

THE TENNESSEE VALLEY AUTHORITY



Clinch River Small Modular Reactor Site

Wetland Survey Report

Kim Pilarski-Hall, Britta P. Lees

09/10/2015

Revision 1 –08/19/2014

Revision 2 - 03/02/2015

Revision 3 - 09/10/2015

Revision 4 - 11/19/2015

This study has been prepared as a supporting document for the Clinch River Small Modular Reactor Site (CR SMR) Construction Permit Application Project and is being distributed for project use. The study provides a summary of documented wetland habitats present in CR SMR study area including the adjacent Clinch River, Roane County, TN.

Initial wetland screening for the Clinch River Small Modular Reactor Site (CR SMR) involved a review of National Wetland Inventory (NWI) maps and soil survey maps. Subsequent field surveys were completed to determine habitat types and map wetland boundaries on January 20-21 and 24, 2011, April 21, 22, and 28, 2011; and May 18, 2011. The central portion of the site includes the former Clinch River Breeder Reactor construction site, which was halted in the 1970s after extensive grading and site preparation. The remainder of the site includes several hundred acres of natural habitat. Twelve wetlands were field delineated during the site visits (Figure 1). Wetland boundaries were mapped with a Trimble ProXH global positioning system and ESRI ArcGIS 10 mapping software.

Wetlands are protected under Sections 404 and 401 of the Clean Water Act (CWA) and by Executive Order (E.O.) 11990, *Wetlands Protection*. In order to conduct specific activities in wetlands, authorization under a Section 404 Permit from the U. S. Army Corps of Engineers (USACE) may be required depending on the wetland's size and hydrologic connectivity to a navigable waterway. Section 401 gives states the authority to certify whether activities permitted under Section 404 are in accordance with state water quality standards. In Tennessee, the Department of Environment and Conservation Division of Water Pollution Control is responsible for issuing Section 401 water quality certification through the Aquatic Resource Alteration Permit. E.O. 11990 requires all federal agencies to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities.

Wetland determinations were performed according to US Army Corps of Engineers (USACE) standards (Environmental Laboratory, 1987; USACE, 2010), which require documentation of hydrophytic vegetation (USFWS, 1996), hydric soil, and wetland hydrology. Jurisdictional determinations were conducted by USACE staff during a site visit on September 23, 2013. Broader definitions of wetlands, such as the definition provided in Executive Order 11990 (Protection of Wetlands), the US Fish and Wildlife Service definition (Cowardin et al., 1979), and the TVA Environmental Review Procedures definition, were also considered in this review. The USACE Routine Wetland Determination forms are attached (Appendix A).

The TVA Rapid Assessment Method (TVARAM) was used to assess wetland condition and identify wetlands with potential ecological significance (Mack 2001). TVA RAM scores utilize six metrics to assess wetland condition: wetland area/size; upland buffers and surrounding land use; hydrology; habitat alteration and development; special wetlands; plant communities, interspersions, microtopography. These six metrics correspond to wetland indicator functions that can be used to differentiate wetlands on the basis of condition (Table 1).

Table 1: TVA Rapid Assessment Metrics as Measures of Indicator Functions.

Rapid Assessment Metric	Indicator Function	Linked General Wetland Functions
Metric 1. Wetland Area (size)	Provision Of Wetland Area	<ul style="list-style-type: none"> • Temporarily store surface water/ Surface water detention • Maintain characteristic subsurface hydrology/Stream-flow maintenance • Remove and sequester elements and compounds • Retain particulates/ Sediment and other particulate retention • Provide habitat for wildlife/Provision of fish and shellfish habitat; Provision of waterfowl and waterbird habitat; Provision of other wildlife habitat
Metric 2. Upland Buffers and Surrounding Land Use	Provision Of Landscape Connectivity	<ul style="list-style-type: none"> • Cycle nutrients/Nutrient transformation • Retain particulates/ Sediment and other particulate retention • Maintain characteristic plant community • Provide habitat for wildlife/Provision of fish and shellfish habitat; Provision of waterfowl and waterbird habitat; Provision of other wildlife habitat
Metric 3. Hydrology	Maintenance Of Characteristic Hydrology	<ul style="list-style-type: none"> • Temporarily store surface water/Surface water detention • Maintain characteristic subsurface hydrology/Stream-flow maintenance • Cycle nutrients/Nutrient transformation • Export organic carbon • Maintain characteristic plant community • Provide habitat for wildlife/Provision of fish and shellfish habitat; Provision of waterfowl and waterbird habitat; Provision of other wildlife habitat • Shoreline stabilization
Metric 4. Habitat Alteration and Development	Provision Of Habitat (For Plants And Wildlife)	<ul style="list-style-type: none"> • Temporarily store surface water/ Surface water detention • Maintain characteristic subsurface hydrology/Stream-flow maintenance • Cycle nutrients/Nutrient transformation • Remove and sequester elements and compounds • Retain particulates/ Sediment and other particulate retention • Export organic carbon • Maintain characteristic plant community • Provide habitat for wildlife/Provision of fish and shellfish habitat; Provision of waterfowl and waterbird habitat; Provision of other wildlife habitat • Shoreline stabilization
Metric 5. Special Wetlands	Maintenance Of Biodiversity (At Local And/Or Regional Scales)	<ul style="list-style-type: none"> • Maintain characteristic plant community • Provide habitat for wildlife/Provision of fish and shellfish habitat; Provision of waterfowl and waterbird habitat; Provision of other wildlife habitat • Conservation of biodiversity
Metric 6. Plant Communities, Interspersion, Microtopography	Maintenance Of Characteristic Species And Assemblages	<ul style="list-style-type: none"> • Temporarily store surface water/Surface water detention • Cycle nutrients/Nutrient transformation • Remove and sequester elements and compounds • Retain particulates/Sediment and other particulate retention • Export organic carbon • Maintain characteristic plant community • Provide habitat for wildlife/Provision of fish and shellfish habitat; Provision of waterfowl and waterbird habitat; Provision of other wildlife habitat • Shoreline stabilization

Using TVARAM, wetlands may be classified into 3 categories. Category 1 wetlands are described as “limited quality waters.” They are considered to be a resource that has been degraded, has limited potential for restoration, or is of such low functionality, that lower standards for avoidance, minimization, and mitigation can be applied. Category 2 includes wetlands of moderate quality and also wetlands that are degraded but exhibit reasonable potential for restoration. Category 3 generally includes wetlands of very high quality and wetlands of concern regionally and/or statewide, such as wetlands that provide habitat for species listed as threatened or endangered. TVARAM scores and categories are reported in Table 2, and TVA RAM forms included in Appendix B.

Table 2: Wetlands on the Clinch River SMR Site.

Wetland ID	Wetland Type¹	TVARAM Category (Score)	Total Wetland Acreage at Site	Jurisdictional Status²
W001	PFO1E	2 (54)	0.67	jurisdictional wetland
W002	PEM1E	1 (22)	0.13	TDEC jurisdiction
W003	PFO1E	2 (46)	0.18	jurisdictional wetland
W004	PFO1E	2 (49)	0.24	jurisdictional wetland
W005	PFO1E	2 (57)	0.36	jurisdictional wetland
W006	PEM1E/PSS1E	2 (42)	0.11	jurisdictional wetland
W007	PSS1E /PFO1E	2 (57)	0.17	jurisdictional wetland
W008	PFO1E	2 (43)	0.23	jurisdictional wetland
W009	PEM1E/PSS1E/PFO1E	3 (90)	5.66	jurisdictional wetland
W010	PEM1E/PSS1E/PFO1E	2 (46)	1.79	jurisdictional wetland
W011	PFO1E	3 (62)	5.87	jurisdictional wetland
W012	PEM1E	1 (20)	0.13	jurisdiction to be determined ³
Totals			15.54	

¹ Classification codes as defined in Cowardin et al. 1979: PEM1E = Palustrine emergent, persistent vegetation, seasonally flooded/saturated; PFO1E= Palustrine forested, broad-leaved deciduous vegetation, seasonally flooded/saturated; PSS1E= Palustrine scrub-shrub, broad-leaved deciduous vegetation, seasonally flooded/saturated.

² Jurisdictional status as determined by USACE personnel during September 23, 2013 site visit

³ May be non-jurisdictional and associated with historic site grading activities

Wetland 1 (W001) is a forested wetland associated with a floodplain/terrace of the Clinch River. The wetland covers 0.67 acre located in the proposed project boundary. This wetland exhibits wetland hydrology and connectivity. Field indicators of hydric soils are lacking, possibly due to extensive site disturbance during the 1970s during site preparation for the Clinch River Breeder Reactor project and subsequent sedimentation. Dominant hydrophytic vegetation in the ROW includes sweetgum (*Liquidambar styraciflua*), slippery elm (*Ulmus rubra*), yellow-poplar (*Liriodendron tulipifera*), silver maple (*Acer saccharinum*), and Chinese privet (*Ligustrum sinense*). The TVA RAM score for this wetland was 54, putting it into Category 2, a wetland of moderate quality.

Wetland 2 (W002) is a small emergent wetland in the central portion of the Clinch River Site near the former reactor site. The wetland covers 0.13 acre in the project area. The wetland exhibits strong hydrology indicators but is not connected to any surface water features. The wetland has formed in a small depression in a previously graded area. Field indicators of hydric soils are lacking, possibly due to extensive site disturbance during the 1970s during site preparation for the Clinch River Breeder Reactor project. Dominant wetland vegetation includes squarestem spikerush (*Eleocharis quadrangulata*), broad-leaf cattail (*Typha latifolia*), and softstem bulrush (*Schoenoplectus tabernaemontana*). The TVA RAM score for this wetland was 22, putting it into Category 1, a wetland of limited quality.

Wetland 3 (W003) is a small, forested wetland located on a small embayment on the Clinch River shoreline. The wetland covers 0.18 acre in the project area. The wetland exhibits wetland hydrology, hydric soils, and connectivity. Dominant vegetation includes American sycamore (*Platanus occidentalis*), boxelder (*Acer negundo*), creeping Jenny (*Lysimachia nummularia*), and Chinese privet (*Ligustrum sinense*). The TVA RAM score for this wetland was 46, putting it into Category 2, a wetland of moderate quality.

Wetland 4 (W004) is a small forested wetland associated with a floodplain/terrace of the Clinch River. The wetland covers 0.24 acre located in the proposed project boundary. The wetland exhibits wetland hydrology, hydric soils, and connectivity. Dominant vegetation includes persimmon (*Diospyros virginiana*), boxelder (*Acer negundo*), silky dogwood (*Cornus amomum*), and Japanese honeysuckle (*Lonicera japonica*). The TVA RAM score for this wetland was 49, putting it into Category 2, a wetland of moderate quality.

Wetland 5 (W005) is a small, forested wetland located on a small embayment on the Clinch River shoreline and two small intermittent streams. The wetland covers 0.36 acre in the project area. The wetland exhibits wetland hydrology, hydric soils, and connectivity. Dominant

vegetation includes green ash (*Fraxinus pennsylvanica*), American sycamore (*Platanus occidentalis*), buttonbush (*Cephalanthus occidentalis*), silky dogwood (*Cornus amomum*), Nepalese browntop (*Microstegium vimineum*), and Japanese honeysuckle (*Lonicera japonica*). The TVA RAM score for this wetland was 57, putting it into Category 2, a wetland of moderate quality.

Wetland 6 is a small emergent/scrub-shrub wetland located near the northwestern corner of the proposed project area. The wetland has formed in a broad, shallow drainage ditch along the southern edge of a TVA PSO 500-kV ROW. The wetland exhibits wetland hydrology, hydric soils, and connectivity; flow from W006 eventually flows into W001. Dominant vegetation includes black willow (*Salix nigra*), lateflowering thoroughwort (*Eupatorium serotinum*), and tall fescue (*Festuca arundinacea*). The TVA RAM score for this wetland was 42, putting it into Category 2, a wetland of moderate quality.

Wetland 7 (W007) is a small, fringe scrub-shrub/forested wetland located on the same embayment on the Clinch River shoreline as W003. The two wetlands are separated by river road and a culvert. The wetland covers 0.17 acre in the project area. The wetland exhibits wetland hydrology, hydric soils, and connectivity. Dominant vegetation includes slippery elm (*Ulmus rubra*), American sycamore (*Platanus occidentalis*), Chinese privet (*Ligustrum sinense*), smooth alder (*Alnus serrulata*), silky dogwood (*Cornus amomum*), rice cutgrass (*Leersia oryzoides*), and Nepalese browntop (*Microstegium vimineum*). The TVA RAM score for this wetland was 57, putting it into Category 2, a wetland of moderate quality.

Wetland 8 (W008) is a small forested wetland associated with an unnamed, intermittent tributary to the Clinch River that rises below a sediment basin on the east side of the site. Wetland hydrology has been affected by a culvert and patrol road as well as water levels on Watts Bar Reservoir (Clinch River). The wetland is separated from the river by the road and culvert. The wetland covers 0.23 acre and exhibits indicators of wetland hydrology, hydric soils, and connectivity. Dominant vegetation includes sycamore (*Platanus occidentalis*), sweetgum (*Liquidambar styraciflua*), Chinese privet (*Ligustrum sinense*), spicebush (*Lindera benzoin*), American elm (*Ulmus americana*), silky dogwood (*Cornus amomum*), an unidentified aster (*Aster* sp.), jewelweed (*Impatiens* sp.), poison ivy (*Toxicodendron radicans*), and trumpet creeper (*Campsis radicans*). The TVA RAM score for this wetland was 43, putting it into Category 2, a wetland of moderate quality.

Wetland 9 (W009) is a large, diverse wetland complex associated with an unnamed, perennial tributary to the Clinch River near the eastern boundary of the site. Wetland hydrology has been affected by a beaver dam that marks the southern end of the wetland and an active groundwater influence including numerous seeps and springs in the northern end. The wetland

includes a diverse assemblage of habitats including a semi-permanently flooded scrub-shrub community in the southern end that grades into a seasonally flooded forested in the south-central area, then a saturated forested wetland in the north-central area, and at the northern end a saturated emergent and scrub-shrub community in a 500-kV TVA transmission line ROW that is periodically mowed. The wetland covers 5.66 acres and exhibits indicators of wetland hydrology, hydric soils, and connectivity. Dominant vegetation includes green ash (*Fraxinus pennsylvanica*), sycamore (*Platanus occidentalis*), buttonbush (*Cephalanthus occidentalis*), silky dogwood (*Cornus amomum*), green ash, black willow (*Salix nigra*), an unidentified aster (*Aster* sp.), blunt broom sedge (*Carex tribuloides*), fox sedge (*Carex vulpinoidea*), and Frank's sedge (*Carex frankii*). Due to its size and diversity of plant communities and habitat, this wetland scored 90 using the TVA RAM, putting it into Category 3, a wetland of high quality.

Wetland 10 (W010) is a small wetland complex associated with the same unnamed, perennial tributary to the Clinch River that is associated with W009. W010 further upstream (north) of W009 is separated from W009 by a patrol road and culvert. The southern end of the wetland is a mix of emergent and scrub-shrub habitat in a 500-kV TVA transmission line ROW; the northern part is forested wetland habitat. Hydrology is influenced by the stream and numerous groundwater seeps. The site appears to have undergone extensive disturbance in the past, most likely prior to acquisition by DOE and TVA. The wetland covers 1.79 acres and exhibits indicators of wetland hydrology, hydric soils, and connectivity. Dominant vegetation includes loblolly pine (*Pinus taeda*), balm-of-Gilead (*Populus x jackii*), green ash (*Fraxinus pennsylvanica*), Nepalese browntop (*Microstegium vimineum*), and poison ivy (*Toxicodendron radicans*). The TVA RAM score for this wetland was 46, putting it into Category 2, a wetland of moderate quality.

Wetland 11 (W011) is a large forested wetland associated with a floodplain/terrace of the Clinch River near the northwestern site boundary. The wetland lies between the main site access road and the river. Hydrology has been altered by a road and culvert at the northern end of the wetland. The wetland covers 5.87 acres within the project area and exhibits indicators of wetland hydrology, hydric soils, and connectivity. Dominant vegetation includes silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), creeping Jenny (*Lysimachia nummularia*), roundleaf greenbrier (*Smilax rotundifolia*), trumpet creeper (*Campsis radicans*), and Japanese honeysuckle (*Lonicera japonica*). The TVA RAM score for this wetland was 62, putting it into Category 3, a wetland of high quality.

Wetland 12 (W012) is a small emergent wetland in the central portion of the Clinch River Site near the former reactor site. The wetland covers 0.13 acre and exhibits indicators of wetland hydrology and connectivity. The wetland has formed in a wet weather drainage in a previously graded area. Field indicators of hydric soils are lacking, possibly due to extensive site disturbance during the 1970s during site preparation for the Clinch River Breeder Reactor project. Dominant wetland vegetation includes black willow (*Salix nigra*), tall fescue (*Festuca arundinacea*), and an unidentified rush (*Juncus* sp.). The TVA RAM score for this wetland was 20, putting it into Category 1, a wetland of limited quality.

Impacts to wetlands will be determined based on site-specific project plans, taking into account site topography and SMR siting constraints. Mitigation for wetland impacts will be aligned with 2008 EPA/USACE guidelines (EPA & USACE 2008). First preference is mitigation via purchase of credits in an approved mitigation bank. If no mitigation banks are available mitigation may be accomplished via payment into an approved in-lieu fee program. Additional options for mitigation include on-site wetland restoration, wetland creation, or enhancement/preservation, or off-site wetland restoration/creation/enhancement/preservation.

Literature Cited

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U.S. Fish and Wildlife Service. 1996. National List of Vascular Plant Species that Occur in Wetlands: 1996 National Summary.

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Compensatory Mitigation for Losses of Aquatic Resources. Final rule. Federal
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Appendix A –

USACE Routine Wetland Determination Forms

Project/Site: Clinch River Site Sample Point: W001 Date: 01/20/2011 Investigator: J. Gorton, J. Nestor

USACE ROUTINE WETLAND DETERMINATION DATA FORM - City/County: Reame State: IN

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

Hydrophytic Vegetation Present?	<u>YES</u>	<u>NO</u>	Is the Sampled Area within a Wetland?
Hydric Soil Present?	<u>YES</u>	<u>NO</u>	
Wetland Hydrology Present?	<u>YES</u>	<u>NO</u>	
Are Vegetation, Soil, or Hydrology significantly disturbed?			YES <u>NO</u> (If YES, explain in Remarks.)
Are Vegetation, Soil, or Hydrology naturally problematic?			YES <u>NO</u> (If YES, explain in Remarks.)
Are "Normal Circumstances" present?			YES <u>NO</u> (If no, explain in Remarks.)
			Cowardin Classification: <u>PFOIE</u>

GENERAL REMARKS

Hydrology (problematic?): Hydrologic indicators present but weakly expressed

Soils (problematic?): Hydric soil morphology lacking

Vegetation (problematic?):

Land Use/Disturbance History: Some grading in past during 1970s & before, likely some sedimentation.

Other: Shown in larger ITAIS polygon on NWI

Wetland Acreage in Project Footprint: 0.07 by class: Emergent 0.00 Scrub/Shrub 0.00 Forest 0.07 Water 0.00

Estimated Total Wetland Acreage: 0.07 Watershed: Clinch River (Watts Bar Res.)

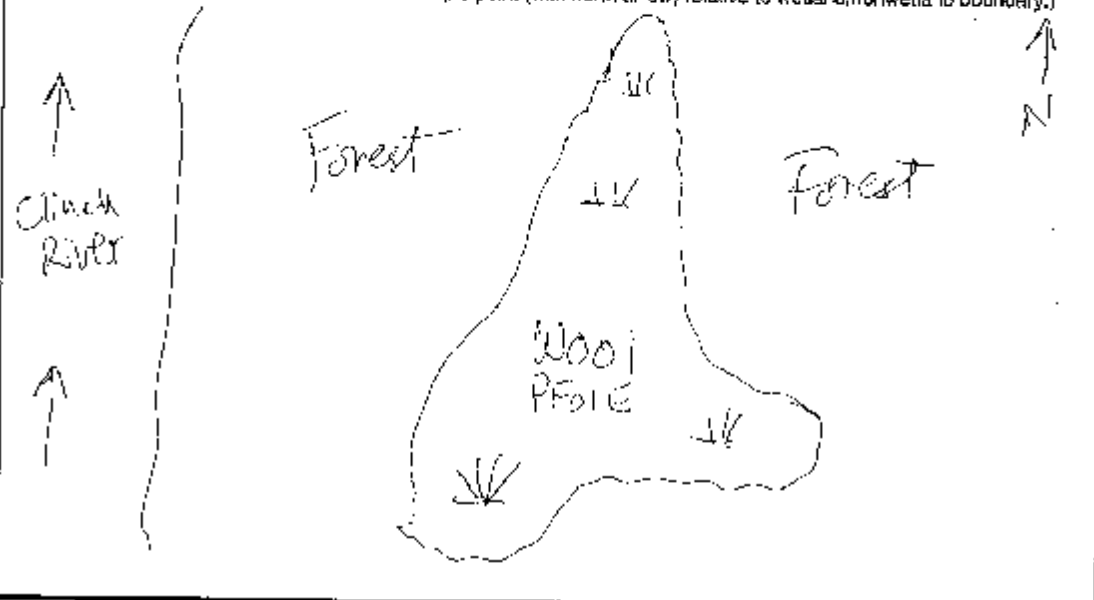
Connected to "Waters of the United States/State"? NO YES (circle): WWC Intermittent Stream Perennial Stream

Water Source (circle): Overbanking Sheet Flow Groundwater Precipitation Other

Landform (circle): slope terrace floodplain shoreline depression: Relief (circle) concave, convex, none; Slope:

TVARAM Score 54 TVARAM CATEGORY 2 Mapped on NWI? YES NO Photo Numbers:

SKETCH (Provide a sketch of wetland area/sample point (with north arrow) relative to wetland/nonwetland boundary.)



Project/Site: Clinch River Site Sample Point: W001 Date: 01/20/11 Investigator: J. Groton, D. Nestor

USACE ROUTINE WETLAND DETERMINATION DATA FORM - City/County: Roane State: TN

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

Hydrophytic Vegetation Present? YES NO
 Hydric Soil Present? YES NO
 Wetland Hydrology Present? YES NO
 Is the Sampled Area within a Wetland? YES NO
 Are Vegetation, Soil, or Hydrology significantly disturbed? YES NO (If YES, explain in Remarks.)
 Are Vegetation, Soil, X, or Hydrology naturally problematic? YES NO (If YES, explain in Remarks.)
 Are "Normal Circumstances" present? YES NO (If no, explain in Remarks.) Cowardin Classification: PFO1E

GENERAL REMARKS

Hydrology (problematic?): Hydrologic indicators present but weakly expressed

Soils (problematic?): Hydric soil morphology lacking

Vegetation (problematic?):

Land Use/Disturbance History: Some grading in past during 1970s & before
likely some sedimentation

Other: Shown in larger PFO1E polygon on NWI

Wetland Acreage in Project Footprint: 0.17 by class: Emergent 0.17 Scrub/Shrub 0.00 Forest 0.00 Water 0.00

Estimated Total Wetland Acreage: 0.17 Watershed: Clinch River (Watts Bar Res)

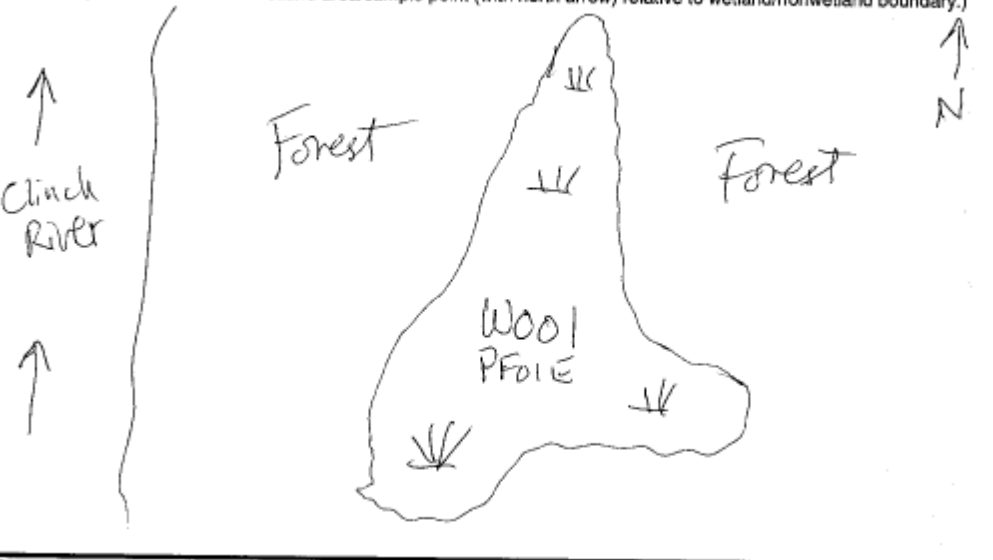
Connected to "Waters of the United States/State"? NO YES via (circle): WWC Intermittent Stream Perennial Stream

Water Source (circle): Overbanking Sheet Flow Groundwater Precipitation Other

Landform (circle): slope terrace floodplain shoreline depression: Relief (circle) concave, convex, none; Slope:

TVARAM Score 54 TVARAM CATEGORY 2 Mapped on NWI? YES NO Photo Numbers:

SKETCH (Provide a sketch of wetland area/sample point (with north arrow) relative to wetland/nonwetland boundary.)



Project/Site: Cinch River Site Sample Point: W001 Date: 1/28/2011 Investigator: Groton/Nester

HYDROLOGY (check all that apply):

Primary Indicators (minimum of 1 required)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Oxidized Root Channels (C3)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Inundation Visible on Aerials (B7)	<input type="checkbox"/> Recent Fe Reduction in Tilled Soils (C6)
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Aquatic Fauna/Invertebrates (B13)	
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	

Secondary (minimum of two required)

<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparse Vegetation/Concave Surface (B8)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input checked="" type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Saturation Visible on Aerials (C9)	
<input type="checkbox"/> Moss Trim Lines (B16)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	

Surface Water Present?	YES	NO	Depth (in):		Wetland Hydrology Present?
Water Table Present?	YES	NO	Depth (in):		<input checked="" type="checkbox"/> YES
Saturation Present?	YES	NO	Depth (in):		NO

SOIL (Profile Description - describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture
	Color (moist)	%	Color (moist)	%			
0-22	10 YR 4/6		No mottles				Silt/Clay

Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Mapped Soil Unit: _____ Drainage Class: _____

Hydric Soil Indicator (circle one): A1, A2, A3, A4, A5, A6, A7, A9, A10, A11, A12, A16, S1, S4, S5, S6, S7, S8, S9, F1, F2, F3, F6, F7, F8, F10, F11, F12, F13, TF2

Restrictive Layer (if observed) Type: _____ Depth (in): _____

Problematic Hydric Soil? (wetland vegetation and hydrology must be present) ☒ YES NO

Wetland Soils Present? YES NO

VEGETATION (use scientific names of plants):

Tree Stratum	Absolute % Cover	Dominant Species	Indicator Status	Herb Stratum	Absolute % Cover	Dominant Species	Indicator Status
Liquidambar styr	30	Y	FAC				
Fraxinus penn	10		FACU				
Liriodendron tul	25	Y	FACU				
Viburnum acer	15	Y	FACU				
Acer saccharinum	15	Y	FACU				
Sapling/Shrub Stratum	75 32.5 15						
Ligustrum sinense	50	Y	FAC				
Acer rubrum	5		FAC				
Viburnum acer	10		FACU				
Cercis occidentalis	5		FAC	Woody Vine Stratum			
Acer negundo	5		FACU	Camptocarpus radicans		Y	FAC
				Toxicaria radicans			FAC

Step 1: Dominance Test: Is >50% of dominant species (50/20 Rule) OBL, FACW, or OBL? YES NO (If NO AND wetland soil and hydrology are present, continue to Step 2)

Step 2: Prevalence Test: Is Prevalence Index ≤ 3.0 ? YES NO

Morphological adaptations (circle): adventitious roots, pneumatophores, prop roots, buttressed trees

Problematic Hydric Vegetation? (wetland soils and hydrology must be present) YES NO

Wetland Vegetation Present? YES NO

Project/Site: Clinch River Site Sample Point: W002 Date: 1/20/2011 Investigator: J. Gorton/D. Nestor

USACE ROUTINE WETLAND DETERMINATION DATA FORM - City/County: Roane State: TN

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

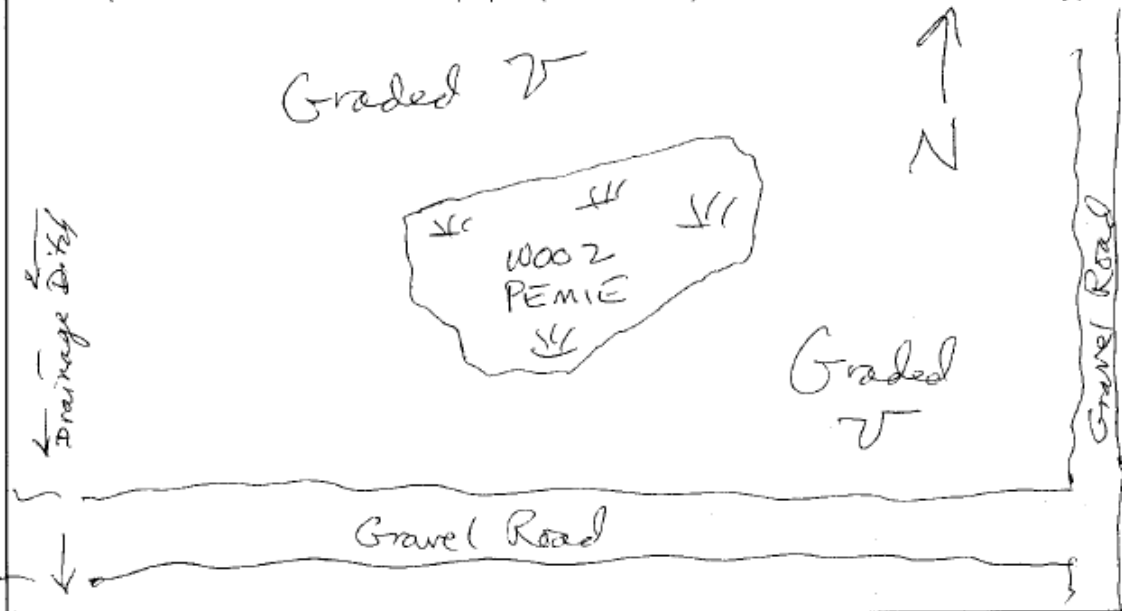
Hydrophytic Vegetation Present? YES NO
 Hydric Soil Present? YES NO
 Wetland Hydrology Present? YES NO
 Is the Sampled Area within a Wetland? YES NO
 Are Vegetation , Soil X, or Hydrology X significantly disturbed? YES NO (If YES, explain in Remarks.)
 Are Vegetation , Soil X, or Hydrology naturally problematic? YES NO (If YES, explain in Remarks.)
 Are "Normal Circumstances" present? YES NO (If no, explain in Remarks.) Cowardin Classification: PEM1E

GENERAL REMARKS

Hydrology (problematic?): Isolated depression in severely disturbed area created wetland
 Soils (problematic?): No natural soil
 Vegetation (problematic?): Good hydrophytic vegetation present, probably colonized site naturally
 Land Use/Disturbance History: Extensive grading & disturbance at Clinch River Breeder Reactor Site
 Other:

Wetland Acreage in Project Footprint: 0.13 by class: Emergent 0.13 Scrub/Shrub Forest Water
 Estimated Total Wetland Acreage: 0.13 Watershed: Clinch River (Watts Bar Res.)
 Connected to "Waters of the United States/State"? NO YES via (circle): WWC Intermittent Stream Perennial Stream
 Water Source (circle): Overbanking Sheet Flow Groundwater Precipitation Other
 Landform (circle): slope terrace floodplain shoreline depression; Relief (circle): concave, convex, none; Slope:
 TVARAM Score 22 TVARAM CATEGORY 1 Mapped on NWI? YES NO Photo Numbers:

SKETCH (Provide a sketch of wetland area/sample point (with north arrow) relative to wetland/nonwetland boundary.)



Project/Site: Chick River Site Sample Point: W002 Date: 1/20/2011 Investigator: Gordon/Nester

HYDROLOGY (check all that apply):									
Primary Indicators (minimum of 1 required)									
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Oxidized Root Channels (C3)							
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Presence of Reduced Iron (C4)							
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Inundation Visible on Aerials (B7)	<input type="checkbox"/> Recent Fe Reduction in Tilled Soils (C6)							
<input type="checkbox"/> Water Marks (D1)	<input type="checkbox"/> Water Stained Leaves (D3)	<input type="checkbox"/> Thin Muck Surface (C7)							
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Aquatic Fauna/Invertebrates (B13)								
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)								
Secondary (minimum of two required)									
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Shallow Aquitard (D3)							
<input type="checkbox"/> Sparse Vegetation/Concave Surface (B8)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> FAC-Neutral Test (D5)							
<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Saturation Visible on Aerials (C9)								
<input type="checkbox"/> Moss Trim Lines (B16)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	<u>Isolated depression</u>							
Surface Water Present? <u>YES</u>	NO	Depth (in): <u>0-10</u>	Wetland Hydrology Present?	YES	NO				
Water Table Present? <u>YES</u>	NO	Depth (in): <u>0</u>							
Saturation Present? <u>YES</u>	NO	Depth (in): <u>0</u>							
SOIL (Profile Description - describe to the depth needed to document the indicator or confirm the absence of indicators):									
Depth (inches)	Matrix	Redox Features				Texture			
	Color (moist)	Color (moist)	%	Type ¹	Loc ²				
0-10	10R 5/4					gravelly clay			
10+	gravel					gravel			
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.									
Mapped Soil Unit _____ Drainage Class _____									
Hydric Soil Indicator (circle one): A1, A2, A3, A4, A5, A6, A7, A9, A10, A11, A12, A16, S1, S4, S5, S6, S7, S8, S9, F1, F2, F3, F6, F7, F8, F10, F11, F12, F13, TF2									
Restrictive Layer (if observed) Type: _____ Depth (in): _____									
Problematic Hydric Soil? (wetland vegetation and hydrology must be present) <u>YES</u> NO									
Wetland Soils Present?									
YES									
NO									
VEGETATION (use scientific names of plants):									
Tree Stratum	Absolute % Cover	Dominant Species	Indicator Status	Herb Stratum ^{140/80/32}	Absolute % Cover	Dominant Species	Indicator Status		
				<i>Typha latifolia</i>	50	Y	OBL		
				<i>Elaeagnus angustifolia</i>	70	Y	OBL		
				<i>Schoenoplectus</i>					
				<i>Tabernaemontana</i>	20		OBL		
				<i>Scirpus atrovirens</i>	5		OBL		
Sapling/Shrub Stratum				<i>Festuca arundinacea</i>	10		FAC		
				<i>Andropogon virginicus</i>	5		FAC		
				Woody Vine Stratum					
Step 1: Dominance Test: Is >50% of dominant species (50/20 Rule) OBL, FACW, or OBL?							Wetland Vegetation Present?		
<u>YES</u> NO (If NO AND wetland soil and hydrology are present, continue to Step 2)							YES		
Step 2: Prevalence Test: Is Prevalence Index ≤3.0? <u>YES</u> NO							NO		
Morphological adaptations (circle): adventitious roots, pneumatophores, prop roots, buttressed trees									
Problematic Hydric Vegetation? (wetland soils and hydrology must be present) YES <u>NO</u>							NO		

TVA - Atlantic & Gulf Coastal Plain AND Eastern Mountains and Piedmont Regions LRR (circle) O or P or N Pg. 2 of 2

Project/Site Clinch River Site Sample Point: W003 Date: 1/20/2011 Investigator: J. Graton/D. Neeter

USACE ROUTINE WETLAND DETERMINATION DATA FORM - City/County Roane State TN

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

Hydrophytic Vegetation Present?	<u>YES</u>	NO	Is the Sampled Area within a Wetland?
Hydric Soil Present?	<u>YES</u>	NO	
Wetland Hydrology Present?	<u>YES</u>	NO	

Are Vegetation, Soil, or Hydrology significantly disturbed? YES NO (If YES, explain in Remarks.)

Are Vegetation, Soil, or Hydrology naturally problematic? YES NO (If YES, explain in Remarks.)

Are "Normal Circumstances" present? YES NO (If no, explain in Remarks.) Cowardin Classification: PFOLE

GENERAL REMARKS

Hydrology (problematic?): Part of embayment on Clinch River (Watts Bar Res.)
road & culvert probably enhance wetland hydrology

Soils (problematic?):

Vegetation (problematic?):

Land Use/Disturbance History: Some grading nearby as part of original breeder reactor project

Other: beaver sign, crayfish holes (not middens)

Wetland Acreage in Project Footprint: 0.18 by class: Emergent 0.18 Scrub/Shrub 0.18 Forest 0.18 Water 0.18

Estimated Total Wetland Acreage: 0.18 Watershed Clinch River (Watts Bar Res)

Connected to "Waters of the United States/State"? NO YES via (circle): WWC Intermittent Stream Perennial Stream

Water Source (circle): Overbanking Sheet Flow Groundwater Precipitation Other

Landform (circle): slope terrace floodplain shoreline depression; Relief (circle): concave, convex, none; Slope: Relief

TVARAM Score 46 TVARAM CATEGORY 2 Mapped on NWI? YES NO Photo Numbers:

SKETCH (Provide a sketch of wetland area/sample point (with north arrow) relative to wetland/nonwetland boundary.)



TVA - Atlantic & Gulf Coastal Plain AND Eastern Mountains and Piedmont Regions LRR (circle) O or P or N Pg. 1 of 2

Project/Site Clinch River Site Sample Point: W003 Date: 1/20/2011 Investigator: Groton/Wester

HYDROLOGY (check all that apply):									
Primary Indicators (minimum of 1 required)									
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Oxidized Root Channels (C3)							
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Presence of Reduced Iron (C4)							
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Inundation Visible on Aerials (B7)	<input type="checkbox"/> Recent Fe Reduction in Tilled Soils (C6)							
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Water Stained Leaves (B8)	<input type="checkbox"/> Thin Muck Surface (C7)							
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Aquatic Fauna/Invertebrates (B13)								
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)								
Secondary (minimum of two required)									
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Shallow Aquitard (D3)							
<input type="checkbox"/> Sparse Vegetation/Concave Surface (B8)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> FAC-Neutral Test (D5)							
<input checked="" type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Saturation Visible on Aerials (C9)								
<input type="checkbox"/> Moss Trim Lines (B16)	<input checked="" type="checkbox"/> Geomorphic Position (D2)								
Surface Water Present? YES NO	Depth (in):	Wetland Hydrology Present? YES NO							
Water Table Present? YES NO	Depth (in):								
Saturation Present? YES NO	Depth (in):								
SOIL (Profile Description - describe to the depth needed to document the indicator or confirm the absence of indicators):									
Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type ¹	Loc ²	Texture		
0-4	10 YR 5/4						clay		
4-12	10 YR 6/4		10 YR 5/2	30			clay		
12-21	10 YR 4/2		10 YR 5/4	25			clay		
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.									
Mapped Soil Unit _____ Drainage Class _____									
Hydric Soil Indicator (circle one): A1, A2, A3, A4, A5, A6, A7, A9, A10, A11, A12, A16, S1, S4, S5, S6, S7, S8, S9, F1, F2, F3, F6, F7, F8, F10, F11, F12, F13, TF2									
Restrictive Layer (if observed) Type: _____ Depth (in) _____									
Problematic Hydric Soil? (wetland vegetation and hydrology must be present) YES NO									
Wetland Soils Present? YES NO									
VEGETATION (use scientific names of plants):									
Tree Stratum ¹⁴⁰ 70 28	Absolute % Cover	Dominant Species	Indicator Status	Herb Stratum ⁷⁰ 35 14	Absolute % Cover	Dominant Species	Indicator Status		
<i>Platanus occidentalis</i>	30	Y	FACW	<i>Lysimachia nummularia</i>	40	Y	FACW		
<i>Acer negundo</i>	30	Y	FACW	<i>Aster pilosus</i>	30		FAC		
<i>Acer saccharinum</i>	10		FACW						
<i>Acer rubrum</i>	10		FAC						
<i>Celtis occidentalis</i>	10								
Sapling/Shrub Stratum ⁵⁵ 27.5 11									
<i>Ligustrum sinense</i>	30	Y	FAC						
<i>Cornus amomum</i>	10		FACW						
<i>Fraxinus penn</i>	5		FACW						
<i>Rosa multiflora</i>	10		UPL						
				Woody Vine Stratum					
Step 1: Dominance Test: Is >50% of dominant species (50/20 Rule) OBL, FACW, or OBL? YES NO (If NO AND wetland soil and hydrology are present, continue to Step 2)									
Step 2: Prevalence Test: Is Prevalence Index ≤3.0? YES NO									
Morphological adaptations (circle): adventitious roots, pneumatophores, prop roots, buttressed trees									
Problematic Hydric Vegetation? (wetland soils and hydrology must be present) YES NO									
Wetland Vegetation Present? YES NO									

Project/Site: Clinch River Site Sample Point: W004 Date: 1/20/2011 Investigator: J. Groton / D. Nestor

USACE ROUTINE WETLAND DETERMINATION DATA FORM - City/County: Roane State: VA

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

Hydrophytic Vegetation Present? YES NO
Hydric Soil Present? YES NO
Wetland Hydrology Present? YES NO

Is the Sampled Area within a Wetland?

YES NO

Are Vegetation, Soil, or Hydrology significantly disturbed? YES NO (If YES, explain in Remarks.)

Are Vegetation, Soil, or Hydrology naturally problematic? YES NO (If YES, explain in Remarks.)

Are "Normal Circumstances" present? YES NO (If no, explain in Remarks.) Cowardin Classification: PFOLE

GENERAL REMARKS

Hydrology (problematic?): Hydrology disturbed by extensive grading on slopes along N side of wetland & river road

Soils (problematic?):

Vegetation (problematic?): Young forested wetland

Land Use/Disturbance History: extensive clearing & grading in past

Other:

Wetland Acreage in Project Footprint: 0.24 by class: Emergent _____ Scrub/Shrub _____ Forest 0.24 Water _____

Estimated Total Wetland Acreage: 0.24 Watershed: Clinch River (Watts Bar Res)

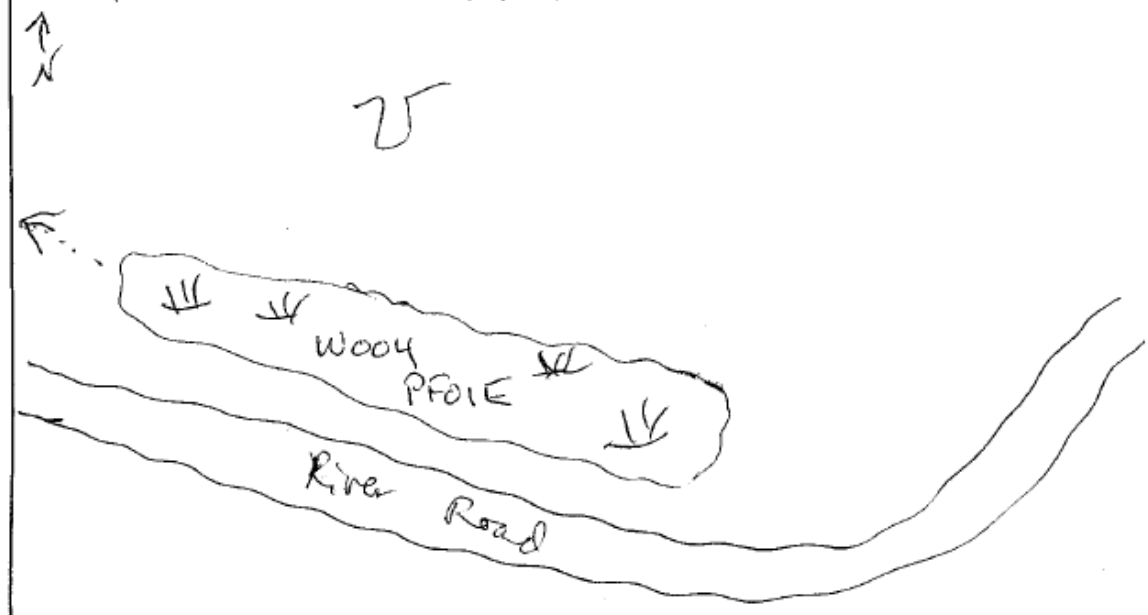
Connected to "Waters of the United States/State"? NO YES via (circle): WWO Intermittent Stream Perennial Stream

Water Source (circle): Overbanking Sheet Flow Groundwater Precipitation Other _____

Landform (circle): slope terrace floodplain shoreline depression; Relief (circle): concave, convex, none; Slope: _____

TVARAM Score 49 TVARAM CATEGORY 2 Mapped on NWI? YES NO Photo Numbers: _____

SKETCH (Provide a sketch of wetland area/sample point (with north arrow) relative to wetland/nonwetland boundary.)



Project/Site Chick River Site Sample Point: W004 Date: 1/20/2011 Investigator: Groton/Wester

HYDROLOGY (check all that apply):

Primary Indicators (minimum of 1 required)

<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Oxidized Root Channels (C3)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Inundation Visible on Aerials (B7)	<input type="checkbox"/> Recent Fe Reduction in Tilled Soils (C6)
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Aquatic Fauna/Invertebrates (B13)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	

Secondary (minimum of two required)

<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparse Vegetation/Concave Surface (B8)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input checked="" type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Saturation Visible on Aerials (C9)	
<input type="checkbox"/> Moss Trim Lines (B16)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	

Surface Water Present?	<input checked="" type="radio"/> YES	<input type="radio"/> NO	Depth (in): <u>0-6</u>	Wetland Hydrology Present?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Water Table Present?	<input type="radio"/> YES	<input type="radio"/> NO	Depth (in): <u> </u>			
Saturation Present?	<input checked="" type="radio"/> YES	<input type="radio"/> NO	Depth (in): <u> </u>			

SOIL (Profile Description - describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture
	Color (moist)	%	Color (moist)	%			
0-12	10 YR 4/2		10 YR 5/4	20			clay
12-20	10 YR 4/4		10 YR 4/2	30			clay

Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.

Mapped Soil Unit Drainage Class

Hydric Soil Indicator (circle one): A1, A2, A3, A4, A5, A6, A7, A9, A10, A11, A12, A16, S1, S4, S5, S6, S7, S8, S9, F1, F2, F3, F6, F7, F8, F10, F11, F12, F13, TF2

Restrictive Layer (if observed) Type: Depth (in):

Problematic Hydric Soil? (wetland vegetation and hydrology must be present) YES ☐ NO ☐

Wetland Soils Present? ☒ YES ☐ NO

VEGETATION (use scientific names of plants):

Tree Stratum	Absolute % Cover	Dominant Species	Indicator Status	Herb Stratum	Absolute % Cover	Dominant Species	Indicator Status
<u>45</u>							
<u>47.5</u>							
<i>Diospyros virginiana</i>	50	Y	FAC				
<i>Acer glabrum</i>	20	Y	FACW				
<i>Liquidambar styr.</i>	15		FAC				
<i>Acer saccharinum</i>	10		FACW				
<i>Fraxinus penn.</i>	5		FACW				
Sapling/Shrub Stratum <u>55</u>							
<i>Ligustrum glab.</i>	5		FAC				
<i>Cornus amomum</i>	50	Y	FACW				
				Woody Vine Stratum <u>25</u> <u>12.5</u> <u>5</u>			
				<i>Lonicera japonica</i>	15	Y	FAC
				<i>Campsis radicans</i>	5		FAC
				<i>Bignonia capreolata</i>	45		FAC

Step 1: Dominance Test: Is >50% of dominant species (50/20 Rule) OBL, FACW, or OBL? ☒ YES ☐ NO (If NO AND wetland soil and hydrology are present, continue to Step 2)

Step 2: Prevalence Test: Is Prevalence Index ≤3.0? YES ☐ NO ☐

Morphological adaptations (circle): adventitious roots, pneumatophores, prop roots, buttressed trees

Problematic Hydric Vegetation? (wetland soils and hydrology must be present) YES ☐ NO ☐

Wetland Vegetation Present? ☒ YES ☐ NO

Project/Site: Church River Site Sample Point: W005 Date: 8/20/2011 Investigator: J. Grotz/D. Nestor

USACE ROUTINE WETLAND DETERMINATION DATA FORM - City/County: Rogue State: GA

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

Hydrophytic Vegetation Present?	<u>YES</u>	NO	Is the Sampled Area within a Wetland?
Hydric Soil Present?	<u>YES</u>	NO	
Wetland Hydrology Present?	<u>YES</u>	NO	
Are Vegetation, Soil, or Hydrology significantly disturbed?			YES <u>NO</u> (If YES, explain in Remarks.)
Are Vegetation, Soil, or Hydrology naturally problematic?			YES <u>NO</u> (If YES, explain in Remarks.)
Are "Normal Circumstances" present?			YES <u>NO</u> (If no, explain in Remarks.) Cowardin Classification: <u>PFOLE</u>

GENERAL REMARKS

Hydrology (problematic?): culvert & river road enhance hydrology; trib from N affected by old detention basin upstream, also channelized

Soils (problematic?): lots of dead privet esp along north trib

Vegetation (problematic?): see hydrology

Land Use/Disturbance History: see hydrology

Other: beaver sign, fish in stream

Wetland Acreage in Project Footprint: 0.36 by class: Emergent 0.36 Scrub/Shrub 0.36 Forest 0.36 Water 0.36

Estimated Total Wetland Acreage: 0.36 Watershed: Church River (Watts Bar Res)

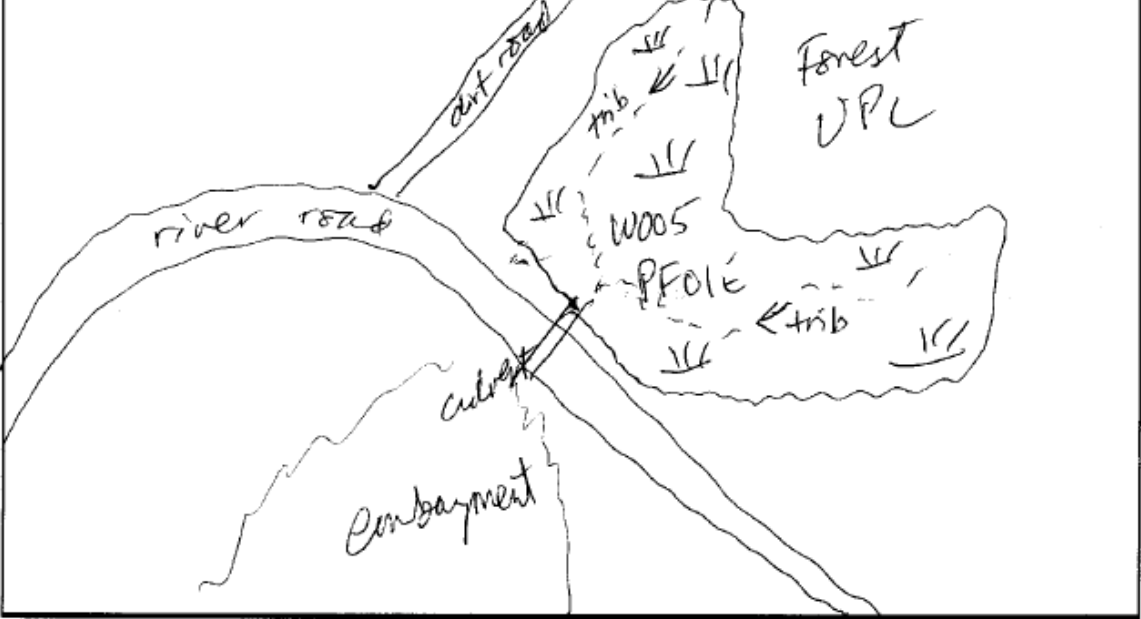
Connected to 'Waters of the United States/State'? NO YES via (circle): WWC Intermittent Stream Perennial Stream

Water Source (circle): Overbanking Sheet Flow Groundwater Precipitation Other

Landform (circle): slope terrace floodplain shoreline depression; Relief (circle): concave, convex, none; Slope: Relief

TVARAM Score 57 TVARAM CATEGORY 2 Mapped on NWI? YES NO Photo Numbers:

SKETCH (Provide a sketch of wetland area/sample point (with north arrow) relative to wetland/nonwetland boundary.)



TVA - Atlantic & Gulf Coastal Plain AND Eastern Mountains and Piedmont Regions LRR (circle) O or P or N Pg. 1 of 2

Project/Site: Cluck River Site Sample Point: U005 Date: 1/20/2011 Investigator: J. Gruber / D. Nestor

HYDROLOGY (check all that apply):							
Primary Indicators (minimum of 1 required)							
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Oxidized Root Channels (C3)					
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Presence of Reduced Iron (C4)					
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Inundation Visible on Aerials (B7)	<input type="checkbox"/> Recent Fe Reduction in Tilled Soils (C6)					
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Thin Muck Surface (C7)					
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Aquatic Fauna/Invertebrates (B13)						
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)						
Secondary (minimum of two required)							
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Shallow Aquitard (D3)					
<input type="checkbox"/> Sparse Vegetation/Concave Surface (B8)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> FAC-Neutral Test (D5)					
<input checked="" type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Saturation Visible on Aerials (C9)						
<input type="checkbox"/> Moss Trim Lines (B16)	<input checked="" type="checkbox"/> Geomorphic Position (D2)						
Surface Water Present?	<input checked="" type="radio"/> YES	<input type="radio"/> NO	Depth (in):	<u>0-6</u>	Wetland Hydrology Present?		
Water Table Present?	<input checked="" type="radio"/> YES	<input type="radio"/> NO	Depth (in):	<u>≤ 12</u>	<input checked="" type="radio"/> YES <input type="radio"/> NO		
Saturation Present?	<input checked="" type="radio"/> YES	<input type="radio"/> NO	Depth (in):	<u>≤ 12</u>			
SOIL (Profile Description - describe to the depth needed to document the indicator or confirm the absence of indicators):							
Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type ¹	Loc ²	Texture
0-4	2.5 Y 4/3						sic1
4-20	2.5 Y 5/2		10 YR 5/6	20			sic1
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Coated Sand Grains, ² Location: PL=Pore Lining, M=Matrix.							
Mapped Soil Unit _____ Drainage Class _____							Wetland Soils Present?
Hydric Soil Indicator (circle one): A1, A2, A3, A4, A5, A6, A7, A9, A10, A11, A12, A16, S1, S4, S5, S6, S7, S8, S9, F1, F2, F3, F6, F7, F8, F10, F11, F12, F13, TF2							<input checked="" type="radio"/> YES
Restrictive Layer (if observed) Type: _____ Depth (in): _____							<input type="radio"/> NO
Problematic Hydric Soil? (wetland vegetation and hydrology must be present) YES <input type="radio"/> NO <input checked="" type="radio"/>							
VEGETATION (use scientific names of plants):							
Tree Stratum ¹⁰⁵ 55.5 2A	Absolute % Cover	Dominant Species	Indicator Status	Herb Stratum ⁶⁵ 32.5 13	Absolute % Cover	Dominant Species	Indicator Status
<i>Fraxinus pennsylvanica</i>	70	Y	FACW	<i>Carex tribuloides</i>	5		FACW
<i>Platanus occidentalis</i>	30	Y	FACW	<i>Microstegium vimineum</i>	40	Y	FAC
<i>Aster saccharinum</i>	5		FACW	<i>Carex flacca</i>	10		FACW
				<i>Aster pilosus</i>	10		FAC
Sapling/Shrub Stratum ¹²⁶ 60 2A							
<i>Cephalanthus occidentalis</i>	50	Y	DBL				
<i>Cornus amomum</i>	40	Y	FACW				
<i>Ligustrum sinense</i>	30		FAC	Woody Vine Stratum			
				<i>Lonicera japonica</i>	10	Y	FAC
Step 1: Dominance Test: Is >50% of dominant species (50/20 Rule) OBL, FACW, or OBL? YES <input checked="" type="radio"/> NO <input type="radio"/> (If NO AND wetland soil and hydrology are present, continue to Step 2)							
Step 2: Prevalence Test: Is Prevalence Index ≤ 3.0? YES <input type="radio"/> NO <input checked="" type="radio"/>							
Morphological adaptations (circle): adventitious roots, pneumatophores, prop roots, buttressed trees							
Problematic Hydric Vegetation? (wetland soils and hydrology must be present) YES <input type="radio"/> NO <input checked="" type="radio"/>							
							Wetland Vegetation Present? <input checked="" type="radio"/> YES <input type="radio"/> NO

TVA - Atlantic & Gulf Coastal Plain AND Eastern Mountains and Piedmont Regions LRR (circle) O or P or N Pg. 2 of 2

Project/Site Clinch River Site Sample Point: W006 Date: 1/20/2011 Investigator: D Nestor / J Gorton

USACE ROUTINE WETLAND DETERMINATION DATA FORM - City/County Roane State VA

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

Hydrophytic Vegetation Present?	<u>YES</u>	NO	Is the Sampled Area within a Wetland?
Hydric Soil Present?	<u>YES</u>	NO	
Wetland Hydrology Present?	<u>YES</u>	NO	
Are Vegetation, Soil, or Hydrology significantly disturbed?			YES <u>NO</u> (If YES, explain in Remarks.)
Are Vegetation, Soil, or Hydrology naturally problematic?			YES <u>NO</u> (If YES, explain in Remarks.)
Are "Normal Circumstances" present?			YES <u>NO</u> (If no, explain in Remarks.) Cowardin Classification: <u>PEMIE/PSSIE</u>

GENERAL REMARKS

Hydrology (problematic?): Drainage ditch along edge of TVA 500-KV ROW, some earth moving, probably drains to W001

Soils (problematic?):

Vegetation (problematic?): Mowed

Land Use/Disturbance History:

Other: Shown as PFOIA on NWI

Wetland Acreage in Project Footprint: 0.11 by class: Emergent 0.11 Scrub/Shrub 0.11 Forest 0.11 Water 0.11

Estimated Total Wetland Acreage: 0.11 Watershed Clinch River (Watts Bar Res.)

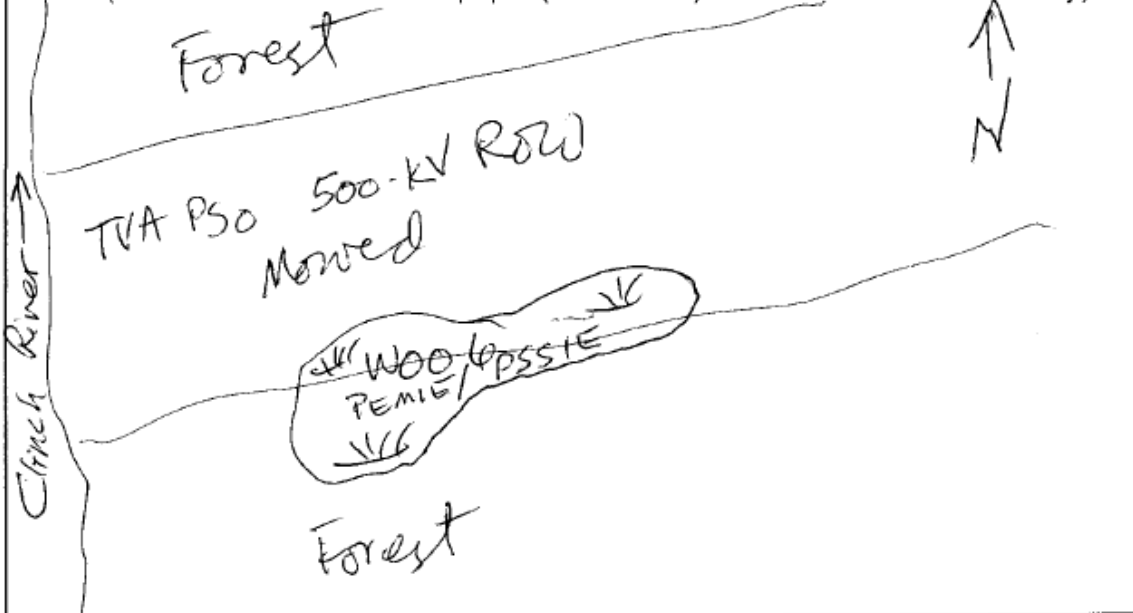
Connected to "Waters of the United States/State"? NO YES via (circle): WWO Intermittent Stream Perennial Stream

Water Source (circle): Overbanking Sheet Flow Groundwater Precipitation Other

Landform (circle): slope terrace floodplain shoreline depression; Relief (circle): concave convex, none; Slope:

TVARAM Score 42 TVARAM CATEGORY 2 Mapped on NWI? YES NO Photo Numbers:

SKETCH (Provide a sketch of wetland area/sample point (with north arrow) relative to wetland/nonwetland boundary.)



TVA - Atlantic & Gulf Coastal Plain AND Eastern Mountains and Piedmont Regions LRR (circle) O or P or N Pg. 1 of 2

Project/Site: Chick River Site Sample Point: W006 Date: 1/20/2011 Investigator: Nester/Boston

HYDROLOGY (check all that apply):							
Primary Indicators (minimum of 1 required)							
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Oxidized Root Channels (C3)					
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Presence of Reduced Iron (C4)					
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Inundation Visible on Aerials (B7)	<input type="checkbox"/> Recent Fe Reduction in Tilled Soils (C6)					
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Thin Muck Surface (C7)					
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Aquatic Fauna/Invertebrates (B13)						
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)						
Secondary (minimum of two required)							
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Shallow Aquitard (D3)					
<input type="checkbox"/> Sparse Vegetation/Concave Surface (B8)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> FAC-Neutral Test (D5)					
<input checked="" type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Saturation Visible on Aerials (C9)						
<input type="checkbox"/> Moss Trim Lines (B16)	<input checked="" type="checkbox"/> Geomorphic Position (D2)						
Surface Water Present? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Depth (in): _____	Wetland Hydrology Present? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>					
Water Table Present? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Depth (in): _____						
Saturation Present? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Depth (in): _____						
SOIL (Profile Description - describe to the depth needed to document the indicator or confirm the absence of indicators):							
Depth (inches)	Matrix	Redox Features	Texture				
0-6	10 YR 4/4		clay loam				
6-13	10 YR 4/2	10 YR 5/4 30	silt loam				
13-20	10 YR 5/4		loam				
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.							
Mapped Soil Unit _____ Drainage Class _____							
Hydric Soil Indicator (circle one): A1, A2, A3, A4, A5, A6, A7, A9, A10, A11, A12, A16, S1, S4, S5, S6, S7, S8, S9, F1, F2, F3, F6, F7, F8, F10, F11, F12, F13, TF2							
Restrictive Layer (Observed) Type: _____ Depth (in): _____							
Problematic Hydric Soil? (wetland vegetation and hydrology must be present) YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>							
Wetland Soils Present? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>							
VEGETATION (use scientific names of plants):							
Tree Stratum	Absolute % Cover	Dominant Species	Indicator Status	Herb Stratum	Absolute % Cover	Dominant Species	Indicator Status
				Eupatorium Sp. 25			FAC
				Carex frankii 15			OBL
				Festuca arundin 80			FAC
				Solidago canadensis 10			FAC
				Veronica gigantea 5			FAC
				Legedera cuneata 5			UPL
				Mertensia Vin 5			FAC
Sapling/Shrub Stratum				Woody Vine Stratum			
Salix nigra 35		OBL					
Ligustrum sinense 10		FAC					
Step 1: Dominance Test: Is >50% of dominant species (50/20 Rule) OBL, FACW, or OBL? YES NO (If NO AND wetland soil and hydrology are present, continue to Step 2)							
Step 2: Prevalence Test: Is Prevalence Index ≤3.0? YES NO							
Morphological adaptations (circle): adventitious roots, pneumatophores, prop roots, buttressed trees							
Problematic Hydric Vegetation? (wetland soils and hydrology must be present) YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>							
Wetland Vegetation Present? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>							

TVA - Atlantic & Gulf Coastal Plain AND Eastern Mountains and Piedmont Regions LRR (circle) O or P or N Pg. 2 of 2

Project/Site: Clinch River Site Sample Point: W007 Date: 1/24/2011 Investigator: J Gorton D Nestor K Pilarski C Phillips

USACE ROUTINE WETLAND DETERMINATION DATA FORM - City/County: Roane State: VA

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

Hydrophytic Vegetation Present?	<u>YES</u>	NO	Is the Sampled Area within a Wetland?
Hydric Soil Present?	<u>YES</u>	NO	
Wetland Hydrology Present?	<u>YES</u>	NO	
Are Vegetation, Soil, or Hydrology significantly disturbed?			YES <u>NO</u> (If YES, explain in Remarks.)
Are Vegetation, Soil, or Hydrology naturally problematic?			YES <u>NO</u> (If YES, explain in Remarks.)
Are "Normal Circumstances" present?			<u>YES</u> NO (If no, explain in Remarks.) Cowardin Classification: <u>PSS1E/PFO1E</u>

GENERAL REMARKS

Hydrology (problematic?): Part of embayment on Clinch R; connected to W003 by culvert
 Soils (problematic?):

Vegetation (problematic?):

Land Use/Disturbance History: River road & culvert

Other:

Wetland Acreage in Project Footprint: 0.17 by class: Emergent 0.17 Scrub/Shrub 0.17 Forest 0.17 Water 0.17

Estimated Total Wetland Acreage: 0.17 Watershed: Clinch River (Watts Bar)

Connected to "Waters of the United States/State"? NO YES via (circle): WWC Intermittent Stream Perennial Stream

Water Source (circle): Overbanking Sheet Flow Groundwater Precipitation Other

Landform (circle): slope terrace floodplain shoreline depression; Relief (circle): concave, convex, none; Slope: Relief

TVARAM Score 57 TVARAM CATEGORY 2 Mapped on NWI? YES NO Photo Numbers:

SKETCH (Provide a sketch of wetland area/sample point (with north arrow) relative to wetland/nonwetland boundary.)



Project/Site Clinch River Site Sample Point: W007 Date: 1/24/2018 Investigator: Grotton/Nestor
P. Garski / P. Phillips

HYDROLOGY (check all that apply):									
Primary Indicators (minimum of 1 required)									
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Oxidized Root Channels (C3)							
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Presence of Reduced Iron (C4)							
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Inundation Visible on Aerials (B7)	<input type="checkbox"/> Recent Fe Reduction in Tilled Soils (C6)							
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Thin Muck Surface (C7)							
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Aquatic Fauna/Invertebrates (B13)								
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)								
Secondary (minimum of two required)									
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Shallow Aquitard (D3)							
<input type="checkbox"/> Sparse Vegetation/Concave Surface (B8)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> FAC-Neutral Test (D5)							
<input checked="" type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Saturation Visible on Aerials (C9)								
<input type="checkbox"/> Moss Trim Lines (B16)	<input checked="" type="checkbox"/> Geomorphic Position (D2)								
Surface Water Present? <input checked="" type="checkbox"/> YES	NO	Depth (in): <u>0-3</u>	Wetland Hydrology Present? <input checked="" type="checkbox"/> YES	NO					
Water Table Present? <input checked="" type="checkbox"/> YES	NO	Depth (in): <u>2-12</u>							
Saturation Present? <input checked="" type="checkbox"/> YES	NO	Depth (in): <u>0-2</u>							
SOIL (Profile Description - describe to the depth needed to document the indicator or confirm the absence of indicators):									
Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type ¹	Loc ²	Texture		
0-4	10 YR 4/3		10 YR 4/4	30			sic		
4-11	10 YR 4/2		10 YR 4/4	30			sic		
11-21	10 YR 5/2		10 YR 4/4	30			sic		
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.									
Mapped Soil Unit _____ Drainage Class _____									
Hydric Soil Indicator (circle one): A1, A2, A3, A4, A5, A6, A7, A9, A10, A11, A12, A16, S1, S4, S5, S6, S7, S8, S9, F1, F2/F3, F6, F7, F8, F10, F11, F12, F13, TF2									
Restrictive Layer (if observed) Type: _____ Depth (in) _____									
Problematic Hydric Soil? (wetland vegetation and hydrology must be present) YES <input checked="" type="checkbox"/> NO									
Wetland Soils Present? <input checked="" type="checkbox"/> YES									
NO									
VEGETATION (use scientific names of plants):									
Tree Stratum ²⁵ 12.5 5	Absolute % Cover	Dominant Species	Indicator Status	Herb Stratum ⁸⁹ 45.5 17.8	Absolute % Cover	Dominant Species	Indicator Status		
<i>Ulmus americana</i>	10	Y	FAC	<i>Leersia oryzoides</i>	30	Y	OBL		
<i>Platanus occidentalis</i>	15	Y	FAC	<i>Hibiscus</i>	15		OBL		
				<i>Microstegium vimineum</i>	30	Y	FAC		
				<i>Juncus effusus</i>	5		FAC		
				<i>Dicentra canadensis</i>	2		FAC		
Sapling/Shrub Stratum 105 55.5				<i>Carex louisianica</i>	5		OBL		
<i>Ligustrum sinense</i>	30	Y	FAC	<i>Tris</i>	2		FAC		
<i>Alnus serrulata</i>	30	Y	FAC						
<i>Cornus amomum</i>	30	Y	FAC	Woody Vine Stratum					
<i>Cophasanthus occidentalis</i>	5		OBL	<i>Lonicera japonica</i>	15	Y	FAC		
<i>Rosa multiflora</i>	10		FAC						
Step 1: Dominance Test: Is >50% of dominant species (50/20 Rule) OBL, FACW, or OBL? <input checked="" type="checkbox"/> YES									
Step 2: Prevalence Test: Is Prevalence Index ≤ 3.0? YES NO									
Morphological adaptations (circle): adventitious roots, pneumatophores, prop roots, buttressed trees									
Problematic Hydric Vegetation? (wetland soils and hydrology must be present) YES <input checked="" type="checkbox"/> NO									
Wetland Vegetation Present? <input checked="" type="checkbox"/> YES									
NO									

TVA - Atlantic & Gulf Coastal Plain AND Eastern Mountains and Piedmont Regions LRR (circle) O or P or N Pg. 2 of 2

Project/Site Clinch River Site Sample Point: W008 Date: 4/24/2011 Investigator: Groton / Nestor

USACE ROUTINE WETLAND DETERMINATION DATA FORM - City/County Roane Co State VA

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

Hydrophytic Vegetation Present?	<u>YES</u>	NO	Is the Sampled Area within a Wetland?
Hydric Soil Present?	<u>YES</u>	NO	
Wetland Hydrology Present?	<u>YES</u>	NO	
Are Vegetation, Soil, or Hydrology significantly disturbed?			YES <u>NO</u> (If YES, explain in Remarks.)
Are Vegetation, Soil, or Hydrology naturally problematic?			YES <u>NO</u> (If YES, explain in Remarks.)
Are "Normal Circumstances" present?			<u>YES</u> NO (If no, explain in Remarks.) Cowardin Classification: <u>PFO1E</u>

GENERAL REMARKS

Hydrology (problematic?): Somewhat influenced by culvert & river patrol road; also influenced by Watts Bar Reservoir
 Soils (problematic?):

Vegetation (problematic?):

Land Use/Disturbance History: Downstream from sediment basin associated w/old Clinch River Breeder Reactor Project (1970s)
 Other:

Wetland Acreage in Project Footprint: 0.23 by class: Emergent _____ Scrub/Shrub _____ Forest 0.23 Water _____

Estimated Total Wetland Acreage: 0.23 Watershed Clinch River (Watts Bar Res)

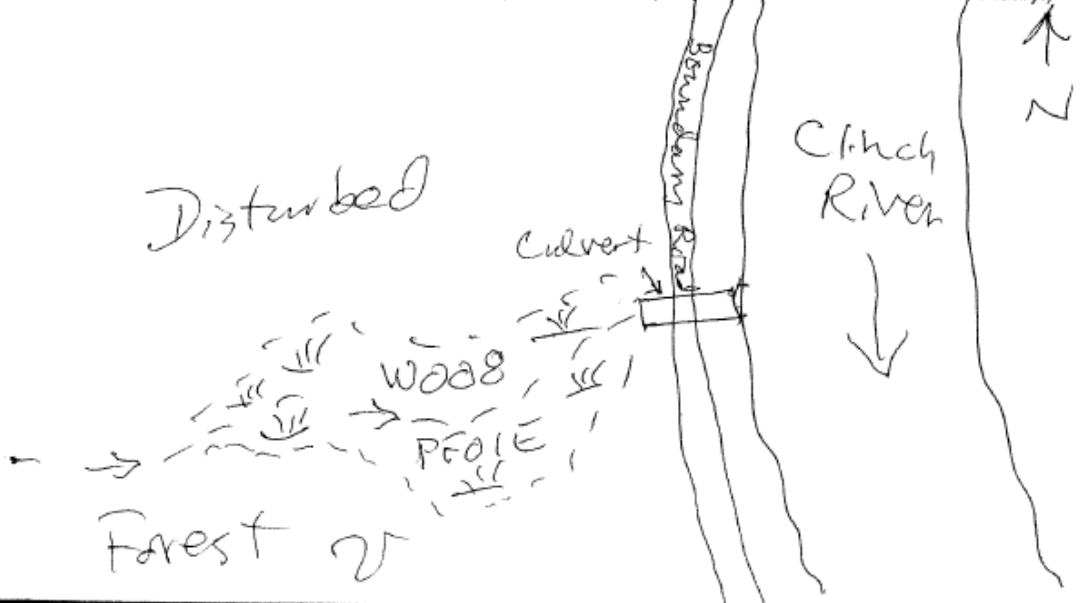
Connected to "Waters of the United States/State"? NO YES via (circle): WWC Intermittent Stream Perennial Stream

Water Source (circle): Overbanking Sheet Flow Groundwater Precipitation Other _____

Landform (circle): slope terrace Woodplain shoreline depression; Relief (circle): concave, convex, none; Slope: _____

TVARAM Score 43 TVARAM CATEGORY 2 Mapped on NWI? YES NO Photo Numbers: _____

SKETCH (Provide a sketch of wetland area/sample point (with north arrow) relative to wetland/nonwetland boundary.)



Project/Site Cash River Site Sample Point: W008 Date: 4/21/2011 Investigator: Gorton/Nestor

HYDROLOGY (check all that apply):									
Primary Indicators (minimum of 1 required)									
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Oxidized Root Channels (C3)							
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Presence of Reduced Iron (C4)							
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Inundation Visible on Aerials (B7)	<input type="checkbox"/> Recent Fe Reduction in Tilled Soils (C6)							
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Thin Muck Surface (C7)							
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Aquatic Fauna/Invertebrates (B13)								
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)								
Secondary (minimum of two required)									
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Shallow Aquitard (D3)							
<input type="checkbox"/> Sparse Vegetation/Concave Surface (B8)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> FAC-Neutral Test (D5)							
<input checked="" type="checkbox"/> Drainage Patterns (B10)	<input checked="" type="checkbox"/> Saturation Visible on Aerials (C9)								
<input type="checkbox"/> Moss Trim Lines (B16)	<input checked="" type="checkbox"/> Geomorphic Position (D2)								
Surface Water Present? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Depth (in): <u>7</u>	Wetland Hydrology Present? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO							
Water Table Present? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Depth (in): <u>0-4</u>								
Saturation Present? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO									
SOIL (Profile Description - describe to the depth needed to document the indicator or confirm the absence of indicators):									
Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type ¹	Loc ²	Texture		
0-5	10 YR 3/2						Sic		
5-15	10 YR 4/2						Sic		
15-20+							Sic		
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix.									
Mapped Soil Unit _____ Drainage Class _____							Wetland Soils Present?		
Hydric Soil Indicator (circle one): A1, A2, A3, <u>A4</u> , A5, A6, A7, A9, A10, A11, A12, A16, S1, S4, S5, S6, S7, S8, S9, F1, F2, <u>F3</u> , F6, F7, F8, F10, F11, <u>F12</u> , F13, TF2							YES		
Restrictive Layer (if observed) Type: _____ Depth (in): _____							NO		
Problematic Hydric Soil? (wetland vegetation and hydrology must be present) YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>									
VEGETATION (use scientific names of plants): <u>80/40/16</u> <u>140/70/28</u>									
Tree Stratum	Absolute % Cover	Dominant Species	Indicator Status	Herb Stratum	Absolute % Cover	Dominant Species	Indicator Status		
Platanus occ	30	Y	FACW	Microstegium vim	20		FAC		
Liquidambar sty	25	Y	FAC	Aster sp	40	Y	FAC		
Acer rubrum	15			Lysimachia numm	15		FACW		
Carpinus carolin	10			Sambucus canad	15		FACW		
				Carex intanrescan	10		FACW		
Sapling/Shrub Stratum	<u>90/45/18</u>			Infatians	40	Y	FACW		
Acer negundo	10		FACW						
Ligustrum sinense	20	Y	FAC						
Lythra benzoin	20	Y	FACW	Woody Vine Stratum	<u>60/30/12</u>				
Ulmus americana	20	Y	FACW	Toxicodendron ad	30	Y	FAC		
Cornus amomum	20	Y	FACW	Loncera jep	10		FAC		
				Compsis radicans	20	Y	FAC		
Step 1: Dominance Test: Is >50% of dominant species (50/20 Rule) OBL, FACW, or OBL? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO (If NO AND wetland soil and hydrology are present, continue to Step 2)							Wetland Vegetation Present?		
Step 2: Prevalence Test: Is Prevalence Index ≤ 3.0? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>							YES		
Morphological adaptations (circle): adventitious roots, pneumatophores, prop roots, buttressed trees							NO		
Problematic Hydric Vegetation? (wetland soils and hydrology must be present) YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>									

TVA - Atlantic & Gulf Coastal Plain AND Eastern Mountains and Piedmont Regions LRR (circle) O or P or N Pg. 2 of 2

Project/Site Clinch River Site Sample Point: W009 Date: 4/21/2011 Investigator: Gorton/Nector

USACE ROUTINE WETLAND DETERMINATION DATA FORM - City/County Rogers State TX

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

Hydrophytic Vegetation Present?	<u>YES</u>	NO	Is the Sampled Area within a Wetland?
Hydric Soil Present?	<u>YES</u>	NO	
Wetland Hydrology Present?	<u>YES</u>	NO	

Are Vegetation, Soil, or Hydrology significantly disturbed? YES NO (If YES, explain in Remarks.)

Are Vegetation, Soil, or Hydrology naturally problematic? YES NO (If YES, explain in Remarks.)

Are "Normal Circumstances" present? YES NO (If no, explain in Remarks.) Cowardin Classification: PB1E/PSS1E

GENERAL REMARKS

Hydrology (problematic?): Beaver dam influences southern end; numerous seeps & springs influence northern end
 Soils (problematic?):

Vegetation (problematic?): Veg. disturbed in N by 500-kV TL maintenance

Land Use/Disturbance History: Part of Clinch River Breeder Site (a70s) but outside central project area

Other: Very nice diverse wetland

Wetland Acreage in Project Footprint: 5.66 by class: Emergent 0.2 Scrub/Shrub 2.73 Forest 2.73 Water

Estimated Total Wetland Acreage: 5.66 Watershed Clinch River (Watts Bar Res)

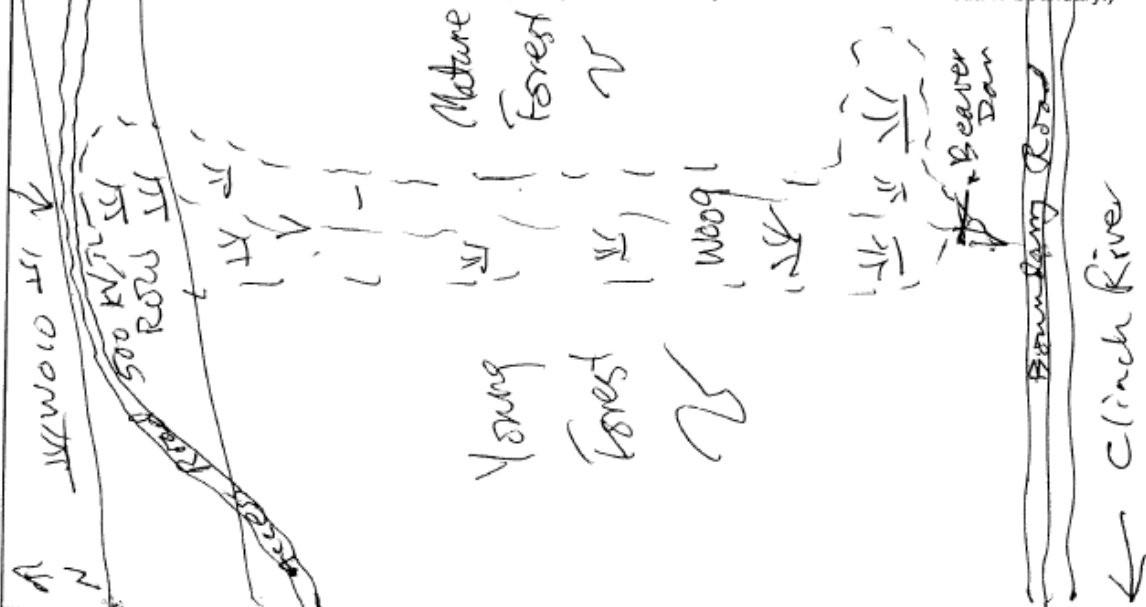
Connected to "Waters of the United States/State"? NO YES via (circle): WWC Intermittent Stream Perennial Stream

Water Source (circle): Overbanking Sheet Flow Groundwater Precipitation Other

Landform (circle): slope terrace floodplain shoreline depression: Relief (circle): concave, convex, none; Slope:

TVARAM Score 90 TVARAM CATEGORY 3 Mapped on NWI? YES NO Photo Numbers:

SKETCH (Provide a sketch of wetland area/sample point (with north arrow) relative to wetland/nonwetland boundary.)



Project/Site: Clinch River Ste Sample Point: W009 Date: 4/21/2011 Investigator: Groton/Nester

HYDROLOGY (check all that apply):							
Primary Indicators (minimum of 1 required)							
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Oxidized Root Channels (C3)					
<input checked="" type="checkbox"/> High Water Table (A2)	<input checked="" type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Presence of Reduced Iron (C4)					
<input checked="" type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Inundation Visible on Aerials (B7)	<input type="checkbox"/> Recent Fe Reduction in Tilled Soils (C6)					
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Thin Muck Surface (C7)					
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Aquatic Fauna/Invertebrates (B13)						
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)						
Secondary (minimum of two required)							
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Shallow Aquitard (D3)					
<input type="checkbox"/> Sparse Vegetation/Concave Surface (B8)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> FAC-Neutral Test (D5)					
<input checked="" type="checkbox"/> Drainage Patterns (B10)	<input checked="" type="checkbox"/> Saturation Visible on Aerials (C9)						
<input checked="" type="checkbox"/> Moss Trim Lines (B16)	<input checked="" type="checkbox"/> Geomorphic Position (D2)						
Surface Water Present?	YES	NO	Depth (in):	0-30+	Wetland Hydrology Present?		
Water Table Present?	YES	NO	Depth (in):	≤ 12	YES		
Saturation Present?	YES	NO	Depth (in):	≤ 12	NO		
SOIL (Profile Description - describe to the depth needed to document the indicator or confirm the absence of indicators):							
Depth (inches)	Matrix	Redox Features					
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture
0-14	10 YR 5/2		7.5 YR 6/6	25			sc1
14-20	7.5 YR 5/6		10 YR 5/2	15			sc1
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix.							
Mapped Soil Unit _____ Drainage Class _____						Wetland Soils Present?	
Hydric Soil Indicator (circle one): A1, A2, A3, A4, A5, A6, A7, A9, A10, A11, A12, A16, S1, S4, S5, S6, S7, S8, S9, F1, F2, F3, F6, F7, F8, F10, F11, F12, F13, TF2						YES	
Restrictive Layer (if observed) Type: _____ Depth (in): _____						NO	
Problematic Hydric Soil? (wetland vegetation and hydrology must be present) YES NO						NO	
VEGETATION (use scientific names of plants):							
Tree Stratum	Absolute % Cover	Dominant Species	Indicator Status	Herb Stratum	Absolute % Cover	Dominant Species	Indicator Status
<i>Salix nigra</i>			OBL	<i>Juncus</i>			FACW
<i>Fraxinus penn</i>			FACW	<i>Galium obtusum</i>			FACW
<i>Platanus occid</i>			FACW	<i>Ludwigia pal</i>			OBL
<i>Acer saccharinum</i>			FACW	<i>Aster</i>			FAC
				<i>Carex tribuloides</i>			FACW
Sapling/Shrub Stratum				<i>Carex vulpina</i>			OBL
<i>Cephalanthus occid</i>			OBL	<i>Carex frankii</i>			OBL
<i>Cornus amomum</i>			FACW				
<i>Fraxinus penn</i>			FACW	Woody Vine Stratum			
<i>Salix nigra</i>			OBL	<i>Lonicera japonica</i>			FAC
<i>Acer saccharinum</i>			FACW	<i>Composita radicans</i>			FAC
<i>Acer rubrum</i>			FAC	<i>Toxicodendron rad</i>			FAC
Step 1: Dominance Test: Is >50% of dominant species (50/20 Rule) OBL, FACW, or OBL?						Wetland Vegetation Present?	
YES NO (If NO AND wetland soil and hydrology are present, continue to Step 2)						YES	
Step 2: Prevalence Test: Is Prevalence Index ≤ 3.0? YES NO						NO	
Morphological adaptations (circle): adventitious roots, pneumatophores, prop roots, buttressed trees							
Problematic Hydric Vegetation? (wetland soils and hydrology must be present) YES NO						NO	

Project/Site Clinch River Site Sample Point: W010 Date: 4/22/2011 Investigator: Groton/Nesler

USACE ROUTINE WETLAND DETERMINATION DATA FORM - City/County Roane Co State TN

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

Hydrophytic Vegetation Present?	<u>YES</u>	NO	Is the Sampled Area within a Wetland?
Hydric Soil Present?	<u>YES</u>	NO	
Wetland Hydrology Present?	<u>YES</u>	NO	

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? YES NO (If YES, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X naturally problematic? YES NO (If YES, explain in Remarks.)

Are "Normal Circumstances" present? YES NO (If no, explain in Remarks.) Cowardin Classification: PFO/E

GENERAL REMARKS

Hydrology (problematic?):

Soils (problematic?): Native soil may be buried by sediment from erosion

Vegetation (problematic?): Poplars most likely planted at site?

Land Use/Disturbance History: Part of old Clinch River Breeder Reactor site but away from old project site, probably farmed pre-DOE/TVA ownership; 500-KV TL borders

Other: on south side

ends Part of same stream as W009 - separated by road & culvert system

Wetland Acreage in Project Footprint: 1.79 by class: Emergent 0.1 Scrub/Shrub 0.1 Forest 1.59 Water

Estimated Total Wetland Acreage: 1.79 Watershed Clinch River (Watts Bar Res.)

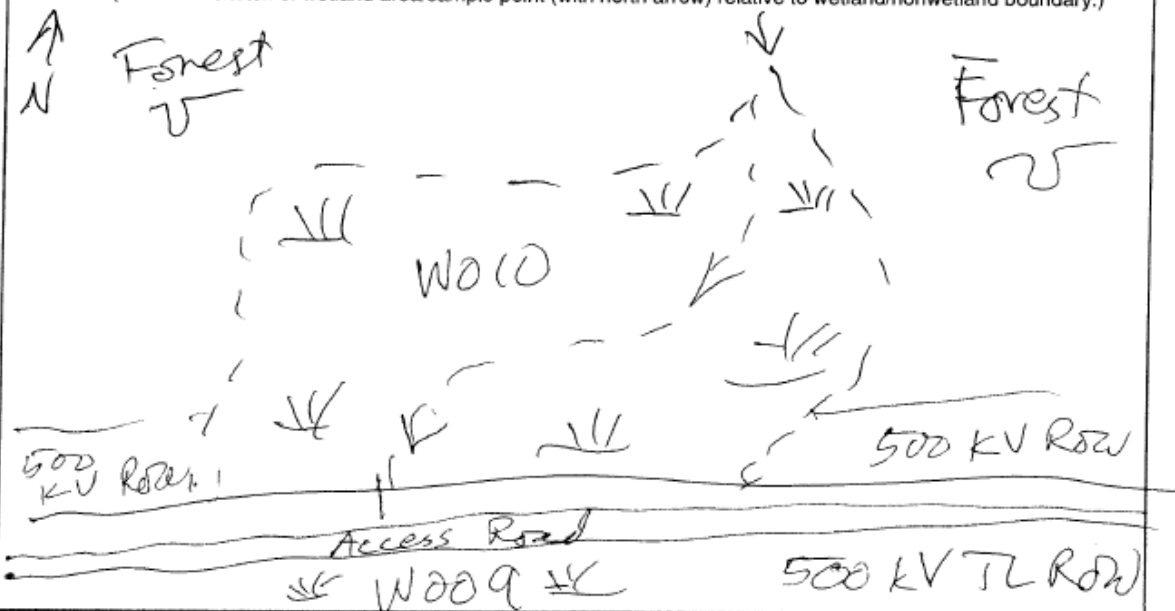
Connected to "Waters of the United States/State"? NO YES via (circle): WWC Intermittent Stream Perennial Stream

Water Source (circle): Overbanking Sheet Flow Groundwater Precipitation Other

Landform (circle): slope terrace floodplain shoreline depression; Relief (circle): concave, convex, none; Slope:

TVARAM Score 46 TVARAM CATEGORY 2 Mapped on NWI? YES NO Photo Numbers:

SKETCH (Provide a sketch of wetland area/sample point (with north arrow) relative to wetland/nonwetland boundary.)



TVA - Atlantic & Gulf Coastal Plain AND Eastern Mountains and Piedmont Regions LRR (circle) O or P or N Pg. 1 of 2

Project/Site: Cinch River Site Sample Point: WORD Date: 4/22/2011 Investigator: Grotzer/Nester

HYDROLOGY (check all that apply):

Primary Indicators (minimum of 1 required)

- ☒ Surface Water (A1) ☐ Algal Mat or Crust (B4) ☐ Oxidized Root Channels (C3)
☒ High Water Table (A2) ☐ Iron Deposits (B5) ☐ Presence of Reduced Iron (C4)
☒ Saturation (A3) ☐ Inundation Visible on Aerials (B7) ☐ Recent Fe Reduction in Tilled Soils (C6)
☐ Water Marks (B1) ☐ Water Stained Leaves (B9) ☐ Thin Muck Surface (C7)
☐ Sediment Deposits (B2) ☐ Aquatic Fauna/Invertebrates (B13)
☐ Drift Deposits (B3) ☐ Hydrogen Sulfide Odor (C1)

Secondary (minimum of two required)

- ☐ Surface Soil Cracks (B6) ☐ Dry Season Water Table (C2) ☐ Shallow Aquitard (D3)
☐ Sparse Vegetation/Concave Surface (B8) ☐ Crayfish Burrows (C8) ☐ FAC-Neutral Test (D5)
☒ Drainage Patterns (B10) ☐ Saturation Visible on Aerials (C9)
☐ Moss Trim Lines (B16) ☐ Geomorphic Position (D2)

Surface Water Present? ☒ YES ☐ NO Depth (in): 0-6
 Water Table Present? ☒ YES ☐ NO Depth (in): 1-2
 Saturation Present? ☒ YES ☐ NO Depth (in): 10-12 Wetland Hydrology Present? ☒ YES ☐ NO

SOIL (Profile Description - describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type ¹	Loc ²	Texture
0-8	10 YR 5/2						sandy loam
8-21	10 YR 7/6						sandy loam
21-30	10 YR 5/2		7.5 YR 4/6	30			silt

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Mapped Soil Unit _____ Drainage Class _____

Hydric Soil Indicator (circle one): A1, A2, A3, A4, A5, A6, A7, A9, A10, A11, A12, A16, S1, S4, S5, S6, S7, S8, S9, F1, F2, F3, F6, F7, F8, F10, F11, F12, F13, TF2

Restrictive Layer (if observed) Type: _____ Depth (in): _____

Problematic Hydric Soil? (wetland vegetation and hydrology must be present) ☒ YES ☐ NO

Wetland Soils Present?

☒ YES

☐ NO

VEGETATION (use scientific names of plants): 80/40/16 90/45

Tree Stratum	Absolute % Cover	Dominant Species	Indicator Status	Herb Stratum	Absolute % Cover	Dominant Species	Indicator Status
<i>Populus x jacksonii</i>	40	Y	NL	<i>Microstegium vim</i>	50	Y	FAC
<i>Pinus taeda</i>	40	Y	FAC	<i>Dicentra sp.</i>	15		FACW
				<i>Solidago gigantea</i>	15		FACW
				<i>Chenopodium sensitivum</i>	10		OBL
Sapling/Shrub Stratum	Absolute % Cover	Dominant Species	Indicator Status	Woody Vine Stratum	Absolute % Cover	Dominant Species	Indicator Status
<i>Fraxinus pennsylv</i>	50	Y	FACW	<i>Toxicodendron rad</i>	35		FAC
<i>Acer rubrum</i>	15		FAC	<i>Campsis radicans</i>	10		FAC
<i>Liquidambar styrac</i>	10		FAC	<i>Parthenocissus quin</i>	10		
<i>Cornus florida</i>	5						

Step 1: Dominance Test: Is >50% of dominant species (50/20 Rule) OBL, FACW, or OBL? laxica
 YES NO (If NO AND wetland soil and hydrology are present, continue to Step 2) japonica

Step 2: Prevalence Test: Is Prevalence Index ≤ 3.0 ? YES NO

Morphological adaptations (circle): adventitious roots, pneumatophores, prop roots, buttressed trees

Problematic Hydric Vegetation? (wetland soils and hydrology must be present) YES NO

Wetland Vegetation Present?

☒ YES

☐ NO

TVA - Atlantic & Gulf Coastal Plain AND Eastern Mountains and Piedmont Regions LRR (circle) O or P or N Pg. 2 of 2

Project/Site Clinch River Site Sample Point: W011 Date: 4/28/2011 Investigator: Gorton/Nesto/Phill

USACE ROUTINE WETLAND DETERMINATION DATA FORM - City/County Kane Co State IN

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

Hydrophytic Vegetation Present?	<u>YES</u>	NO	Is the Sampled Area within a Wetland?
Hydric Soil Present?	<u>YES</u>	NO	
Wetland Hydrology Present?	<u>YES</u>	NO	

Are Vegetation , Soil , or Hydrology significantly disturbed? YES NO (If YES, explain in Remarks.)

Are Vegetation , Soil X, or Hydrology naturally problematic? YES NO (If YES, explain in Remarks.)

Are "Normal Circumstances" present? YES NO (If no, explain in Remarks.) Cowardin Classification: PFOIE

GENERAL REMARKS

Hydrology (problematic?): Partly controlled by reservoir levels, also farm culvert on northern end; disturbance in southern end to construct old sediment basin
Soils (problematic?):

Vegetation (problematic?):

Land Use/Disturbance History: Clinch River Breeder Site (K70) but outside main project area, large sediment basin in southern end
Other:

Floodplain Clinch River

Wetland Acreage in Project Footprint: 5.87 by class: Emergent Scrub/Shrub Forest 5.87 Water

Estimated Total Wetland Acreage: 5.87 Watershed Clinch River (Watts Bar Res.)

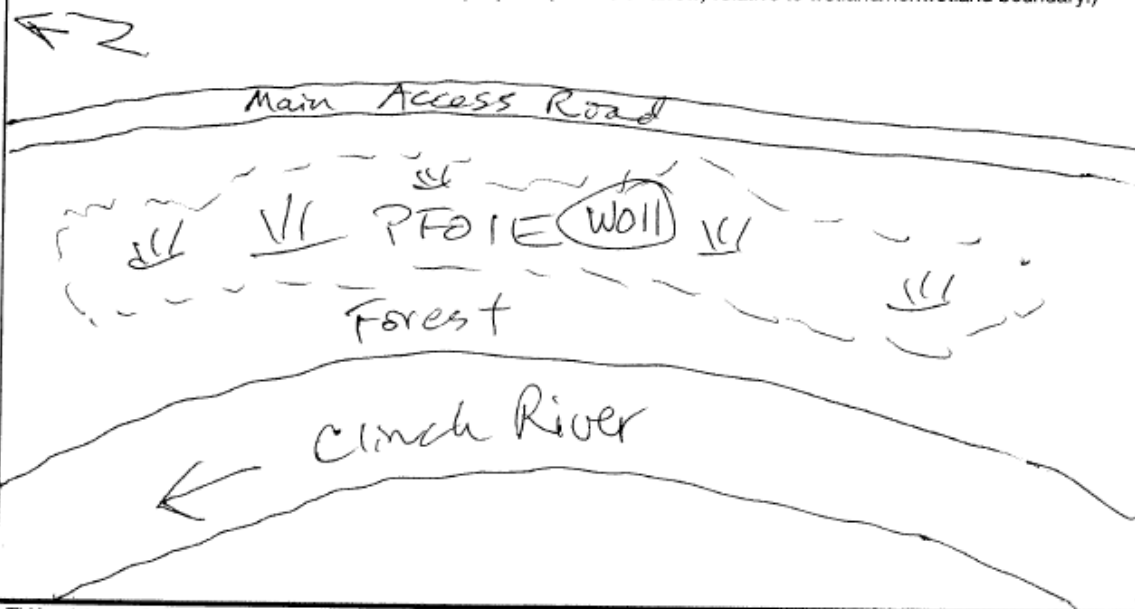
Connected to "Waters of the United States/State"? NO YES via (circle): WWC Intermittent Stream Perennial Stream

Water Source (circle): Overbanking Sheet Flow Groundwater Precipitation Other

Landform (circle): slope terrace floodplain shoreline depression; Relief (circle): concave, convex, none; Slope:

TVARAM Score 62 TVARAM CATEGORY 3 Mapped on NWI? YES NO Photo Numbers:

SKETCH (Provide a sketch of wetland area/sample point (with north arrow) relative to wetland/nonwetland boundary.)



Project/Site Cinch River Site Sample Point: W011 Date: 4/28/2011 Investigator: Ginter/Nester/Phillips

HYDROLOGY (check all that apply):							
Primary Indicators (minimum of 1 required)							
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Oxidized Root Channels (C3)					
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Presence of Reduced Iron (C4)					
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Inundation Visible on Aerials (B7)	<input type="checkbox"/> Recent Fe Reduction in Tilled Soils (C6)					
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Water Stained Leaves (B9)	<input type="checkbox"/> Thin Muck Surface (C7)					
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Aquatic Fauna/Invertebrates (B13)						
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)						
Secondary (minimum of two required)							
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Dry Season Water Table (C2)	<input type="checkbox"/> Shallow Aquitard (D3)					
<input type="checkbox"/> Sparse Vegetation/Concave Surface (B8)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> FAC-Neutral Test (D5)					
<input checked="" type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Saturation Visible on Aerials (C9)						
<input checked="" type="checkbox"/> Moss Trim Lines (B16)	<input checked="" type="checkbox"/> Geomorphic Position (D2)						
Surface Water Present? <u>YES</u>	NO	Depth (in): <u>0-30</u>	Wetland Hydrology Present?				
Water Table Present? <u>YES</u>	NO	Depth (in): <u>12</u>	<u>YES</u>		NO		
Saturation Present? <u>YES</u>	NO	Depth (in): <u>12</u>					
SOIL (Profile Description - describe to the depth needed to document the indicator or confirm the absence of indicators):							
Depth (inches)	Matrix	Redox Features					
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture
0-21	10 YR 4/3		10 YR 5/2	30			Silt
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix.							
Mapped Soil Unit _____ Drainage Class _____						Wetland Soils Present?	
Hydric Soil Indicator (circle one): A1, A2, A3, A4, A5, A6, A7, A9, A10, A11, A12, A16, S1, S4, S5, S6, S7, S8, S9, F1, F2, F3, F6, F7, F8, F10, F11, F12, F13, TF2 <u>Fe/Mn Concentration</u>						YES	
Restrictive Layer (if observed) Type: _____ Depth (in): _____						NO	
Problematic Hydric Soil? (wetland vegetation and hydrology must be present) <u>YES</u>						NO	
VEGETATION (use scientific names of plants): <u>120/60/24</u> <u>8</u>							
Tree Stratum	Absolute % Cover	Dominant Species	Indicator Status	Herb Stratum	Absolute % Cover	Dominant Species	Indicator Status
<i>Acer saccharinum</i>	40	Y	FACW	<i>Lysimachia nummularia</i>	75	Y	FACW
<i>Fraxinus pennsylv</i>	30	Y	FACW	<i>Carex crinita</i>	10		FACW
<i>Platanus occident</i>	20	Y	FACW				
<i>Viburnum americana</i>	20	Y	FACW				
Sapling/Shrub Stratum	<u>110/55/22</u>						
<i>Fraxinus penn</i>	60	Y	FACW				
<i>Ligustrum sin</i>	30		FAC				
<i>Cornus amomom</i>	20		FACW	Woody Vine Stratum	<u>70/35/14</u>		
				<i>Smilax rotundifolia</i>	20	Y	FAC
				<i>Campsis radicans</i>	30	Y	FAC
				<i>Lonicera japonica</i>	20	Y	FAC
Step 1: Dominance Test: Is >50% of dominant species (50/20 Rule) OBL, FACW, or OBL?						Wetland Vegetation Present?	
<u>YES</u> NO (If NO AND wetland soil and hydrology are present, continue to Step 2)						<u>YES</u>	
Step 2: Prevalence Test: Is Prevalence Index ≤ 3.0 ? YES NO						NO	
Morphological adaptations (circle): adventitious roots, pneumatophores, prop roots, buttressed trees							
Problematic Hydric Vegetation? (wetland soils and hydrology must be present) YES NO						NO	

TVA - Atlantic & Gulf Coastal Plain AND Eastern Mountains and Piedmont Regions LRR (circle) O or P or N Pg. 2 of 2

Project/Site Clinch River Site Sample Point: W012 Date: 4/22/2011 Investigator: Gorton/Phillips

USACE ROUTINE WETLAND DETERMINATION DATA FORM - City/County Roane State TN

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

Hydrophytic Vegetation Present?	<u>YES</u>	NO	Is the Sampled Area within a Wetland?
Hydric Soil Present?	<u>YES</u>	NO	
Wetland Hydrology Present?	<u>YES</u>	NO	
Are Vegetation <u>X</u> , Soil <u>X</u> , or Hydrology <u>X</u> significantly disturbed?			<u>YES</u> <u>NO</u> (If YES, explain in Remarks.)
Are Vegetation <u>X</u> , Soil <u>X</u> , or Hydrology <u>X</u> naturally problematic?			<u>YES</u> <u>NO</u> (If YES, explain in Remarks.)
Are "Normal Circumstances" present? <u>YES</u> <u>NO</u> (If no, explain in Remarks.)			Cowardin Classification: <u>PEMIE</u>

GENERAL REMARKS

Hydrology (problematic?): Drainage ditch below main Clinch River Breeder Reactor site

Soils (problematic?): Similar to W002 very disturbed

Vegetation (problematic?):

Land Use/Disturbance History: Drainage ditch created to drain former Clinch River Breeder Reactor site - lots of earthmoving in 1970s

Wetland Acreage in Project Footprint: 0.13 by class: Emergent 0.13 Scrub/Shrub 0.00 Forest 0.00 Water 0.00

Estimated Total Wetland Acreage: 0.13 Watershed Clinch River (Watts Bar Res)

Connected to "Waters of the United States/State"? NO YES via (circle): WWC Intermittent Stream Perennial Stream

Water Source (circle): Overbanking Sheet Flow Groundwater Precipitation Other

Landform (circle): slope terrace floodplain shoreline depression; Relief (circle): concave, convex, none; Slope: 0.13

TVARAM Score 20 TVARAM CATEGORY 1 Mapped on NWI? YES NO Photo Numbers:

SKETCH (Provide a sketch of wetland area/sample point (with north arrow) relative to wetland/nonwetland boundary.)



TVA - Atlantic & Gulf Coastal Plain AND Eastern Mountains and Piedmont Regions LRR (circle) O or P or N Pg. 1 of 2

5804 0.13

Project/Site: Cinch River Site Sample Point: W012 Date: 4/22/2011 Investigator: Grotan

HYDROLOGY (check all that apply):

Primary Indicators (minimum of 1 required)

- ☒ Surface Water (A1) ☐ Algal Mat or Crust (B4) ☐ Oxidized Root Channels (C3)
☐ High Water Table (A2) ☐ Iron Deposits (B5) ☐ Presence of Reduced Iron (C4)
☒ Saturation (A3) ☐ Inundation Visible on Aerials (B7) ☐ Recent Fe Reduction in Tilled Soils (C6)
☐ Water Marks (B1) ☐ Water Stained Leaves (B9) ☐ Thin Muck Surface (C7)
☐ Sediment Deposits (B2) ☐ Aquatic Fauna/Invertebrates (B13)
☐ Drift Deposits (B3) ☐ Hydrogen Sulfide Odor (C1)

Secondary (minimum of two required)

- ☐ Surface Soil Cracks (B6) ☐ Dry Season Water Table (C2) ☐ Shallow Aquitard (D3)
☐ Sparse Vegetation/Concave Surface (B8) ☐ Crayfish Burrows (C8) ☐ FAC-Neutral Test (D5)
☒ Drainage Patterns (B10) ☐ Saturation Visible on Aerials (C9)
☐ Moss Trim Lines (B16) ☒ Geomorphic Position (D2)

Surface Water Present? ☒ YES ☐ NO Depth (in): 0-2
 Water Table Present? ☒ YES ☐ NO Depth (in): 0-6
 Saturation Present? ☒ YES ☐ NO Depth (in): 0-6 Wetland Hydrology Present? ☒ YES ☐ NO

SOIL (Profile Description - describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type ¹	Loc ²	Texture
0-10	10 R 5/4						gravelly clay
10+	gravel						gravel

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Mapped Soil Unit _____ Drainage Class _____

Hydric Soil Indicator (circle one): A1, A2, A3, A4, A5, A6, A7, A9, A10, A11, A12, A16, S1, S4, S5, S6, S7, S8, S9, F1, F2, F3, F6, F7, F8, F10, F11, F12, F13, TF2

Restrictive Layer (if observed) Type: _____ Depth (in): _____

Problematic Hydric Soil? (wetland vegetation and hydrology must be present) ☒ YES ☐ NO

Wetland Soils Present?

☒ YES
☐ NO

VEGETATION (use scientific names of plants):

Tree Stratum	Absolute % Cover	Dominant Species	Indicator Status	Herb Stratum	Absolute % Cover	Dominant Species	Indicator Status
				<i>Juncus effusus</i>	30	Y	FACW
				<i>Typha latifolia</i>	5		OBL
				<i>Festuca arun</i>	50	Y	FAC
				<i>Cyperus</i> sp	10		FACW
				<i>Scirpus</i> sp	30	Y	FACW
Sapling/Shrub Stratum	Absolute % Cover	Dominant Species	Indicator Status	Woody Vine Stratum	Absolute % Cover	Dominant Species	Indicator Status
<i>Salix nigra</i>	10	Y	OBL				

Step 1: Dominance Test: Is >50% of dominant species (50/20 Rule) OBL, FACW, or OBL?

☒ YES ☐ NO (If NO AND wetland soil and hydrology are present, continue to Step 2)

Step 2: Prevalence Test: Is Prevalence Index ≤3.0? ☒ YES ☐ NO

Morphological adaptations (circle): adventitious roots, pneumatophores, prop roots, buttressed trees

Problematic Hydric Vegetation? (wetland soils and hydrology must be present) ☒ YES ☐ NO

Wetland Vegetation Present?

☒ YES
☐ NO

TVA - Atlantic & Gulf Coastal Plain AND Eastern Mountains and Piedmont Regions LRR (circle) O or P or N Pg. 2 of 2

Appendix Wetland B

TVA Rapid Assessment Methodology Forms

TVARAM Field Form Quantitative Rating

Site: Clinch River Site W001 Rater(s): J. Gorton Date: 1/28/2011

2 2
max 6 pts. subtotal

Metric 1. Wetland Area (size)

Select one size class and assign score.

- ☐ >50 acres (>20.2 ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2 ha) (5) [BR/CM (6)]
☐ 10 to <25 acres (4 to <10.1 ha) (4) [BR/CM (6)]
☐ 3 to <10 acres (1.2 to <4 ha) (3) [BR/CM (5)]
☒ 0.3 to <3 acres (0.1 to <1.2 ha) (2) [BR/CM (3)]
☐ 0.1 to <0.3 acre (0.04 to <0.1 ha) (1) [BR/CM (2)]
☐ <0.1 acre (<0.04 ha) (0)

0.67 acre

2

Notes: BR/CM = adjusted points for Blue Ridge and Cumberland Mountains. If an open water body (excluding aquatic beds and seasonal mudflats) is >20 acres (8 ha), then add only 0.5 acre (0.2 ha) of it to the wetland size for Metric 1.

Sources/assumptions for size estimate (list):

NWI
Aerial Photos
Field Survey

13 15
max 14 pts. subtotal

Metric 2. Upland Buffers and Surrounding Land Use

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☒ WIDE. Buffers average 50 m (164 ft) or more around wetland perimeter (7)
☐ MEDIUM. Buffers average 25 m to <50 m (82 to <164 ft) around wetland perimeter (4)
☐ NARROW. Buffers average 10 m to <25 m (32 ft to <82 ft) around wetland perimeter (1)
☐ VERY NARROW. Buffers average <10 m (<32 ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☒ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☐ LOW. Old field (>10 years), shrubland, young 2nd growth forest (5)
☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field (3)
☐ High. Urban, industrial, open pasture, row cropping, mining, construction (1)

18 33
max 30 pts. subtotal

Metric 3. Hydrology

3a. Sources of water. Score all that apply.

- ☐ High pH groundwater (5)
☐ Other groundwater (3) [BR/CM (5)]
☒ Precipitation (1) [unless BR/CM primary source (5)]
☒ Seasonal/intermittent surface water (3)
☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 m (27.6 in.) (3)
☐ 0.4 to 0.7 m (16 to 27.6 in.) (2) [BR/CM (3)]
☒ <0.4 m (<16 in.) (1) [BR/CM 0.15 to 0.4 m (6 to <16 in.) (2)]

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
☒ Recovered (7)
☐ Recovering (3)
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☒ 100-year floodplain (1)
☒ Between stream/lake and other human use (1)
☒ Part of wetland/upland (e.g., forest), complex (1)
☒ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl. check & avg.

- ☐ Semi- to permanently inundated/saturated (4)
☐ Regularly inundated/saturated (3) [BR/CM (4)]
☒ Seasonally inundated (2) [BR/CM (4)]
☐ Seasonally saturated in upper 30 cm (12 in.) (1) [BR/CM (2)]

Check all disturbances observed

- ☐ ditch ☐ point source (nonstormwater)
☐ tile (including culvert) ☐ filling/grading
☐ dike ☐ road bed/RR track
☐ weir ☐ dredging
☐ stormwater input ☐ other _____

12 45
max 20 pts. subtotal

Metric 4. Habitat Alteration and Development

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
☒ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☒ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☒ None or none apparent (9)
☒ Recovered (6)
☐ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

- ☐ mowing ☐ shrub/sapling removal
☐ grazing ☐ herbaceous/aquatic bed removal
☐ clearcutting ☐ woody debris removal
☐ selective cutting ☒ sedimentation
☐ farming ☐ dredging
☐ toxic pollutants ☐ nutrient enrichment

45
subtotal this page

Last revised 2005-04-29

TVARAM Field Form Quantitative Rating

Site: <u>Wool</u>	Rater(s): <u>J. Gorton</u>	Date: <u>1/20/2011</u>
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45
subtotal previous page

3	48
max 10 pts	subtotal

3
raw score*

Metric 5. Special Wetlands

*If the documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.

Select all that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide documentation for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc).

- 3
- ☐ Bog, fen, wet prairie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3)
 - ☐ Assoc. forest (wetl. &/or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation]
 - ☐ Sensitive geologic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5)
 - ☐ Vernal pool (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3)
 - ☐ Island wetland >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5)
 - ☒ Braided channel of floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3)
 - ☐ Gross morph. adapt. in >5 trees >10 in. (25 cm) dbh; buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3)
 - ☐ Ecological community with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier]
 - ☐ Known occurrence state/federal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] [exclude records which are only "historic"]
 - ☐ Superior/enhanced habitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3)
 - ☐ Cat. 1 (very low quality) : <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)

6	54
max 20 pts	subtotal

Metric 6. Plant Communities, Interspersion, Microtopography**6a. Wetland vegetation communities.**

Score all present using 0 to 3 scale.

- 1
- ☐ Aquatic bed
 - ☒ Emergent
 - ☒ Shrub
 - ☒ Forest
 - ☒ Mudflats
 - ☒ Open water <20 acres (8 ha)
 - ☐ Moss/lichen. Other _____

6b. Horizontal (plan view) interspersion.

Select only one.

- 3
- ☐ High (5)
 - ☐ Moderately high (4) [BR/CM (5)]
 - ☒ Moderate (3) [BR/CM (5)]
 - ☐ Moderately low (2) [BR/CM (3)]
 - ☐ Low (1) [BR/CM (2)]
 - ☐ None (0)

6c. Coverage of invasive plants.

Add or deduct points for coverage.

- 2
- ☐ Extensive >75% cover (-5)
 - ☒ Moderate 25-75% cover (-3)
 - ☒ Sparse 5-25% cover (-1)
 - ☐ Nearly absent <5% cover (0)
 - ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- 1
- ☐ Vegetated hummocks/tussocks
 - ☒ Coarse woody debris >15 cm (6 in.)
 - ☐ Standing dead >25 cm (10 in.) dbh
 - ☐ Amphibian breeding pools

Vegetation Community Cover Scale

0 = Absent or <0.1 ha (<0.25 acre) contiguous acre

[BR/CM <0.04 ha (<0.1 acre)]

1 = Present and either comprises a small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality

2 = Present and either comprises a significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality

3 = Present and comprises a significant part or more of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low = Low species diversity &/or dominance of nonnative or disturbance tolerant native species

mod = Native species are dominant component of the vegetation, although nonnative &/or disturbance tolerant native species can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened or endangered species

high = A predominance of native species with nonnative sp &/or disturbance tolerant native sp absent or virtually absent, and high sp diversity and often but not always, the presence of rare, threatened, or endangered species

Mudflat and Open Water Class Quality

0 = Absent <0.1 ha (<0.25 acres) [BR/CM <0.04 ha (<0.1 acre)]

1 = Low 0.1 to <1 ha (0.25 to <2.5 acres) [BR/CM 0.04 to <0.2 ha (0.1 to <0.5 acre)]

2 = Moderate 1 to <4 ha (2.5 to <9.9 acres) [BR/CM 0.2 to <2 ha (0.5 to <5 acre)]

3 = High 4 ha (9.9 acres) or more [BR/CM 2 ha (5 acres) or more]

Hypothetical Wetland for Estimating Degree of Interspersion**Microtopography Cover Scale**

0 = Absent

1 = Present in very small amounts or if more common of marginal quality

2 = Present in moderate amounts, but not of highest quality or in small amounts of highest quality

3 = Present in moderate or greater amounts and of highest quality

Category 2

54

GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.ch.us/dsw/401/401.html>

Last revised 2005-04-29

TVARAM Field Form Quantitative Rating

Site: Cinder River Site WOOD Rater(s): J Gorton Date: 1/20/2011

1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size)

Notes: BR/CM = adjusted points for Blue Ridge and Cumberland Mountains. If an open water body (excluding aquatic beds and seasonal mudflats) is >20 acres (8 ha), then add only 0.5 acre (0.2 ha) of it to the wetland size for Metric 1.

Select one size class and assign score.

- ☐ >50 acres (>20.2 ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2 ha) (5) [BR/CM (6)]
☐ 10 to <25 acres (4 to <10.1 ha) (4) [BR/CM (6)]
☐ 3 to <10 acres (1.2 to <4 ha) (3) [BR/CM (5)]
☐ 0.3 to <3 acres (0.1 to <1.2 ha) (2) [BR/CM (3)]
☒ 0.1 to <0.3 acre (0.04 to <0.1 ha) (1) [BR/CM (2)]
☐ <0.1 acre (<0.04 ha) (0)

0.13 acre

Sources/assumptions for size estimate (list):

NWI
Aerial Photos
Field Survey

2	3
max 14 pts.	subtotal

Metric 2. Upland Buffers and Surrounding Land Use

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☐ WIDE. Buffers average 50 m (164 ft) or more around wetland perimeter (7)
☐ MEDIUM. Buffers average 25 m to <50 m (82 to <164 ft) around wetland perimeter (4)
☐ NARROW. Buffers average 10 m to <25 m (32 ft to <82 ft) around wetland perimeter (1)
☒ VERY NARROW. Buffers average <10 m (<32 ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☐ LOW. Old field (>10 years), shrubland, young 2nd growth forest (5)
☒ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field (3)
☐ High. Urban, industrial, open pasture, row cropping, mining, construction (1)

7	10
max 30 pts.	subtotal

Metric 3. Hydrology

3a. Sources of water. Score all that apply.

- ☐ High pH groundwater (5)
☐ Other groundwater (3) [BR/CM (5)]
☒ Precipitation (1) [unless BR/CM primary source (5)]
☐ Seasonal/intermittent surface water (3)
☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 m (27.6 in.) (3)
☐ 0.4 to 0.7 m (16 to 27.6 in.) (2) [BR/CM (3)]
☒ <0.4 m (<16 in.) (1) [BR/CM 0.15 to 0.4 m (6 to <16 in.) (2)]

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
☒ Recovered (7)
☐ Recovering (3)
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☐ 100-year floodplain (1)
☐ Between stream/lake and other human use (1)
☐ Part of wetland/upland (e.g., forest), complex (1)
☐ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl. check & avg.

- ☐ Semi- to permanently inundated/saturated (4)
☒ Regularly inundated/saturated (3) [BR/CM (4)]
☐ Seasonally inundated (2) [BR/CM (4)]
☐ Seasonally saturated in upper 30 cm (12 in.) (1) [BR/CM (2)]

Check all disturbances observed

- ☐ ditch
☐ tile (including culvert)
☐ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☐ filling/grading
☐ road bed/RR track
☐ dredging
☐ other

5	15
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
☒ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☐ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☒ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
☒ Recovered (6)
☐ Recovering (3)
☒ Recent or no recovery (1)

Check all disturbances observed

- ☐ mowing
☐ grazing
☐ clearcutting
☐ selective cutting
☐ farming
☐ toxic pollutants
☐ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☐ woody debris removal
☐ sedimentation
☐ dredging
☐ nutrient enrichment

15
subtotal this page

Last revised 2005-04-29

TVARAM Field Form Quantitative Rating

Site: <u>Wooz</u>	Rater(s): <u>Groton</u>	Date: <u>1/20/2011</u>
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15
subtotal previous page

5	20
max 10 pts	subtotal

5
raw score*

Metric 5. Special Wetlands

*If the documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.

Select all that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide documentation for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc).

- ☐ Bog, fen, wet prairie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3)
- ☐ Assoc. forest (wetl. &/or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation]
- ☐ Sensitive geologic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5)
- ☐ Vernal pool (5); isolated, perched, or slope wetland (4); headwater wetland (1st order perennial or above) (3)
- ☐ Island wetland >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5)
- ☐ Braided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3)
- ☐ Gross morph. adapt. in >5 trees >10 in. (25 cm) dbh: buttress, multi-trunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3)
- ☐ Ecological community with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier]
- ☐ Known occurrence state/federal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] [exclude records which are only "historic"]
- ☐ Superior/enhanced habitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3)
- ☐ Cat. 1 (very low quality) : <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)

2	22
max 20 pts	subtotal

Metric 6. Plant Communities, Interspersion, Microtopography**6a. Wetland vegetation communities.**

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water <20 acres (8 ha)
- ☐ Moss/lichen, Other _____

6b. Horizontal (plan view) interspersion.

Select only one.

- ☐ High (5)
- ☐ Moderately high (4) [BR/CM (5)]
- ☐ Moderate (3) [BR/CM (5)]
- ☐ Moderately low (2) [BR/CM (3)]
- ☒ Low (1) [BR/CM (2)]
- ☐ None (0)

6c. Coverage of invasive plants.

Add or deduct points for coverage.

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☒ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☐ Vegetated hummocks/tussocks
- ☐ Coarse woody debris >15 cm (6 in.)
- ☐ Standing dead >25 cm (10 in.) dbh
- ☒ Amphibian breeding pools

Vegetation Community Cover Scale

0 = Absent or <0.1 ha (<0.25 acre) contiguous acre

[BR/CM <0.04 ha (<0.1 acre)]

1 = Present and either comprises a small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality

2 = Present and either comprises a significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality

3 = Present and comprises a significant part or more of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low = Low species diversity &/or dominance of nonnative or disturbance tolerant native species

mod = Native species are dominant component of the vegetation, although nonnative &/or disturbance tolerant native species can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened or endangered species

high = A predominance of native species with nonnative sp &/or disturbance tolerant native sp absent or virtually absent, and high sp diversity and often but not always, the presence of rare, threatened, or endangered species

Mudflat and Open Water Class Quality

0 = Absent <0.1 ha (<0.25 acres) [BR/CM <0.04 ha (<0.1 acre)]

1 = Low 0.1 to <1 ha (0.25 to <2.5 acres) [BR/CM 0.04 to <0.2 ha (0.1 to <0.5 acre)]

2 = Moderate 1 to <4 ha (2.5 to <9.9 acres) [BR/CM 0.2 to <2 ha (0.5 to <5 acre)]

3 = High 4 ha (9.9 acres) or more [BR/CM 2 ha (5 acres) or more]

Hypothetical Wetland for Estimating Degree of Interspersion**Microtopography Cover Scale**

0 = Absent

1 = Present in very small amounts or if more common of marginal quality

2 = Present in moderate amounts, but not of highest quality or in small amounts of highest quality

3 = Present in moderate or greater amounts and of highest quality

Category 1

22

GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.or.us/csw/401/401.html>

Last revised 2005-04-29

TVARAM Field Form Quantitative Rating

Site: Clinch River Site W003 Rater(s): J Gorton Date: 1/20/2011

1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size)

Notes: BR/CM = adjusted points for Blue Ridge and Cumberland Mountains. If an open water body (excluding aquatic beds and seasonal mudflats) is >20 acres (8 ha), then add only 0.5 acre (0.2 ha) of it to the wetland size for Metric 1.

Select one size class and assign score.

- ☐ >50 acres (>20.2 ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2 ha) (5) [BR/CM (6)]
☐ 10 to <25 acres (4 to <10.1 ha) (4) [BR/CM (6)]
☐ 3 to <10 acres (1.2 to <4 ha) (3) [BR/CM (5)]
☐ 0.3 to <3 acres (0.1 to <1.2 ha) (2) [BR/CM (3)]
☒ 0.1 to <0.3 acre (0.04 to <0.1 ha) (1) [BR/CM (2)]
☐ <0.1 acre (<0.04 ha) (0)

0.18 acre

Sources/assumptions for size estimate (list):

Field Survey
 NWI
 Aerial Photos

9	10
max 14 pts.	subtotal

Metric 2. Upland Buffers and Surrounding Land Use

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☒ WIDE. Buffers average 50 m (164 ft) or more around wetland perimeter (7)
☐ MEDIUM. Buffers average 25 m to <50 m (82 to <164 ft) around wetland perimeter (4)
☐ NARROW. Buffers average 10 m to <25 m (32 ft to <82 ft) around wetland perimeter (1)
☐ VERY NARROW. Buffers average <10 m (<32 ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☒ LOW. Old field (>10 years), shrubland, young 2nd growth forest (5)
☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field (3)
☐ High. Urban, industrial, open pasture, row cropping, mining, construction (1)

22	26
max 30 pts.	subtotal

Metric 3. Hydrology

3a. Sources of water. Score all that apply.

- ☐ High pH groundwater (5)
☐ Other groundwater (3) [BR/CM (5)]
☒ Precipitation (1) [unless BR/CM primary source (5)]
☐ Seasonal/intermittent surface water (3)
☒ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 m (27.6 in.) (3)
☐ 0.4 to 0.7 m (16 to 27.6 in.) (2) [BR/CM (3)]
☒ <0.4 m (<16 in.) (1) [BR/CM 0.15 to 0.4 m (6 to <16 in.) (2)]

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
☒ Recovered (7)
☐ Recovering (3)
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☒ 100-year floodplain (1)
☒ Between stream/lake and other human use (1)
☒ Part of wetland/upland (e.g., forest), complex (1)
☒ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl. check & avg.

- ☐ Semi- to permanently inundated/saturated (4)
☒ Regularly inundated/saturated (3) [BR/CM (4)]
☒ Seasonally inundated (2) [BR/CM (4)]
☐ Seasonally saturated in upper 30 cm (12 in.) (1) [BR/CM (2)]

Check all disturbances observed

- ☒ ditch
☒ tile (including culvert)
☒ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☒ filling/grading
☒ road bed/RR track
☐ dredging
☐ other _____

11	37
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
☒ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☒ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
☒ Recovered (6)
☐ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

- ☐ mowing
☐ grazing
☐ clearcutting
☐ selective cutting
☐ farming
☐ toxic pollutants
☐ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☐ woody debris removal
☒ sedimentation
☐ dredging
☐ nutrient enrichment

37
subtotal this page

Last revised 2005-04-29

Site: <u>W003</u>	Rater(s): <u>Groton</u>	Date: <u>1/20/2011</u>
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37
subtotal previous page

3	40
max 10 pts	subtotal

3
raw score*

Metric 5. Special Wetlands

*If the documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.

Select all that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide documentation for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc).

- 3
- ☐ Bog, fen, wet prairie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3)
 - ☐ Assoc. forest (wetl. &/or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation]
 - ☐ Sensitive geologic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5)
 - ☐ Vernal pool (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3)
 - ☐ Island wetland >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5)
 - ☐ Braided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3)
 - ☐ Gross morph. adapt. in >5 trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3)
 - ☐ Ecological community with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [use higher rank where mixed rank or qualifier]
 - ☐ [use higher rank where mixed rank or qualifier] [exclude records which are only "historic"]
 - ☐ Superior/enhanced habitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3)
 - ☐ Cat. 1 (very low quality) : <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)

6	46
max 20 pts	subtotal

Metric 6. Plant Communities, Interspersion, Microtopography

6a. Wetland vegetation communities.
Score all present using 0 to 3 scale.

- 1
- ☐ Aquatic bed
 - ☒ Emergent
 - ☒ Shrub
 - ☒ Forest
 - ☐ Mudflats
 - ☐ Open water <20 acres (8 ha)
 - ☐ Moss/lichen, Other

6b. Horizontal (plan view) interspersion.
Select only one.

- 2
- ☐ High (5)
 - ☐ Moderately high (4) [BR/CM (5)]
 - ☐ Moderate (3) [BR/CM (5)]
 - ☒ Moderately low (2) [BR/CM (3)]
 - ☐ Low (1) [BR/CM (2)]
 - ☐ None (0)

6c. Coverage of invasive plants.

- 1
- Add or deduct points for coverage.
- ☐ Extensive >75% cover (-5)
 - ☐ Moderate 25-75% cover (-3)
 - ☒ Sparse 5-25% cover (-1)
 - ☐ Nearly absent <5% cover (0)
 - ☐ Absent (1)

6d. Microtopography.

- 2
- Score all present using 0 to 3 scale.
- ☐ Vegetated hummocks/tussocks
 - ☒ Coarse woody debris >15 cm (6 in.)
 - ☒ Standing dead >25 cm (10 in.) dbh
 - ☐ Amphibian breeding pools

Vegetation Community Cover Scale

0 = Absent or <0.1 ha (<0.25 acre) contiguous acre
[BR/CM <0.04 ha (<0.1 acre)]

1 = Present and either comprises a small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality

2 = Present and either comprises a significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality

3 = Present and comprises a significant part or more of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low = Low species diversity &/or dominance of nonnative or disturbance tolerant native species

mod = Native species are dominant component of the vegetation, although nonnative &/or disturbance tolerant native species can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened or endangered species

high = A predominance of native species with nonnative sp &/or disturbance tolerant native sp absent or virtually absent, and high sp diversity and often but not always, the presence of rare, threatened, or endangered species

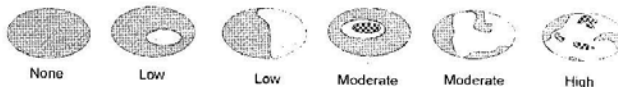
Mudflat and Open Water Class Quality

0 = Absent <0.1 ha (<0.25 acres) [BR/CM <0.04 ha (<0.1 acre)]

1 = Low 0.1 to <1 ha (0.25 to <2.5 acres) [BR/CM 0.04 to <0.2 ha (0.1 to <0.5 acre)]

2 = Moderate 1 to <4 ha (2.5 to <9.9 acres) [BR/CM 0.2 to <2 ha (0.5 to <5 acre)]

3 = High 4 ha (9.9 acres) or more [BR/CM 2 ha (5 acres) or more]

Hypothetical Wetland for Estimating Degree of Interspersion**Microtopography Cover Scale**

0 = Absent

1 = Present in very small amounts or if more common of marginal quality

2 = Present in moderate amounts, but not of highest quality or in small amounts of highest quality

3 = Present in moderate or greater amounts and of highest quality

Category 2

46

GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.nh.us/dsw/401/401.html>

Last revised 2005-04-29

TVARAM Field Form Quantitative Rating

Site: Clinch River Site 0004Rater(s): GrotonDate: 1/20/2011

1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size)

Notes: BR/CM = adjusted points for Blue Ridge and Cumberland Mountains. If an open water body (excluding aquatic beds and seasonal mudflats) is >20 acres (8 ha), then add only 0.5 acre (0.2 ha) of it to the wetland size for Metric 1.

Select one size class and assign score.

- ☐ >50 acres (>20.2 ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2 ha) (5) [BR/CM (6)]
☐ 10 to <25 acres (4 to <10.1 ha) (4) [BR/CM (6)]
☐ 3 to <10 acres (1.2 to <4 ha) (3) [BR/CM (5)]
☐ 0.3 to <3 acres (0.1 to <1.2 ha) (2) [BR/CM (3)]
☒ 0.1 to <0.3 acre (0.04 to <0.1 ha) (1) [BR/CM (2)]
☐ <0.1 acre (<0.04 ha) (0)

0.24 acre

Sources/assumptions for size estimate (list):

NWI
Field Survey
Aerial Photos

7	8
max 14 pts.	subtotal

Metric 2. Upland Buffers and Surrounding Land Use

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☒ WIDE. Buffers average 50 m (164 ft) or more around wetland perimeter (7)
☐ MEDIUM. Buffers average 25 m to <50 m (82 to <164 ft) around wetland perimeter (4)
☒ NARROW. Buffers average 10 m to <25 m (32 ft to <82 ft) around wetland perimeter (1)
☐ VERY NARROW. Buffers average <10 m (<32 ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☒ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☒ LOW. Old field (>10 years), shrubland, young 2nd growth forest (5)
☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field (3)
☐ High. Urban, industrial, open pasture, row cropping, mining, construction (1)

14	22
max 30 pts.	subtotal

Metric 3. Hydrology

3a. Sources of water. Score all that apply.

- ☐ High pH groundwater (5)
☐ Other groundwater (3) [BR/CM (5)]
☒ Precipitation (1) [unless BR/CM primary source (5)]
☒ Seasonal/intermittent surface water (3)
☒ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 m (27.6 in.) (3)
☐ 0.4 to 0.7 m (16 to 27.6 in.) (2) [BR/CM (3)]
☒ <0.4 m (<16 in.) (1) [BR/CM 0.15 to 0.4 m (6 to <16 in.) (2)]

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
☒ Recovered (7)
☒ Recovering (3)
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☐ 100-year floodplain (1)
☒ Between stream/lake and other human use (1)
☒ Part of wetland/upland (e.g., forest), complex (1)
☐ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl. check & avg.

- ☐ Semi- to permanently inundated/saturated (4)
☒ Regularly inundated/saturated (3) [BR/CM (4)]
☒ Seasonally inundated (2) [BR/CM (4)]
☐ Seasonally saturated in upper 30 cm (12 in.) (1) [BR/CM (2)]

Check all disturbances observed

- ☒ ditch
☐ tile (including culvert)
☐ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☒ filling/grading
☒ road bed/RR track
☐ dredging
☐ other

10	32
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
☒ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☒ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
☒ Recovered (6)
☒ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

- ☐ mowing
☐ grazing
☒ clearcutting
☐ selective cutting
☐ farming
☐ toxic pollutants
☐ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☐ woody debris removal
☒ sedimentation
☐ dredging
☐ nutrient enrichment

32
subtotal this page

Last revised 2005-04-29

Site: <u>WOOF</u>	Rater(s): <u>Groton</u>	Date: <u>1/20/2011</u>
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32
subtotal previous page

8	40
max 10 pts	subtotal

8
raw score*

Metric 5. Special Wetlands

*If the documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.

- Select all that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide documentation for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc).
- 5 ☒ Bog, fen, wet prairie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3)
- ☒ Assoc. forest (wetl. &/or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation]
- ☒ Sensitive geologic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5)
- ☒ Vernal pool (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3)
- ☒ Island wetland >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5)
- 3 ☒ Braided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3)
- ☒ Gross morph. adapt. in >5 trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/rip-up, or pneumatophores (3)
- ☒ Ecological community with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [use higher rank where mixed rank or qualifier]
- ☒ Known occurrence state/federal threatened/endangered species (10), other rare species with global rank G1*(10), G2*(5), G3*(3) [use higher rank where mixed rank or qualifier] [exclude records which are only "historic"]
- ☒ Superior/enhanced habitat/use: migratory songbird/waterfowl (5), in-reservoir buttonbush (4); other fish/wildlife management/designation (3)
- ☒ Cat. 1 (very low quality) : <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)

9	49
max 10 pts	subtotal

Metric 6. Plant Communities, Interspersion, Microtopography**6a. Wetland vegetation communities.**

Score all present using 0 to 3 scale.

- 1 ☒ Aquatic bed
- 2 ☒ Emergent
- 1 ☒ Shrub
- ☒ Forest
- ☒ Mudflats
- ☒ Open water <20 acres (8 ha)
- ☒ Moss/lichen. Other _____

Vegetation Community Cover Scale

0 = Absent or <0.1 ha (<0.25 acre) contiguous acre

[BR/CM <0.04 ha (<0.1 acre)]

1 = Present and either comprises a small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality

2 = Present and either comprises a significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality

3 = Present and comprises a significant part or more of wetland's vegetation and is of high quality

6b. Horizontal (plan view) interspersion.

Select only one.

- 2 ☒ High (5)
- ☒ Moderately high (4) [BR/CM (5)]
- ☒ Moderate (3) [BR/CM (5)]
- ☒ Moderately low (2) [BR/CM (3)]
- ☒ Low (1) [BR/CM (2)]
- ☒ None (0)

Narrative Description of Vegetation Quality

low = Low species diversity &/or dominance of nonnative or disturbance tolerant native species

mod = Native species are dominant component of the vegetation, although nonnative &/or disturbance tolerant native species can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened or endangered species

high = A predominance of native species with nonnative sp &/or disturbance tolerant native sp absent or virtually absent, and high sp diversity and often but not always, the presence of rare, threatened or endangered species

6c. Coverage of invasive plants.

Add or deduct points for coverage.

- 1 ☒ Extensive >75% cover (-5)
- ☒ Moderate 25-75% cover (-3)
- ☒ Sparse 5-25% cover (-1)
- ☒ Nearly absent <5% cover (0)
- ☒ Absent (1)

Mudflat and Open Water Class Quality

0 = Absent <0.1 ha (<0.25 acres) [BR/CM <0.04 ha (<0.1 acre)]

1 = Low 0.1 to <1 ha (0.25 to <2.5 acres) [BR/CM 0.04 to <0.2 ha (0.1 to <0.5 acre)]

2 = Moderate 1 to <4 ha (2.5 to <9.9 acres) [BR/CM 0.2 to <2ha (0.5 to <5acre)]

3 = High 4 ha (9.9 acres) or more [BR/CM 2 ha (5 acres) or more]

6d. Microtopography.

Score all present using 0 to 3 scale.

- 2 ☒ Vegetated hummocks/tussocks
- 2 ☒ Coarse woody debris >15 cm (6 in.)
- ☒ Standing dead >25 cm (10 in.) dbh
- ☒ Amphibian breeding pools

Hypothetical Wetland for Estimating Degree of Interspersion**Microtopography Cover Scale**

0 = Absent

1 = Present in very small amounts or if more common of marginal quality

2 = Present in moderate amounts, but not of highest quality or in small amounts of highest quality

3 = Present in moderate or greater amounts and of highest quality

Category 2

49

GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.ch.us/dsw/401/401.html>

Last revised 2005-04-29

TVARAM Field Form Quantitative Rating

Site: Cinch River Site W005 Rater(s): J Gorton Date: 1/20/2011

2 2
max 6 pts. subtotal

Metric 1. Wetland Area (size)

Select one size class and assign score.

- ☐ >50 acres (>20.2 ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2 ha) (5) [BR/CM (6)]
☐ 10 to <25 acres (4 to <10.1 ha) (4) [BR/CM (6)]
☐ 3 to <10 acres (1.2 to <4 ha) (3) [BR/CM (5)]
☒ 0.3 to <3 acres (0.1 to <1.2 ha) (2) [BR/CM (3)]
☐ 0.1 to <0.3 acre (0.04 to <0.1 ha) (1) [BR/CM (2)]
☐ <0.1 acre (<0.04 ha) (0)

0.36 acre 2

Notes: BR/CM = adjusted points for Blue Ridge and Cumberland Mountains. If an open water body (excluding aquatic beds and seasonal mudflats) is >20 acres (8 ha), then add only 0.5 acre (0.2 ha) of it to the wetland size for Metric 1.

Sources/assumptions for size estimate (list):

NWI
Aerial Photos
Field Survey

9 11
max 14 pts. subtotal

Metric 2. Upland Buffers and Surrounding Land Use

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☐ WIDE. Buffers average 50 m (164 ft) or more around wetland perimeter (7)
☒ MEDIUM. Buffers average 25 m to <50 m (82 to <164 ft) around wetland perimeter (4)
☐ NARROW. Buffers average 10 m to <25 m (32 ft to <82 ft) around wetland perimeter (1)
☐ VERY NARROW. Buffers average <10 m (<32 ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☒ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☐ LOW. Old field (>10 years), shrubland, young 2nd growth forest (5)
☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field (3)
☐ High. Urban, industrial, open pasture, row cropping, mining, construction (1)

21 32
max 30 pts. subtotal

Metric 3. Hydrology

3a. Sources of water. Score all that apply.

- ☐ High pH groundwater (5)
☐ Other groundwater (3) [BR/CM (5)]
☒ Precipitation (1) [unless BR/CM primary source (5)]
☐ Seasonal/intermittent surface water (3)
☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 m (27.6 in.) (3)
☐ 0.4 to 0.7 m (16 to 27.6 in.) (2) [BR/CM (3)]
☒ <0.4 m (<16 in.) (1) [BR/CM 0.15 to 0.4 m (6 to <16 in.) (2)]

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
☒ Recovered (7)
☐ Recovering (3)
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☒ 100-year floodplain (1)
☒ Between stream/lake and other human use (1)
☒ Part of wetland/upland (e.g., forest), complex (1)
☒ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl. check & avg.

- ☐ Semi- to permanently inundated/saturated (4)
☒ Regularly inundated/saturated (3) [BR/CM (4)]
☒ Seasonally inundated (2) [BR/CM (4)]
☐ Seasonally saturated in upper 30 cm (12 in.) (1) [BR/CM (2)]

Check all disturbances observed

- ☐ ditch
☒ tile (including culvert)
☐ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☐ filling/grading
☒ road bed/RR track
☐ dredging
☐ other _____

13 45
max 20 pts. subtotal

Metric 4. Habitat Alteration and Development

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
☒ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☒ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
☒ Recovered (6)
☐ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

- ☐ mowing
☐ grazing
☐ clearcutting
☐ selective cutting
☐ farming
☐ toxic pollutants
☐ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☐ woody debris removal
☒ sedimentation
☐ dredging
☐ nutrient enrichment

45
subtotal this page

Last revised 2005-04-29

TVARAM Field Form Quantitative Rating

Site: W005 Rater(s): Groton Date: 1/20/2011

45
subtotal previous page

3 48
max 10 pts subtotal

3
raw score*

Metric 5. Special Wetlands

*If the documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.

Select all that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide documentation for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc).

☐ Bog, fen, wet prairie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3)

☐ Assoc. forest (wetl. &/or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation]

☐ Sensitive geologic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5)

☐ Vernal pool (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3)

☐ Island wetland >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5)

☒ Braided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3)

☐ Gross morph. adapt. in >5 trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3)

☐ Ecological community with global rank (NatureServe): G1* (10), G2* (5), G3* (3) [*use higher rank where mixed rank or qualifier]

☐ Known occurrence state/federal threatened/endangered species (10); other rare species with global rank G1* (10), G2* (5), G3* (3) [*use higher rank where mixed rank or qualifier] [exclude records which are only "historic"]

☐ Superior/enhanced habitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3)

☐ Cat. 1 (very low quality) : <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)

9 57
max 20 pts subtotal

Metric 6. Plant Communities, Interspersion, Microtopography**6a. Wetland vegetation communities.**

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☐ Emergent
- ☒ Shrub
- ☒ Forest
- ☐ Mudflats
- ☐ Open water <20 acres (8 ha)
- ☐ Moss/lichen. Other _____

6b. Horizontal (plan view) interspersion.

Select only one.

- ☐ High (5)
- ☒ Moderately high (4) [BR/CM (5)]
- ☒ Moderate (3) [BR/CM (5)]
- ☐ Moderately low (2) [BR/CM (3)]
- ☐ Low (1) [BR/CM (2)]
- ☐ None (0)

6c. Coverage of invasive plants.

Add or deduct points for coverage.

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☒ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☒ Vegetated hummocks/tussocks
- ☒ Coarse woody debris >15 cm (6 in.)
- ☒ Standing dead >25 cm (10 in.) dbh
- ☐ Amphibian breeding pools

Vegetation Community Cover Scale

0 = Absent or <0.1 ha (<0.25 acre) contiguous acre

[BR/CM <0.04 ha (<0.1 acre)]

1 = Present and either comprises a small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality

2 = Present and either comprises a significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality

3 = Present and comprises a significant part or more of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low = Low species diversity &/or dominance of nonnative or disturbance tolerant native species

mod = Native species are dominant component of the vegetation, although nonnative &/or disturbance tolerant native species can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened or endangered species

high = A predominance of native species with nonnative sp &/or disturbance tolerant native sp absent or virtually absent, and high sp diversity and often but not always, the presence of rare, threatened, or endangered species

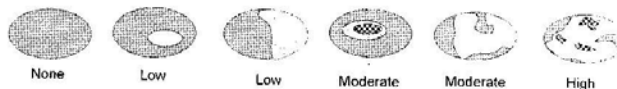
Mudflat and Open Water Class Quality

0 = Absent <0.1 ha (<0.25 acres) [BR/CM <0.04 ha (<0.1 acre)]

1 = Low 0.1 to <1 ha (0.25 to <2.5 acres) [BR/CM 0.04 to <0.2 ha (0.1 to <0.5 acre)]

2 = Moderate 1 to <4 ha (2.5 to <9.9 acres) [BR/CM 0.2 to <2ha (0.5 to <5acre)]

3 = High 4 ha (9.9 acres) or more [BR/CM 2 ha (5 acres) or more]

Hypothetical Wetland for Estimating Degree of Interspersion**Microtopography Cover Scale**

0 = Absent

1 = Present in very small amounts or if more common of marginal quality

2 = Present in moderate amounts, but not of highest quality or in small amounts of highest quality

3 = Present in moderate or greater amounts and of highest quality

Category 2

57

GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.oh.us/dsw/401/401.html>

Last revised 2005-04-29

TVARAM Field Form Quantitative Rating

Site: Clinch River W006

Rater(s): Grotton & Nestor

Date: 1/20/2011

1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size)

Notes: BR/CM = adjusted points for Blue Ridge and Cumberland Mountains. If an open water body (excluding aquatic beds and seasonal mudflats) is >20 acres (8 ha), then add only 0.5 acre (0.2 ha) of it to the wetland size for Metric 1.

Select one size class and assign score.

- ☐ >50 acres (>20.2 ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2 ha) (5) [BR/CM (6)]
☐ 10 to <25 acres (4 to <10.1 ha) (4) [BR/CM (6)]
☐ 3 to <10 acres (1.2 to <4 ha) (3) [BR/CM (5)]
☐ 0.3 to <3 acres (0.1 to <1.2 ha) (2) [BR/CM (3)]
☒ 0.1 to <0.3 acre (0.04 to <0.1 ha) (1) [BR/CM (2)]
☐ <0.1 acre (<0.04 ha) (0)

0.11 acre

Sources/assumptions for size estimate (list):

NWI
Aerial Photos
Field Survey

12	13
max 14 pts.	subtotal

Metric 2. Upland Buffers and Surrounding Land Use

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☒ WIDE. Buffers average 50 m (164 ft) or more around wetland perimeter (7)
☐ MEDIUM. Buffers average 25 m to <50 m (82 to <164 ft) around wetland perimeter (4)
☐ NARROW. Buffers average 10 m to <25 m (32 ft to <82 ft) around wetland perimeter (1)
☐ VERY NARROW. Buffers average <10 m (<32 ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☒ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☐ LOW. Old field (>10 years), shrubland, young 2nd growth forest (5)
☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field (3)
☐ High. Urban, industrial, open pasture, row cropping, mining, construction (1)

14	27
max 30 pts.	subtotal

Metric 3. Hydrology

3a. Sources of water. Score all that apply.

- ☐ High pH groundwater (5)
☐ Other groundwater (3) [BR/CM (5)]
☒ Precipitation (1) [unless BR/CM primary source (5)]
☒ Seasonal/intermittent surface water (3)
☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 m (27.6 in.) (3)
☐ 0.4 to 0.7 m (16 to 27.6 in.) (2) [BR/CM (3)]
☒ <0.4 m (<16 in.) (1) [BR/CM 0.15 to 0.4 m (6 to <16 in.) (2)]

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
☒ Recovered (7)
☐ Recovering (3)
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☒ 100-year floodplain (1)
☒ Between stream/lake and other human use (1)
☒ Part of wetland/upland (e.g., forest), complex (1)
☐ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl. check & avg.

- ☐ Semi- to permanently inundated/saturated (4)
☐ Regularly inundated/saturated (3) [BR/CM (4)]
☒ Seasonally inundated (2) [BR/CM (4)]
☒ Seasonally saturated in upper 30 cm (12 in.) (1) [BR/CM (2)]

Check all disturbances observed

- ☒ ditch
☐ tile (including culvert)
☐ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☒ filling/grading
☐ road bed/RR track
☐ dredging
☐ other

9	36
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
☒ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☐ Moderately good (4)
☐ Fair (3)
☒ Poor to fair (2)
☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
☒ Recovered (6)
☐ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

- ☒ mowing
☐ grazing
☒ clearcutting
☐ selective cutting
☐ farming
☐ toxic pollutants
☒ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☐ woody debris removal
☒ sedimentation
☐ dredging
☐ nutrient enrichment

36
subtotal this page

Last revised 2005-04-29

Site: <u>Wool</u>	Rater(s): <u>Groton</u>	Date: <u>1/20/2011</u>
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36
subtotal previous page

3	39
max 10 pts	subtotal
3	
raw score*	

Metric 5. Special Wetlands

*If the documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.

Select all that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide documentation for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc).

- ☐ Bog, fen, wet prairie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3)
- ☐ Assoc. forest (wetl. &/or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation]
- ☐ Sensitive geologic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5)
- ☐ Vernal pool (5); isolated, perched, or slope wetland (4); headwater wetland (1st order perennial or above) (3)
- ☒ Island wetland >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5)
- ☒ Braided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3)
- ☐ Gross morph. adapt. in >5 trees ≥10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/kip-up, or pneumatophores (3)
- ☐ Ecological community with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier]
- ☐ Known occurrence state/federal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] [exclude records which are only "historic"]
- ☐ Superior/enhanced habitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3)
- ☐ Cat. 1 (very low quality) : <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)

3	42
max 20 pts	subtotal

Metric 6. Plant Communities, Interspersion, Microtopography**6a. Wetland vegetation communities.**

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ Emergent
- ☒ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water <20 acres (8 ha)
- ☐ Moss/lichen, Other

6b. Horizontal (plan view) interspersion.

Select only one.

- ☐ High (5)
- ☐ Moderately high (4) [BR/CM (5)]
- ☐ Moderate (3) [BR/CM (5)]
- ☒ Moderately low (2) [BR/CM (3)]
- ☐ Low (1) [BR/CM (2)]
- ☐ None (0)

6c. Coverage of invasive plants.

Add or deduct points for coverage.

- ☐ Extensive >75% cover (-5)
- ☒ Moderate 25-75% cover (-3)
- ☐ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☒ Vegetated hummocks/tussocks
- ☐ Coarse woody debris >15 cm (6 in.)
- ☐ Standing dead >25 cm (10 in.) dbh
- ☐ Amphibian breeding pools

Vegetation Community Cover Scale

0 = Absent or <0.1 ha (<0.25 acre) contiguous acre

[BR/CM <0.04 ha (<0.1 acre)]

1 = Present and either comprises a small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality

2 = Present and either comprises a significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality

3 = Present and comprises a significant part or more of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low = Low species diversity &/or dominance of nonnative or disturbance tolerant native species

mod = Native species are dominant component of the vegetation, although nonnative &/or disturbance tolerant native species can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened or endangered species

high = A predominance of native species with nonnative sp &/or disturbance tolerant native sp absent or virtually absent, and high sp diversity and often but not always, the presence of rare, threatened, or endangered species

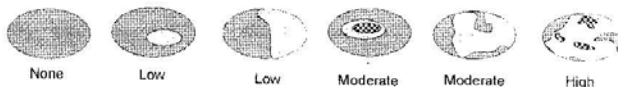
Mudflat and Open Water Class Quality

0 = Absent <0.1 ha (<0.25 acres) [BR/CM <0.04 ha (<0.1 acre)]

1 = Low 0.1 to <1 ha (0.25 to <2.5 acres) [BR/CM 0.04 to <0.2 ha (0.1 to <0.5 acre)]

2 = Moderate 1 to <4 ha (2.5 to <9.9 acres) [BR/CM 0.2 to <2ha (0.5 to <5acre)]

3 = High 4 ha (9.9 acres) or more [BR/CM 2 ha (5 acres) or more]

Hypothetical Wetland for Estimating Degree of Interspersion**Microtopography Cover Scale**

0 = Absent

1 = Present in very small amounts or if more common of marginal quality

2 = Present in moderate amounts, but not of highest quality or in small amounts of highest quality

3 = Present in moderate or greater amounts and of highest quality

Category 2

42

GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.or.us/dsw/401/401.html>

Last revised 2005-04-29

TVARAM Field Form Quantitative Rating

Site: Cinch River Site W007Rater(s): GristonDate: 01/24/2017

1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size)

Select one size class and assign score.

- ☐ >50 acres (>20.2 ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2 ha) (5) [BR/CM (6)]
☐ 10 to <25 acres (4 to <10.1 ha) (4) [BR/CM (6)]
☐ 3 to <10 acres (1.2 to <4 ha) (3) [BR/CM (5)]
☐ 0.3 to <3 acres (0.1 to <1.2 ha) (2) [BR/CM (3)]
☒ 0.1 to <0.3 acre (0.04 to <0.1 ha) (1) [BR/CM (2)]
☐ <0.1 acre (<0.04 ha) (0)

0.17 acre

Notes: BR/CM = adjusted points for Blue Ridge and Cumberland Mountains. If an open water body (excluding aquatic beds and seasonal mudflats) is >20 acres (8 ha), then add only 0.5 acre (0.2 ha) of it to the wetland size for Metric 1.

Sources/assumptions for size estimate (list):

Aerial Photos
NUT
Field Survey

10	11
max 14 pts.	subtotal

Metric 2. Upland Buffers and Surrounding Land Use

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☒ WIDE. Buffers average 50 m (164 ft) or more around wetland perimeter (7)
☐ MEDIUM. Buffers average 25 m to <50 m (82 to <164 ft) around wetland perimeter (4)
☐ NARROW. Buffers average 10 m to <25 m (32 ft to <82 ft) around wetland perimeter (1)
☐ VERY NARROW. Buffers average <10 m (<32 ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☒ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☐ LOW. Old field (>10 years), shrubland, young 2nd growth forest (5)
☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field (3)
☐ High. Urban, industrial, open pasture, row cropping, mining, construction (1)

2	32
max 30 pts.	subtotal

Metric 3. Hydrology

3a. Sources of water. Score all that apply.

- ☐ High pH groundwater (5)
☐ Other groundwater (3) [BR/CM (5)]
☐ Precipitation (1) [unless BR/CM primary source (5)]
☒ Seasonal/intermittent surface water (3)
☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☒ >0.7 m (27.6 in.) (3)
☐ 0.4 to 0.7 m (16 to 27.6 in.) (2) [BR/CM (3)]
☐ <0.4 m (<16 in.) (1) [BR/CM 0.15 to 0.4 m (6 to <16 in.) (2)]

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
☒ Recovered (7)
☐ Recovering (3)
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☒ 100-year floodplain (1)
☒ Between stream/lake and other human use (1)
☒ Part of wetland/upland (e.g., forest), complex (1)
☒ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl. check & avg.

- ☐ Semi- to permanently inundated/saturated (4)
☒ Regularly inundated/saturated (3) [BR/CM (4)]
☐ Seasonally inundated (2) [BR/CM (4)]
☐ Seasonally saturated in upper 30 cm (12 in.) (1) [BR/CM (2)]

Check all disturbances observed

- ☒ ditch
☒ tile (including culvert)
☐ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☐ filling/grading
☒ road bed/RR track
☐ dredging
☐ other _____

12	44
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
☒ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☒ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
☒ Recovered (6)
☐ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

- ☐ mowing
☐ grazing
☐ clearcutting
☐ selective cutting
☐ farming
☐ toxic pollutants
☐ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☐ woody debris removal
☒ sedimentation
☐ dredging
☐ nutrient enrichment

44
subtotal this page

Last revised 2005-04-29

TVARAM Field Form Quantitative Rating

Site: W007 Rater(s): Croton Date: 1/24/2011

44
subtotal previous page

3 47
max 10 pts subtotal

3
raw score*

Metric 5. Special Wetlands

*If the documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.

Select all that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide documentation for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc).

- ☐ Bog, fen, wet prairie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5), muck, organic soil layer (3)
- ☐ Assoc. forest (wetl. &/or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation]
- ☐ Sensitive geologic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5)
- ☐ Vernal pool (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3)
- ☐ Island wetland >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5)
- 3 ☒ Braided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3)
- ☐ Gross morph. adapt. in >5 trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3)
- ☐ Ecological community with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier]
- ☐ Known occurrence state/federal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] [exclude records which are only "historic"]
- ☐ Superior/enhanced habitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3)
- ☐ Cat. 1 (very low quality) : <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)

10 57
max 20 pts subtotal

Metric 6. Plant Communities, Interspersion, Microtopography**6a. Wetland vegetation communities.**

Score all present using 0 to 3 scale.

- 2 ☒ Aquatic bed
- 2 ☒ Emergent
- 2 ☒ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water <20 acres (8 ha)
- ☐ Moss/lichen. Other _____

6b. Horizontal (plan view) interspersion.

Select only one.

- 3 ☒ High (5)
- ☐ Moderately high (4) [BR/CM (5)]
- ☐ Moderate (3) [BR/CM (5)]
- ☐ Moderately low (2) [BR/CM (3)]
- ☐ Low (1) [BR/CM (2)]
- ☐ None (0)

6c. Coverage of invasive plants.

Add or deduct points for coverage.

- 2 ☒ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☐ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- 2 ☒ Vegetated hummocks/tussocks
- 1 ☒ Coarse woody debris >15 cm (6 in.)
- ☐ Standing dead >25 cm (10 in.) dbh
- ☐ Amphibian breeding pools

Vegetation Community Cover Scale

0 = Absent or <0.1 ha (<0.25 acre) contiguous acre

[BR/CM <0.04 ha (<0.1 acre)]

1 = Present and either comprises a small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality

2 = Present and either comprises a significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality

3 = Present and comprises a significant part or more of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low = Low species diversity &/or dominance of nonnative or disturbance tolerant native species

mod = Native species are dominant component of the vegetation, although nonnative &/or disturbance tolerant native species can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened or endangered species

high = A predominance of native species with nonnative sp &/or disturbance tolerant native sp absent or virtually absent, and high sp diversity and often but not always, the presence of rare, threatened or endangered species

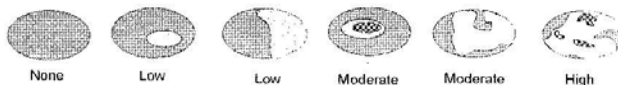
Mudflat and Open Water Class Quality

0 = Absent <0.1 ha (<0.25 acres) [BR/CM <0.04 ha (<0.1 acre)]

1 = Low 0.1 to <1 ha (0.25 to <2.5 acres) [BR/CM 0.04 to <0.2 ha (0.1 to <0.5 acre)]

2 = Moderate 1 to <4 ha (2.5 to <9.9 acres) [BR/CM 0.2 to <2 ha (0.5 to <5 acre)]

3 = High 4 ha (9.9 acres) or more [BR/CM 2 ha (5 acres) or more]

Hypothetical Wetland for Estimating Degree of Interspersion**Microtopography Cover Scale**

0 = Absent

1 = Present in very small amounts or if more common of marginal quality

2 = Present in moderate amounts, but not of highest quality or in small amounts of highest quality

3 = Present in moderate or greater amounts and of highest quality

Category 2

57

GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.oh.us/dsw/401/401.html>

Last revised 2005-04-29

Site: <i>WOOD</i>	Rater(s): <i>J. Gorton</i>	Date: <i>4/21/2011</i>
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<i>1</i>	<i>1</i>
max 6 pts.	subtotal

Metric 1. Wetland Area (size)

Select one size class and assign score.

- ☐ >50 acres (>20.2 ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2 ha) (5) [BR/CM (6)]
☐ 10 to <25 acres (4 to <10.1 ha) (4) [BR/CM (6)]
☐ 3 to <10 acres (1.2 to <4 ha) (3) [BR/CM (5)]
☐ 0.3 to <3 acres (0.1 to <1.2 ha) (2) [BR/CM (3)]
☒ 0.1 to <0.3 acre (0.04 to <0.1 ha) (1) [BR/CM (2)]
☐ <0.1 acre (0.04 ha) (0)

Notes: BR/CM = adjusted points for Blue Ridge and Cumberland Mountains. If an open water body (excluding aquatic beds and seasonal mudflats) is >20 acres (8 ha), then add only 0.5 acre (0.2 ha) of it to the wetland size for Metric 1.

Sources/assumptions for size estimate (list):

Field survey
NWI Maps
Aerial Photos

<i>7</i>	<i>12</i>
max 14 pts.	subtotal

Metric 2. Upland Buffers and Surrounding Land Use

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☐ WIDE. Buffers average 50 m (164 ft) or more around wetland perimeter (7)
☐ MEDIUM. Buffers average 25 m to <50 m (82 to <164 ft) around wetland perimeter (4)
☐ NARROW. Buffers average 10 m to <25 m (32 ft to <82 ft) around wetland perimeter (1)
☐ VERY NARROW. Buffers average <10 m (<32 ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☒ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☒ LOW. Old field (>10 years), shrubland, young 2nd growth forest (5)
☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field (3)
☐ High. Urban, industrial, open pasture, row cropping, mining, construction (1)

<i>15</i>	<i>27</i>
max 30 pts.	subtotal

Metric 3. Hydrology

3a. Sources of water. Score all that apply.

- ☐ High pH groundwater (5)
☐ Other groundwater (3) [BR/CM (5)]
☒ Precipitation (1) [unless BR/CM primary source (5)]
☒ Seasonal/intermittent surface water (3)
☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 m (27.6 in.) (3)
☐ 0.4 to 0.7 m (16 to 27.6 in.) (2) [BR/CM (3)]
☒ <0.4 m (<16 in.) (1) [BR/CM 0.15 to 0.4 m (6 to <16 in.) (2)]

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
☒ Recovered (7)
☐ Recovering (3)
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☐ 100-year floodplain (1)
☒ Between stream/lake and other human use (1)
☒ Part of wetland/upland (e.g., forest), complex (1)
☒ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl. check & avg.

- ☐ Semi- to permanently inundated/saturated (4)
☒ Regularly inundated/saturated (3) [BR/CM (4)]
☒ Seasonally inundated (2) [BR/CM (4)]
☐ Seasonally saturated in upper 30 cm (12 in.) (1) [BR/CM (2)]

Check all disturbances observed

- ☐ ditch
☒ tile (including culvert)
☐ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☐ filling/grading
☒ road bed/RR track
☐ dredging
☐ other _____

<i>11</i>	<i>30</i>
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
☒ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☐ Moderately good (4)
☒ Fair (3)
☐ Poor to fair (2)
☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
☒ Recovered (6)
☐ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

- ☐ mowing
☐ grazing
☐ clearcutting
☐ selective cutting
☐ farming
☐ toxic pollutants
☐ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☐ woody debris removal
☒ sedimentation
☐ dredging
☐ nutrient enrichment

<i>38</i>
subtotal this page

Last revised 2005-04-29

TVARAM Field Form Quantitative Rating

Cinch River Site

Site: W009

Rater(s): J Graton

Date: 4/21/2011

38
subtotal previous page0 38
max 10 pts subtotal0
raw score*

Metric 5. Special Wetlands

*If the documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.

Select all that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide documentation for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc).

- ☐ Bog, fen, wet prairie (10); acidophilic veg., mossy substrate >10 sq.m. sphagnum or other moss (5); muck, organic soil layer (3)
- ☐ Assoc. forest (wet, &/or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation]
- ☐ Sensitive geologic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5)
- ☐ Vernal pool (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3)
- ☐ Island wetland >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5)
- ☐ Braided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3)
- ☐ Gross morph. adapt. in >5 trees >10 in. (25 cm) dbh; buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3)
- ☐ Ecological community with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [use higher rank where mixed rank or qualifier]
- ☐ Known occurrence state/federal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) [use higher rank where mixed rank or qualifier] [exclude records which are only "historic"]
- ☐ Superior/enhanced habitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3)
- ☐ Cat. 1 (very low quality) : <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)

5 43
max 20 pts subtotal

Metric 6. Plant Communities, Interspersion, Microtopography

6a. Wetland vegetation communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ Emergent
- ☒ Shrub
- ☒ Forest
- ☐ Mudflats
- ☐ Open water <20 acres (8 ha)
- ☐ Moss/lichen, Other

6b. Horizontal (plan view) interspersion. Select only one.

- ☐ High (5)
- ☐ Moderately high (4) [BR/CM (5)]
- ☐ Moderate (3) [BR/CM (5)]
- ☒ Moderately low (2) [BR/CM (3)]
- ☐ Low (1) [BR/CM (2)]
- ☐ None (0)

6c. Coverage of invasive plants.

Add or deduct points for coverage.

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☒ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☐ Vegetated hummocks/lussocks
- ☐ Coarse woody debris >15 cm (6 in.)
- ☐ Standing dead >25 cm (10 in.) dbh
- ☐ Amphibian breeding pools

Vegetation Community Cover Scale

0 = Absent or <0.1 ha (0.25 acre) contiguous acre

[For BR/CM <0.04 ha (0.1 acre)]

1 = Present and either comprises a small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality

2 = Present and either comprises a significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality

3 = Present and comprises a significant part or more of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low = Low species diversity &/or dominance of nonnative or disturbance tolerant native species

mod = Native species are dominant component of the vegetation, although nonnative &/or disturbance tolerant native species can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened or endangered species

high = A predominance of native species with nonnative sp. &/or disturbance tolerant native sp. absent or virtually absent, and high sp. diversity and often but not always, the presence of rare, threatened, or endangered species

Mudflat and Open Water Class Quality

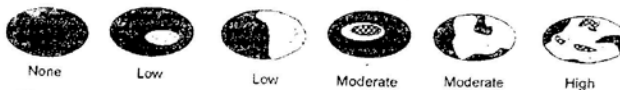
0 = Absent <0.1 ha (0.25 acres) [For BR/CM <0.04 ha (0.1 acre)]

1 = Low 0.1 to <1 ha (0.25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha (0.1 to 0.5 acre)]

2 = Moderate 1 to <4 ha (2.5 to 9.9 acres) [BR/CM 0.2 to <0.2 ha (0.5 to 5 acre)]

3 = High 4 ha (9.9 acres) or more [BR/CM 2 ha (5 acres) or more]

Hypothetical Wetland for Estimating Degree of Interspersion



Microtopography Cover Scale

0 = Absent

1 = Present in very small amounts or if more common of marginal quality

2 = Present in moderate amounts, but not of highest quality or in small amounts of highest quality

3 = Present in moderate or greater amounts and of highest quality

Category 2

43

GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.oh.us/dsw/401.401.html>

Last revised 2005-04-29

Site: W009Rater(s): T. GortonDate: 4/21/20113
max 5 pts.3
subtotal**Metric 1. Wetland Area (size)**

Select one size class and assign score.

- 3 ☒ >50 acres (>20.2 ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2 ha) (5) [BR/CM (6)]
☐ 10 to <25 acres (4 to <10.1 ha) (4) [BR/CM (6)]
☐ 3 to <10 acres (1.2 to <4 ha) (3) [BR/CM (5)]
☐ 0.3 to <3 acres (0.1 to <1.2 ha) (2) [BR/CM (3)]
☐ 0.1 to <0.3 acre (0.04 to <0.1 ha) (1) [BR/CM (2)]
☐ <0.1 acre (0.04 ha) (0)

Notes: BR/CM = adjusted points for Blue Ridge and Cumberland Mountains. If an open water body (excluding aquatic beds and seasonal mudflats) is >20 acres (8 ha), then add only 0.5 acre (0.2 ha) of it to the wetland size for Metric 1.

Sources/assumptions for size estimate (list):

Field Survey
Aerial Photos
NWI Data

12
max 14 pts.15
subtotal**Metric 2. Upland Buffers and Surrounding Land Use**

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- 6 ☒ WIDE. Buffers average 50 m (164 ft) or more around wetland perimeter (7)
☐ MEDIUM. Buffers average 25 m to <50 m (82 to <164 ft) around wetland perimeter (4)
☐ NARROW. Buffers average 10 m to <25 m (32 ft to <82 ft) around wetland perimeter (1)
☐ VERY NARROW. Buffers average <10 m (<32 ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- 6 12 ☒ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☒ LOW. Old field (>10 years), shrubland, young 2nd growth forest (5)
☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field (3)
☐ High. Urban, industrial, open pasture, row cropping, mining, construction (1)

29
max 30 pts.44
subtotal**Metric 3. Hydrology**

3a. Sources of water. Score all that apply.

- 12 ☒ High pH groundwater (5)
☒ Other groundwater (3) [BR/CM (5)]
☒ Precipitation (1) [unless BR/CM primary source (5)]
☒ Seasonal/intermittent surface water (3)
☒ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- 3 ☒ >0.7 m (27.6 in.) (3)
☐ 0.4 to 0.7 m (16 to 27.6 in.) (2) [BR/CM (3)]
☐ <0.4 m (<16 in.) (1) [BR/CM 0.15 to 0.4 m (6 to <16 in.) (2)]

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- 7 ☒ None or none apparent (12)
☐ Recovered (7)
☐ Recovering (3)
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- 3 ☒ 100-year floodplain (1)
☒ Between stream/lake and other human use (1)
☒ Part of wetland/upland (e.g., forest), complex (1)
☒ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl. check & avg.

- 4 ☒ Semi- to permanently inundated/saturated (4)
☐ Regularly inundated/saturated (3) [BR/CM (4)]
☐ Seasonally inundated (2) [BR/CM (4)]
☐ Seasonally saturated in upper 30 cm (12 in.) (1) [BR/CM (2)]

Check all disturbances observed

- ☐ ditch ☐ point source (nonstormwater)
☐ tile (including culvert) ☐ filling/grading
☐ dike ☒ road bed/RR track
☐ weir ☐ dredging
☐ stormwater input ☐ other _____

16
max 20 pts.60
subtotal**Metric 4. Habitat Alteration and Development**

4a. Substrate disturbance. Score one or double check and average.

- 3 ☒ None or none apparent (4)
☐ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- 6 ☒ Excellent (7)
☐ Very good (6)
☐ Good (5)
☐ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- 7 ☒ None or none apparent (9)
☐ Recovered (6)
☐ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

- ☒ mowing ☒ shrub/sapling removal
☐ grazing ☐ herbaceous/aquatic bed removal
☐ clearcutting ☐ woody debris removal
☐ selective cutting ☒ sedimentation
☐ farming ☐ dredging
☐ toxic pollutants ☐ nutrient enrichment

60
subtotal this page

TVARAM Field Form Quantitative Rating

Site: W009 Rater(s): J Grotan Date: 4/21/2011

60
subtotal previous page

10 70
max 10 pts subtotal

13
raw score*

Metric 5. Special Wetlands

*If the documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.

- Select all that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide documentation for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc).
- ☒ 5 Bog, fen, wet prairie (10); acidophilic veg., mossy substrate >10 sq m, sphagnum or other moss (5); muck, organic soil layer (3)
 - ☒ 5 Assoc. forest (wetl. &/or adj. upland) incl. >0.25 acre (0.1 ha) old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation]
 - ☒ 5 Sensitive geologic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5)
 - ☒ 5 Vernal pool (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3)
 - ☒ 3 Island wetland >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5)
 - ☒ 3 Braided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3)
 - ☒ 3 Gross morph. adapt. in >5 trees >10 in. (25 cm) dbh; buttress, multitrunk/stoot, stilted, shallow roots/tip-up, or pneumatophores (3)
 - ☒ 3 Ecological community with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier]
 - ☒ 3 Known occurrence state/federal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] [exclude records which are only "historic"]
 - ☒ 3 Superior/enhanced habitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3)
 - ☐ Cat. 1 (very low quality): <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)

20 90
max 20 pts subtotal

Metric 6. Plant Communities, Interspersion, Microtopography

6a. Wetland vegetation communities.
Score all present using 0 to 3 scale.

- 12
- ☒ 2 Aquatic bed
 - ☒ 2 Emergent
 - ☒ 3 Shrub
 - ☒ 3 Forest
 - ☒ 2 Mudflats
 - ☒ 2 Open water <20 acres (8 ha)
 - ☐ Moss/lichen, Other

6b. Horizontal (plan view) interspersion.
Select only one.

- 75
- ☒ 5 High (5)
 - ☐ Moderately high (4) [BR/CM (5)]
 - ☐ Moderate (3) [BR/CM (5)]
 - ☐ Moderately low (2) [BR/CM (3)]
 - ☐ Low (1) [BR/CM (2)]
 - ☐ None (0)

6c. Coverage of invasive plants.
Add or deduct points for coverage.

- 1
- ☐ Extensive >75% cover (-5)
 - ☐ Moderate 25-75% cover (-3)
 - ☒ Sparse 5-25% cover (-1)
 - ☐ Nearly absent <5% cover (0)
 - ☐ Absent (1)

6d. Microtopography.

- 9
- ☐ Score all present using 0 to 3 scale.
 - ☒ 3 Vegetated hummocks/tussocks
 - ☒ 3 Coarse woody debris >15 cm (6 in.)
 - ☒ 3 Standing dead >25 cm (10 in.) dbh
 - ☒ 3 Amphibian breeding pools

Vegetation Community Cover Scale

- 0 = Absent or <0.1 ha (0.25 acre) contiguous acre
[For BR/CM <0.04 ha (0.1 acre)]
- 1 = Present and either comprises a small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
- 2 = Present and either comprises a significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality
- 3 = Present and comprises a significant part or more of wetland's vegetation and is of high quality

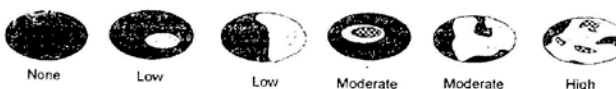
Narrative Description of Vegetation Quality

- low = Low species diversity &/or dominance of nonnative or disturbance tolerant native species
- mod = Native species are dominant component of the vegetation, although nonnative &/or disturbance tolerant native species can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened or endangered species
- high = A predominance of native species with nonnative sp &/or disturbance tolerant native sp absent or virtually absent, and high sp diversity and often but not always, the presence of rare, threatened, or endangered species

Mudflat and Open Water Class Quality

- 0 = Absent <0.1 ha (0.25 acres) [For BR/CM <0.04 ha (0.1 acre)]
- 1 = Low 0.1 to <1 ha (0.25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha (0.1 to 0.5 acre)]
- 2 = Moderate 1 to <4 ha (2.5 to 9.9 acres) [BR/CM 0.2 to <0.2 ha (0.5 to 5 acre)]
- 3 = High 4 ha (9.9 acres) or more [BR/CM 2 ha (5 acres) or more]

Hypothetical Wetland for Estimating Degree of Interspersion



None Low Low Moderate Moderate High

Microtopography Cover Scale

- 0 = Absent
- 1 = Present in very small amounts or if more common of marginal quality
- 2 = Present in moderate amounts, but not of highest quality or in small amounts of highest quality
- 3 = Present in moderate or greater amounts and of highest quality

Category 3

90

GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.oh.us/dsw/401/401.html>

Last revised 2005-04-29

Site: W010Rater(s): J. GatonDate: 4/22/2011

2	2
max 6 pts.	subtotal

Metric 1. Wetland Area (size)

Notes: BR/CM = adjusted points for Blue Ridge and Cumberland Mountains. If an open water body (excluding aquatic beds and seasonal mudflats) is >20 acres (8 ha), then add only 0.5 acre (0.2 ha) of it to the wetland size for Metric 1.

Select one size class and assign score.

- ☐ >50 acres (>20.2 ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2 ha) (5) [BR/CM (6)]
☐ 10 to <25 acres (4 to <10.1 ha) (4) [BR/CM (6)]
☐ 3 to <10 acres (1.2 to <4 ha) (3) [BR/CM (5)]
☒ 0.3 to <3 acres (0.1 to <1.2 ha) (2) [BR/CM (3)]
☐ 0.1 to <0.3 acre (0.04 to <0.1 ha) (1) [BR/CM (2)]
☐ <0.1 acre (0.04 ha) (0)

Sources/assumptions for size estimate (list):

Field Survey
National Wetland Inventory
SSURGO data (NRCS/SCS)

8	10
max 14 pts.	subtotal

Metric 2. Upland Buffers and Surrounding Land Use

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☐ WIDE. Buffers average 50 m (164 ft) or more around wetland perimeter (7)
☒ MEDIUM. Buffers average 25 m to <50 m (82 to <164 ft) around wetland perimeter (4)
☐ NARROW. Buffers average 10 m to <25 m (32 ft to <82 ft) around wetland perimeter (1)
☐ VERY NARROW. Buffers average <10 m (<32 ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☒ LOW. Old field (>10 years), shrubland, young 2nd growth forest (5)
☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field (3)
☐ High. Urban, industrial, open pasture, row cropping, mining, construction (1)

17	27
max 30 pts.	subtotal

Metric 3. Hydrology

3a. Sources of water. Score all that apply.

- ☐ High pH groundwater (5)
☒ Other groundwater (3) [BR/CM (5)]
☒ Precipitation (1) [unless BR/CM primary source (5)]
☒ Seasonal/intermittent surface water (3)
☒ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 m (27.6 in.) (3)
☐ 0.4 to 0.7 m (16 to 27.6 in.) (2) [BR/CM (3)]
☒ <0.4 m (<16 in.) (1) [BR/CM 0.15 to 0.4 m (6 to <16 in.) (2)]

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
☒ Recovered (7)
☒ Recovering (3)
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☐ 100-year floodplain (1)
☒ Between stream/lake and other human use (1)
☒ Part of wetland/upland (e.g., forest), complex (1)
☒ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl. check & avg.

- ☐ Semi- to permanently inundated/saturated (4)
☐ Regularly inundated/saturated (3) [BR/CM (4)]
☐ Seasonally inundated (2) [BR/CM (4)]
☒ Seasonally saturated in upper 30 cm (12 in.) (1) [BR/CM (2)]

Check all disturbances observed

- ☐ ditch
☒ tile (including culvert)
☐ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☐ filling/grading
☒ road bed/RR track
☐ dredging
☐ other

9	36
max 28 pts.	subtotal

Metric 4. Habitat Alteration and Development

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
☒ Recovered (3)
☒ Recovering (2)
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☒ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
☒ Recovered (6)
☒ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

- ☒ mowing
☐ grazing
☐ clearcutting
☐ selective cutting
☐ farming
☐ toxic pollutants
☒ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☐ woody debris removal
☐ sedimentation
☐ dredging
☐ nutrient enrichment

36
subtotal this page

TVARAM Field Form Quantitative Rating

Crack River Site

Site: W010

Rater(s): J. Grotan

Date: 4/22/2011

36
subtotal previous page5 41
max 10 pts subtotal5
raw score*

Metric 5. Special Wetlands

*If the documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.

Select all that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide documentation for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc).

- 5
- ☐ Bog, fen, wet prairie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3)
 - ☐ Assoc. forest (wet. &/or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation]
 - ☐ Sensitive geologic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5)
 - ☐ Vernal pool (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3)
 - ☐ Island wetland >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5)
 - ☐ Braided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3)
 - ☐ Gross morph. adapt. in >5 trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3)
 - ☐ Ecological community with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [use higher rank where mixed rank or qualifier]
 - ☐ Known occurrence state/federal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) [use higher rank where mixed rank or qualifier] [exclude records which are only "historic"]
 - ☐ Superior/enhanced habitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3)
 - ☐ Cat. 1 (very low quality): <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)

5 46
max 20 pts subtotal

Metric 6. Plant Communities, Interspersion, Microtopography

6a. Wetland vegetation communities.
Score all present using 0 to 3 scale.

- 1
- ☐ Aquatic bed
 - ☒ Emergent
 - ☒ Shrub
 - ☒ Forest
 - ☐ Mudflats
 - ☐ Open water <20 acres (8 ha)
 - ☐ Moss/lichen. Other _____

6b. Horizontal (plan view) interspersion.
Select only one.

- 2
- ☐ High (5)
 - ☐ Moderately high (4) [BR/CM (5)]
 - ☐ Moderate (3) [BR/CM (5)]
 - ☐ Moderately low (2) [BR/CM (3)]
 - ☐ Low (1) [BR/CM (2)]
 - ☐ None (0)

6c. Coverage of invasive plants.
Add or deduct points for coverage.

- 2
- ☐ Extensive >75% cover (-5)
 - ☒ Moderate 25-75% cover (-3)
 - ☒ Sparse 5-25% cover (-1)
 - ☐ Nearly absent <5% cover (0)
 - ☐ Absent (1)

6d. Microtopography.

- 1
- ☐ Vegetated hummocks/tussocks
 - ☒ Coarse woody debris >15 cm (6 in.)
 - ☒ Standing dead >25 cm (10 in.) dbh
 - ☐ Amphibian breeding pools

Vegetation Community Cover Scale

0 = Absent or <0.1 ha (0.25 acre) contiguous acre
[For BR/CM <0.04 ha (0.1 acre)]

1 = Present and either comprises a small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality

2 = Present and either comprises a significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality

3 = Present and comprises a significant part or more of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low = Low species diversity &/or dominance of nonnative or disturbance tolerant native species

mod = Native species are dominant component of the vegetation, although nonnative &/or disturbance tolerant native species can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened or endangered species

high = A predominance of native species with nonnative sp &/or disturbance tolerant native sp absent or virtually absent, and high sp diversity and often but not always, the presence of rare, threatened, or endangered species

Mudflat and Open Water Class Quality

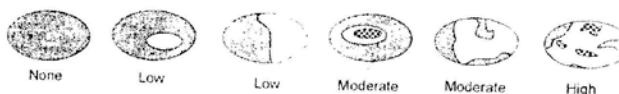
0 = Absent <0.1 ha (0.25 acres) [For BR/CM <0.04 ha (0.1 acre)]

1 = Low 0.1 to <1 ha (0.25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha (0.1 to 0.5 acre)]

2 = Moderate 1 to <4 ha (2.5 to 9.9 acres) [BR/CM 0.2 to <0.2 ha (0.5 to 5 acre)]

3 = High 4 ha (9.9 acres) or more [BR/CM 2 ha (5 acres) or more]

Hypothetical Wetland for Estimating Degree of Interspersion



Microtopography Cover Scale

0 = Absent

1 = Present in very small amounts or if more common of marginal quality

2 = Present in moderate amounts, but not of highest quality or in small amounts of highest quality

3 = Present in moderate or greater amounts and of highest quality

46 Category 2

GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.or.us/dow/401-401.html>

Last revised 2005-04-29

Site: W011Rater(s): J. GrotanDate: 4/28/2011

3	3
max 6 pts.	subtotal

Metric 1. Wetland Area (size)

Notes: BR/CM = adjusted points for Blue Ridge and Cumberland Mountains. If an open water body (excluding aquatic beds and seasonal mudflats) is >20 acres (8 ha), then add only 0.5 acre (0.2 ha) of it to the wetland size for Metric 1.

Select one size class and assign score.

- ☐ >50 acres (>20.2 ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2 ha) (5) [BR/CM (6)]
☐ 10 to <25 acres (4 to <10.1 ha) (4) [BR/CM (6)]
☒ 3 to <10 acres (1.2 to <4 ha) (3) [BR/CM (5)]
☐ 0.3 to <3 acres (0.1 to <1.2 ha) (2) [BR/CM (3)]
☐ 0.1 to <0.3 acre (0.04 to <0.1 ha) (1) [BR/CM (2)]
☐ <0.1 acre (0.04 ha) (0)

Sources/assumptions for size estimate (list):

Field Survey
 National Wetland Inventory
 SSURGO data (NRCS/SCS)

12	15
max 14 pts.	subtotal

Metric 2. Upland Buffers and Surrounding Land Use

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☒ WIDE. Buffers average 50 m (164 ft) or more around wetland perimeter (7)
☐ MEDIUM. Buffers average 25 m to <50 m (82 to <164 ft) around wetland perimeter (4)
☐ NARROW. Buffers average 10 m to <25 m (32 ft to <82 ft) around wetland perimeter (1)
☐ VERY NARROW. Buffers average <10 m (<32 ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☒ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☐ LOW. Old field (>10 years), shrubland, young 2nd growth forest (5)
☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field (3)
☐ High. Urban, industrial, open pasture, row cropping, mining, construction (1)

21	36
max 30 pts.	subtotal

Metric 3. Hydrology

3a. Sources of water. Score all that apply.

- ☐ High pH groundwater (5)
☐ Other groundwater (3) [BR/CM (5)]
☒ Precipitation (1) [unless BR/CM primary source (5)]
☒ Seasonal/intermittent surface water (3)
☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☒ >0.7 m (27.6 in.) (3)
☐ 0.4 to 0.7 m (16 to 27.6 in.) (2) [BR/CM (3)]
☐ <0.4 m (<16 in.) (1) [BR/CM 0.15 to 0.4 m (6 to <16 in.) (2)]

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
☒ Recovered (7)
☐ Recovering (3)
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☒ 100-year floodplain (1)
☒ Between stream/lake and other human use (1)
☒ Part of wetland/upland (e.g., forest), complex (1)
☒ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl. check & avg.

- ☐ Semi- to permanently inundated/saturated (4)
☒ Regularly inundated/saturated (3) [BR/CM (4)]
☒ Seasonally inundated (2) [BR/CM (4)]
☐ Seasonally saturated in upper 30 cm (12 in.) (1) [BR/CM (2)]

Check all disturbances observed

- ☒ ditch
☒ tile (including culvert)
☐ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☐ filling/grading
☒ road bed/RR track
☐ dredging
☐ other

13	49
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
☒ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
☐ Very good (6)
☒ Good (5)
☐ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
☒ Recovered (6)
☐ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

- ☐ mowing
☐ grazing
☐ clearcutting
☒ selective cutting
☐ farming
☐ toxic pollutants
☐ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☐ woody debris removal
☒ sedimentation
☐ dredging
☐ nutrient enrichment

49
subtotal this page

Last revised 2005-04-29

TVARAM Field Form Quantitative Rating

Site: W011 Rater(s): J. Gorton Date: 4/28/2011

49
subtotal previous page

3 52
max 10 pts subtotal

3
raw score*

Metric 5. Special Wetlands

*If the documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.

Select all that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide documentation for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc).

- ☐ Bog, fen, wet prairie (10); acidophilic veg., mossy substrate >10 sq m, sphagnum or other moss (5); muck, organic soil layer (3)
- ☐ Assoc. forest (wetl. &/or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation]
- ☐ Sensitive geologic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5)
- ☐ Vernal pool (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3)
- ☐ Island wetland >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5)
- ☐ Braided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3)
- ☐ Gross morph. adapt. in >5 trees >10 in. (25 cm) dbh; buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3)
- ☐ Ecological community with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier]
- ☐ Known occurrence state/federal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] [exclude records which are only "historic"]
- ☐ Superior/enhanced habitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3)
- ☐ Cat. 1 (very low quality): <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated or mined/excavated land (<10)

10 62
max 20 pts subtotal

Metric 6. Plant Communities, Interspersion, Microtopography

6a. Wetland vegetation communities. Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☐ Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water <20 acres (8 ha)
- ☐ Moss/lichen. Other _____

6b. Horizontal (plan view) interspersion. Select only one.

- ☐ High (5)
- ☐ Moderately high (4) [BR/CM (5)]
- ☐ Moderate (3) [BR/CM (5)]
- ☐ Moderately low (2) [BR/CM (3)]
- ☐ Low (1) [BR/CM (2)]
- ☐ None (0)

6c. Coverage of invasive plants. Add or deduct points for coverage.

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☐ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- ☐ Vegetated hummocks/tussocks
- ☐ Coarse woody debris >15 cm (6 in.)
- ☐ Standing dead >25 cm (10 in.) dbh
- ☐ Amphibian breeding pools

Vegetation Community Cover Scale

0 = Absent or <0.1 ha (0.25 acre) contiguous acre
[For BR/CM <0.04 ha (0.1 acre)]

- 1 = Present and either comprises a small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
- 2 = Present and either comprises a significant part of wetland's vegetation and is of moderate quality, or comprises a small part and is of high quality
- 3 = Present and comprises a significant part or more of wetland's vegetation and is of high quality

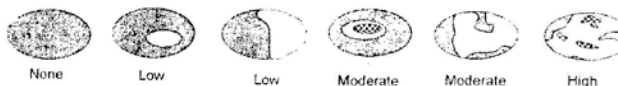
Narrative Description of Vegetation Quality

- low = Low species diversity &/or dominance of nonnative or disturbance tolerant native species
- mod = Native species are dominant component of the vegetation, although nonnative &/or disturbance tolerant native species can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare, threatened or endangered species
- high = A predominance of native species with nonnative sp &/or disturbance tolerant native sp absent or virtually absent, and high sp diversity and often but not always, the presence of rare, threatened, or endangered species

Mudflat and Open Water Class Quality

0 = Absent <0.1 ha (0.25 acres) [For BR/CM <0.04 ha (0.1 acre)]

- 1 = Low 0.1 to <1 ha (0.25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha (0.1 to 0.5 acre)]
- 2 = Moderate 1 to <4 ha (2.5 to 9.9 acres) [BR/CM 0.2 to <0.2 ha (0.5 to 5 acre)]
- 3 = High 4 ha (9.9 acres) or more [BR/CM 2 ha (5 acres) or more]

Hypothetical Wetland for Estimating Degree of Interspersion**Microtopography Cover Scale**

- 0 = Absent
- 1 = Present in very small amounts or if more common of marginal quality
- 2 = Present in moderate amounts, but not of highest quality or in small amounts of highest quality
- 3 = Present in moderate or greater amounts and of highest quality

62 **Category 3** **GRAND TOTAL (max 100 pts)**

Refer to the most recent QRAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.or.us/osw/401.401.html>

Last revised 2005-04-29

Site: W012

Rater(s): J Gorton

Date: 4/22/2011

max 6 pts.	subtotal
1	1

Metric 1. Wetland Area (size)

Select one size class and assign score.

- ☐ >50 acres (>20.2 ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2 ha) (5) [BR/CM (6)]
☐ 10 to <25 acres (4 to <10.1 ha) (4) [BR/CM (6)]
☐ 3 to <10 acres (1.2 to <4 ha) (3) [BR/CM (5)]
☐ 0.3 to <3 acres (0.1 to <1.2 ha) (2) [BR/CM (3)]
☒ 0.1 to <0.3 acre (0.04 to <0.1 ha) (1) [BR/CM (2)]
☐ <0.1 acre (0.04 ha) (0)

Notes: BR/CM = adjusted points for Blue Ridge and Cumberland Mountains. If an open water body (excluding aquatic beds and seasonal mudflats) is >20 acres (8 ha), then add only 0.5 acre (0.2 ha) of it to the wetland size for Metric 1.

Sources/assumptions for size estimate (list):

Field Survey
National Wetland Inventory
SSURGO data (NRCS/SCS)

max 14 pts.	subtotal
3	4

Metric 2. Upland Buffers and Surrounding Land Use

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☐ WIDE. Buffers average 50 m (164 ft) or more around wetland perimeter (7)
☐ MEDIUM. Buffers average 25 m to <50 m (82 to <164 ft) around wetland perimeter (4)
☒ NARROW. Buffers average 10 m to <25 m (32 ft to <82 ft) around wetland perimeter (1)
☐ VERY NARROW. Buffers average <10 m (<32 ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☐ LOW. Old field (>10 years), shrubland, young 2nd growth forest (5)
☒ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field (3)
☐ High. Urban, industrial, open pasture, row cropping, mining, construction (1)

max 30 pts.	subtotal
10	14

Metric 3. Hydrology

3a. Sources of water. Score all that apply.

- ☐ High pH groundwater (5)
☐ Other groundwater (3) [BR/CM (5)]
☒ Precipitation (1) [unless BR/CM primary source (5)]
☒ Seasonal/intermittent surface water (3)
☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 m (27.6 in.) (3)
☐ 0.4 to 0.7 m (16 to 27.6 in.) (2) [BR/CM (3)]
☒ <0.4 m (<16 in.) (1) [BR/CM 0.15 to 0.4 m (6 to <16 in.) (2)]

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
☐ Recovered (7)
☒ Recovering (3)
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☐ 100-year floodplain (1)
☐ Between stream/lake and other human use (1)
☐ Part of wetland/upland (e.g., forest), complex (1)
☐ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl. check & avg.

- ☐ Semi- to permanently inundated/saturated (4)
☐ Regularly inundated/saturated (3) [BR/CM (4)]
☒ Seasonally inundated (2) [BR/CM (4)]
☐ Seasonally saturated in upper 30 cm (12 in.) (1) [BR/CM (2)]

Check all disturbances observed

- ☒ ditch
☐ tile (including culvert)
☐ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☒ filling/grading
☐ road bed/RR track
☐ dredging
☐ other

max 20 pts.	subtotal
5	19

Metric 4. Habitat Alteration and Development

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
☐ Recovered (3)
☒ Recovering (2)
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☐ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☒ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
☐ Recovered (6)
☒ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

- ☒ mowing
☐ grazing
☐ clearcutting
☐ selective cutting
☐ farming
☐ toxic pollutants
☒ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☐ woody debris removal
☒ sedimentation
☐ dredging
☐ nutrient enrichment

subtotal this page
19

TVARAM Field Form Quantitative Rating

Climax River Site

Site: W012

Rater(s): J Gorton

Date: 4/22/2011

19

subtotal previous page

0	max 10 pts	subtotal
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0	raw score*
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Metric 5. Special Wetlands

*If the documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.

- Select all that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide documentation for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc).
- ☐ Bog, fen, wet prairie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3)
 - ☐ Assoc. forest (wetl. &/or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation]
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 - ☐ Braided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3)
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1	20
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max 20 pts. subtotal

Metric 6. Plant Communities, Interspersion, Microtopography

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- ☐ Moss/lichen. Other

6b. Horizontal (plan view) interspersion. Select only one.

- ☐ High (5)
- ☐ Moderately high (4) [BR/CM (5)]
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- ☒ Moderately low (2) [BR/CM (3)]
- ☐ Low (1) [BR/CM (2)]
- ☐ None (0)

6c. Coverage of invasive plants. Add or deduct points for coverage.

- ☒ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☐ Sparse 5-25% cover (-1)
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- ☐ Absent (1)

6d. Microtopography.

- Score all present using 0 to 3 scale.
- ☒ Vegetated hummocks/tussocks
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Mudflat and Open Water Class Quality

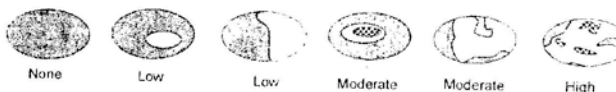
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Hypothetical Wetland for Estimating Degree of Interspersion



Microtopography Cover Scale

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20 Category 1

GRAND TOTAL (max 100 pts)

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Last revised 2005-04-29

