhila maculata	<u>_</u>	,		Dominance Test is > 50%	
4 Lyconodium clayatum		<u> </u>		$\frac{1}{2} = \frac{1}{2} $	
5 Lycopedium chavatum	10			Morphological Adaptational (Dravide support	et in a
			NK-UPL	data in Remarks or on a separate sheet)	ung
7		· · · · · · · · · · · · · · · · · · ·			
/		······································	· · · · · · · · · · · · · · · · · · ·	Problematic Hydrophytic Vegetation' (Explain	in)
0				Indicators of hydric soil and watland hydrology	
9		·		be present, unless disturbed or problematic	nust
				Hydrophytic	
	<u>.</u>			Vegetation	
12		·,		Present? Yes <u>No X</u>	_
		= Total Cov	/er		
Woody Vino Stratum (District)					
1		······································			
2					
3					
4.				•	
	0	= Total Cov	'er	,	
Remarks: (Include photo numbers here or on a separate s	sheet.)				
					(
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SO	IL
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0-1 1-14		~~~	Color (moist)	0/	Typo1	1002	Tosture		
1-14	10YR 2/2	'100						Re	marks
	7.5YR 2.5/2	100			·		Loamy sand		
					· ······				
· ,				<u>·</u>	· · · · · · · · · · · · · · · · · · ·			•	
		· · · · ·			· · · · · · · · · · · · · · · · · · ·		·		
			•		·····				
ype: C=Cor	centration, D=De	pletion, RM=I	Reduced Matrix,	CS=Covere	d or Coated	Sand Gra	ains. ² Lo	cation: PL=Pore L	_ining, M=Matrix.
dric Soil In	dicators:						Indicator	s for Problematic	Hvdric Soils ³ :
Histosol (A1)			Polyvalue Be	elow Surfa <mark>c</mark>	e (S8) (LRR	R,	2 cm N	luck (A10) (LRR K	(, L, MLRA 149B)
Histic Epipedon (A2)			MLRA 14	9B)			Coast I	Prairie Redox (A16	َ)) (LRR K, L, R)
Black Hi	stic (A3)		Thin Dark Su	urface (S9)	(LRR R, ML	RA 149B)	5 cm M	lucky Peat or Peat	(S3) (LRR K, L, I
Hydroge	n Sulfide (A4)	-	Loamy Muck	y Mineral (F	⁻ 1) (LRR K,	L)	Dark S	urface (S7) (LRR I	K, L)
_ Stratified	i ∟ayers (A5) I Balaw Da≂k Cort	-	Loamy Gleye	ed Matrix (F	2)		Polyval	ue Below Surface	(S8) (LRR K, L)
Depleted	r Delow Dark Suff	ace (A11)	Depleted Ma	trix (⊢3) Suufaaa (⊏2	•		Thin Da	ark Surface (S9) (L	-RR K, L)
Sandy M	ucky Mineral (S1)	·	Redox Dark	Surface (Fb) []		Iron-Ma	angenese Masses	(F12) (LRR K, L,
Candy M Sandy G	leved Matrix (S4)	/ _	Depleted Dal	ik Sullace (Pleamo	ont Floodplain Soils	s (F19) (MLRA 14
Sandy Re	edox (S5)	-		3310113 (1 0)			Wesic a	podic (TAb) (MLH	(A 144A, 145, 149 \
Stripped	Matrix (S6)							allow Dark Surfag))) (TE12)
Dark Sur	face (S7) (LRR R	, MLRA 149E	3)				Other (I	Explain in Remark	e (11 12)
licators of H	ydrophytic vegeta	ation and wetl	and hydrology m	ust be pres	ent, unless o	listurbed o	or problematic.		•
rictive La	yer (if observed)	:							
Type:					Ludei				
Depth (inch	es):				nyun	5011 - 16	sentr	Yes	No <u>X</u>
narks:									
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THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS FOR SALE BY U.S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092 A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST UTM GRID AND 1979 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET Revisions shown in purple compiled in cooperation with the State of Massachusetts agencies from aerial photographs taken 1975 and other source data. This information not field checked. Map edited 1979



EMA Wetland 4

Cold and Cold

ELIS

MORLEY BR

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Aerial View From Google Earth 3/29/2012 Wetland 4

14:20

3/29/2012

Wetland 4

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APPENDIX D APPROVED USACE JURISDICTIONAL DETERMINATION

TBD

APPENDIX E APPROVED MASSDEP JURISDICTIONAL DETERMINATION

TBD