

Tennessee Valley Authority Site Clearing and Grading Specifications

1. General - The project manager with the clearing and/or grading contractor(s) shall review the environmental evaluation documents for the project or proposed activity (categorical exclusion checklist, environmental assessment, or environmental impact statement) along with all clearing and construction appendices, conditions in applicable general and/or site-specific permits, the storm water pollution prevention plan, open burning or demolition notification requirements, and any Tennessee Valley Authority (TVA) commitments to property owners. The contractor shall then plan and carry out operations using techniques consistent with good engineering and storm water management practices as outlined in TVA's best management practices (BMPs) manual. The contractor will protect areas that are to be left unaffected by access or clearing work at and adjacent to all work sites. In sensitive areas and their buffers, the contractor will retain as much native ground cover and other vegetation as possible. BMPs shall be installed before general site clearing or grading, with progressive stabilization BMPs applied from the perimeter toward the interior work areas as grading is completed. Any stabilized area that must be disturbed in subsequent steps shall have temporary BMPs installed until work is completed and the area is restabilized.

If the contractor fails to use BMPs or to follow environmental expectations discussed in the prebid, prework meeting or present in contract specifications, TVA will order corrective changes and additional work, as deemed necessary in TVA's judgment, to meet the intent of environmental laws and regulations or other guidelines. Major violations or continued minor violations will result in work suspension until correction of the situation is achieved or other remedial action is taken at the contractor's expense. Penalty clauses may be invoked as appropriate.

- 2. Regulations The clearing contractor shall comply with all applicable federal, state, and local environmental and antipollution laws, regulations, and ordinances, including without limitation, all air, water, solid and hazardous waste, noise, and nuisance laws, regulations, and ordinances. He or she shall secure, or ensure that TVA has secured, all necessary permits and authorizations and made all appropriate notifications to conduct work on the acres shown on the drawings and plan and profile for the contract. The contractor's designated project manager will actively seek to prevent, control, monitor, and safely abate all commonly recognized forms of workplace and environmental pollution. Permits or authorizations and any necessary certifications of trained employees knowledgeable of environmental requirements shall be documented with copies submitted to TVA's project manager or environmental specialist before work begins. The contractor and subcontractors will be responsible for meeting all conditions specified in permits. Permit conditions shall be reviewed in prework discussions.
- 3. <u>Land and Landscape Preservation</u> The contractor shall exercise care to preserve the condition of cleared soils by avoiding as much compacting and deep scarring as possible in areas not to be developed for buildings, structures, or foundations. As soon as possible after initial disturbance of the soil and in accordance with any permit(s) or other state or local environmental regulatory requirements, cover material shall be placed to prevent erosion and sedimentation of water bodies or conveyances to

surface water or groundwater. The placement of erosion/sediment controls shall begin at the perimeter and work progressively to the interior of the site. Repeated work in an area will require establishment of a ground cover immediately after each disturbance is completed. In areas outside the clearing, borrow, fill, or use and access areas, the natural vegetation shall be protected from damage. The contractor and his or her employees and subcontractors must not deviate from delineated access routes or use areas and must enter the site(s) at designated areas that will be marked. Clearing operations shall be conducted to prevent any unnecessary destruction, scarring, or defacing of the remaining natural vegetation and adjacent surroundings in the vicinity of the work. In sensitive public or environmental areas, appropriate buffer zones shall be observed by modifying the methods of clearing or reclearing, grading, borrow, or fill so that the buffer and sensitive area are protected. Some areas may require planting native low-growing plants or grasses to meet the criteria of regulatory agencies, executive orders, or commitments to special program interests.

- 4. Streamside Management Zones The clearing and/or grading contractor(s) must leave as many rooted ground cover plants as possible in buffer zones along streams and other bodies of water or wet-weather conveyances thereto. In such streamside management zones (SMZs), tall-growing tree species (trees that would interfere with TVA's National Electrical Safety Code clearances) shall be cut, and the stumps may be treated to prevent resprouting. Low-growing trees identified by TVA as marginal electrical clearance problems may be cut and then the stump treated with growth regulators to allow low, slow-growing canopy development and active root growth. Only approved herbicides shall be used, and herbicide application shall be conducted by certified applicators from the Transmission Operations and Maintenance (TOM) organization after initial clearing and construction. Cutting of trees within SMZs must be accomplished by using either hand-held equipment or other appropriate clearing equipment, such as a feller-buncher. The method will be selected based on sitespecific conditions and topography to minimize soil disturbance and impacts to the SMZ and surrounding area. Disturbed soils in SMZs must be stabilized by appropriate methods immediately after the access or site is cleared. Stabilization must occur within the time frame specified in applicable storm water permits or regulations. Stumps within SMZs may be cut close to the ground but must not be removed or uprooted. Trees, limbs, and debris shall be prevented from falling into water bodies or immediately removed from streams, ditches, ponds, and wet areas using methods that will minimize dragging or scarring the banks or stream bottom. No debris will be left in the water or watercourse. Equipment will cross streams, ditches, or wet areas only at locations designated by TVA after the application of appropriate erosion-control BMPs and consistent with permit conditions or regulatory requirements.
- 5. Wetlands In forested wetlands, tall trees will be cut near the ground, leaving stumps and roots in place. The cambium may be treated with herbicides applied by certified applicators from the TOM organization to prevent regrowth. Understory trees that must be initially cut and removed may be allowed to grow back or may be treated with tree growth regulators selectively to slow growth and increase the reclearing cycle. The decision will be situationally made based on existing ground cover, wetland type, and tree species, since tall tree removal may "release" understory species and allow them to quickly grow to "electrical clearance problem" heights. In many circumstances, herbicides labeled for water and wetland use may be used in reclearing.

At substation, switching stations, and communications sites, wetlands are avoided unless there is no feasible alternative.

- 6. Sensitive Area Preservation If prehistoric or historic artifacts or features that might be of archaeological or historical significance are discovered during clearing, grading, borrow, or fill operations, the activity shall immediately cease within a 100-foot radius, and a TVA project manager, an environmental specialist, and the TVA Cultural Resources program manager shall be notified. The site shall be protected and left as found until a determination about the resources, their significance, and site treatment is made by TVA's Cultural Resources Program. Work may continue beyond the finding zone and the 100-foot radius beyond its perimeter.
- 7. Water Quality Control The contractor's clearing, grading, borrow and fill, and/or disposal activities shall be performed using BMPs that will prevent erosion and entrance of spillage, contaminants, debris, and other pollutants or objectionable materials into drainageways, surface waters, or groundwater. Special care shall be exercised in refueling equipment to prevent spills. Fueling areas shall be remote from any sinkhole, crevice, stream, or other water body. Open burning debris shall be kept away from streams and ditches and shall be incorporated into the soil. Only materials allowed to be burned under an open burning permit may be incorporated into the soil.

The clearing and grading contractor(s) and subcontractors will erect and (when TVA or contract construction personnel are unable) maintain BMPs, such as silt fences, on steep slopes and adjacent to any steam, wetland, or other water body. BMPs will be inspected by the TVA field engineer or other designated TVA or contractor personnel routinely and at least as frequently as required by the permit or good management practices and during periods of high runoff; any necessary repairs will be made as soon as practicable. BMP runoff sampling will be conducted in accordance with permit requirements. Records of all inspections and sampling will be maintained on site, and copies of inspection forms and sampling results will be forwarded to the TVA environmental specialist.

8. Turbidity and Blocking of Streams - If temporary clearing, grading, borrow, or fill activities must interrupt natural drainage, appropriate drainage facilities and erosion/sediment controls shall be provided to avoid erosion and siltation of streams and other water bodies or water conveyances. In Tennessee, conditions of an Aquatic Resource Alteration Permit shall be met. Turbidity levels in receiving waters or at storm water discharge points shall be monitored, documented, and reported if required by the applicable permit. Erosion and sediment control measures such as silt fences, water bars, and sediment traps shall be installed as soon as practicable after initial access, site, borrow, fill, or right-of-way disturbance and after sequential disturbance of stabilized areas due to stepwise construction requirement in accordance with applicable permit or regulatory requirements.

On rights-of-way, mechanized equipment shall not be operated in flowing water except when approved and then only to construct necessary stream crossings under direct quidance of TVA.

Construction of stream fords or other crossings will only be permitted at approved locations and to current TVA design or construction access road standards. At any construction site, material shall not be deposited in watercourses or within stream bank

areas where it could be washed away by high stream flows. Any clearing debris that enters streams or other water bodies shall be removed immediately. Appropriate U.S. Army Corps of Engineers and state permits shall be obtained for stream or wetland crossings.

- 9. <u>Air Quality Control</u> The clearing or grading contractor shall take appropriate actions to limit the amount of air emissions created by clearing and disposal operations to be well within the limits of clearing or burning permits and/or forestry or local fire department requirements. All operations must be conducted in a manner that prevents nuisance conditions or damage to adjacent land, crops, dwellings, highways, or people. If building renovation or demolition is involved, the required air quality organization shall be notified the minimum 10 days in advance, and if the start date is delayed, renotified to start the clock again.
- 10. <u>Dust and Mud Control</u> Clearing, grading, borrow, fill, or transport activities shall be conducted in a manner that minimizes the creation of fugitive dust. This may require limitations as to type of equipment, allowable speeds, and routes utilized. Control measures such as water, gravel, etc., or similar measures may be used subject to TVA approval. On new construction sites and easements, the last 100 feet before an access road approaches a county road or highway shall be graveled to prevent transfer of mud onto the public road.
- 11. <u>Burning</u> The contractor shall obtain applicable permits and approvals to conduct controlled burning. The contractor will comply with all provisions of the permit, notification or authorization including burning site locations, controlled draft, burning hours, and such other conditions as stipulated. If weather conditions such as wind speed or wind direction change rapidly, the contractor's burning operation may be temporarily stopped by TVA's field engineer. The debris to be burned shall be kept as clean and dry as possible and stacked and burned in a manner that produces the minimum amount of smoke. Residue from burning will be disposed of according to permit stipulations. No fuel starters or enhancements other than kerosene will be allowed.
- 12. <u>Smoke and Odors</u> The contractor will properly store and handle combustible and volatile materials that could create objectionable smoke, odor, or fumes. The contractor shall not burn oil or refuse that includes trash, rags, tires, plastics, or other manufactured debris.
- 13. Vehicle Exhaust Emissions The contractor shall maintain and operate equipment in a manner that limits vehicle exhaust emissions. Equipment and vehicles will be kept within the manufacturer's recommended limits and tolerances. Excessive exhaust gases will be eliminated, and inefficient operating procedures will be revised or halted until corrective repairs or adjustments are made.
- 14. <u>Vehicle Servicing</u> Routine maintenance of vehicles will not be performed on the site, right-of-way, or access route. However, if emergency or "have to" situations arise, minimal/temporary maintenance to vehicles will occur in order to mobilize the vehicle to an off-site maintenance shop. Some heavy equipment may have to be serviced on the right-of-way, site, or access route, except in designated sensitive areas. The clearing, grading, borrow, or fill contractor will properly maintain these vehicles with approved spill protection controls and countermeasures. If emergency maintenance in a

- sensitive or questionable area arises, the Area Environmental Program Administration or project manager will be consulted. All wastes and used oils will be properly recovered, handled, and disposed/recycled. Equipment shall not be temporarily stored in stream floodplains, whether overnight or on weekends or holidays.
- 15. <u>Noise Control</u> The contractor shall take steps to avoid the creation of excessive sound levels for employees, the public, or the site and adjacent property owners. Concentration of individual noisy pieces as well as the hours and locations of operation should be considered.
- 16. <u>Noise Suppression</u> All internal combustion engines shall be properly equipped with mufflers. The equipment and mufflers shall be maintained at peak operating efficiency.
- 17. <u>Sanitation</u> A designated representative of TVA or the clearing, grading, borrow, fill, or construction contractor shall contract a sanitary contractor who will provide sanitary chemical toilets convenient to all principal points of operation for every working party and at each construction step. The facilities shall comply with applicable federal, state, or local health laws and regulations. They shall not be located closer than 100 feet to any stream or tributary or to any wetland. The facilities shall be required to have proper servicing and maintenance, and the waste disposal contractor shall verify in writing that the waste disposal will be in state-approved facilities. Employees shall be notified of sanitation regulations and shall be required to use the toilet facilities.
- 18. <u>Refuse Disposal</u> The clearing, grading, borrow, fill, or construction contractor and subcontractor(s) shall be responsible for daily cleanup and proper labeling, storage, and disposal of all refuse and debris on the site produced by his or her operations and employees. Facilities that meet applicable regulations and guidelines for refuse collection will be required. Only approved transport, storage, and disposal areas shall be used. Records of waste generation shall be maintained for a site and shall be provided to the project manager and environmental specialist assigned to the project.
- 19. <u>Brush and Timber Disposal (Initial Clearing)</u> For initial clearing, trees are commonly part of the contractor's contract to remove as they wish. Trees may be removed from the site for lumber or pulpwood, or they may be chipped or stacked and burned. All such activities must be coordinated with the TVA field engineer and the open burning permits; notifications and regulatory requirements must be met. On rights-of-way, trees may be cut and left in place only in areas specified by TVA and approved by appropriate regulatory agencies. These areas may include sensitive wetlands or SMZs where tree removal would cause excessive ground disturbance or in very rugged terrain where windrowed trees are used as sediment barriers along the edge of the right-of-way, site, or access.

Trees that have been cut may not be left on a substation, switching station, or communications site.

20. <u>Restoration of Site</u> - All disturbed areas, with the exception of farmland under cultivation and any other areas as may be designated by TVA's specifications, shall be stabilized in the following manner unless the property owner and TVA's engineer specify a different method:

- A. The subsoil shall be loosened to a minimum depth of 6 inches if possible and worked to remove unnatural ridges and depressions.
- B. If needed, appropriate soil amendments will be added.
- C. All disturbed areas will initially be seeded with a temporary ground cover such as winter wheat, rye, or millet, depending on the season. Perennials may also be planted during initial seeding if proper growing conditions exist. Final restoration and final seeding will be performed as line, site, or communications facilities construction is completed. Final seeding will consist of permanent perennial grasses such as those outlined in TVA's A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities (TVA, 2017). Exceptions would include those areas designated as native grass planting areas. Initial and final restoration will be performed by the clearing contractor with emphasis on using landscaping materials provided in guidelines for low maintenance native vegetation use.
- D. TVA holds the option, depending upon the time of year and weather condition, to delay or withdraw the requirement of seeding until more favorable planting conditions are certain. In the meantime, other stabilization techniques must be applied.
- E. Vegetation designated by the Federal Invasive Species Council must be eliminated at the work site, and equipment being transported from location to location must be inspected to ensure removal and destruction of live material.

References

Tennessee Valley Authority. 2017. A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities, Revision 3. Edited by G. Behel, S. Benefield, R. Brannon, C. Buttram, G. Dalton, C. Ellis, C. Henley, T. Korth, T. Giles, A. Masters, J. Melton, R. Smith, J.Turk, T. White, R. Wilson. Chattanooga, TN.: Retrieved from https://www.tva.com/Energy/Transmission-System/Transmission-System-Projects (n.d.).

Revision July 2017



F	U.S. Departmen			ATING			
PART I (To be completed by Federal Agend	cy)	Date Of I	Land Evaluation	Request			
Name of Project		Federal A	Agency Involved	<u>·</u>			
5			and State				
PART II (To be completed by NRCS)		Date Red	quest Received	Ву	Person C	ompleting For	rm:
Does the site contain Prime, Unique, Statew	vide or Local Important Farmland		YES NO	Acres Ir	rigated	Average	Farm Size
(If no, the FPPA does not apply - do not con	nplete additional parts of this forn	n)					
Major Crop(s)	Farmable Land In Govt.	Jurisdiction]	Amount of F	armland As	Defined in FF	PPA
	Acres: %			Acres:	%		
Name of Land Evaluation System Used	Name of State or Local S	ite Assess	ment System	Date Land E	valuation R	eturned by Ni	RCS
PART III (To be completed by Federal Ager	ncv)				Alternative	Site Rating	_
A. Total Acres To Be Converted Directly				Site A	Site B	Site C	Site D
B. Total Acres To Be Converted Indirectly							
C. Total Acres In Site							
PART IV (To be completed by NRCS) Land	d Evaluation Information						
, , , , , , , , , , , , , , , , , , , ,							
A. Total Acres Prime And Unique Farmland	Increase to the Comment of						
B. Total Acres Statewide Important or Local C. Percentage Of Farmland in County Or Local	·						
D. Percentage Of Farmland in Govt. Jurisdic		vo Valuo					
		ve value					
PART V (To be completed by NRCS) Land Relative Value of Farmland To Be Co		s)					
PART VI (To be completed by Federal Age			Maximum	Site A	Site B	Site C	Site D
(Criteria are explained in 7 CFR 658.5 b. For 1. Area In Non-urban Use	Corridor project use form NRCS-	CPA-106)	Points (15)				
Area in Non-urban Use Perimeter In Non-urban Use			(10)				
Percent Of Site Being Farmed			(20)				
Protection Provided By State and Local (Sovernment		(20)				
Florection Florided By State and Local Co. Distance From Urban Built-up Area	Jovenninent		(15)				
Distance To Urban Support Services			(15)				
7. Size Of Present Farm Unit Compared To	Δverage		(10)				
Creation Of Non-farmable Farmland	Average		(10)				
Availability Of Farm Support Services			(5)				
10. On-Farm Investments			(20)				
11. Effects Of Conversion On Farm Support	Services		(10)				
12. Compatibility With Existing Agricultural U			(10)				
TOTAL SITE ASSESSMENT POINTS			160				
PART VII (To be completed by Federal A	gency)						
Relative Value Of Farmland (From Part V)	g,,		100				
Total Site Assessment (From Part VI above	or local site assessment)		160				
TOTAL POINTS (Total of above 2 lines)	·		260				
,				Was A Loca	Site Asses	sment Used?	1
Site Selected:	Date Of Selection			YES	s 🗌	NO 🗌	
Reason For Selection: Name of Federal agency representative comp	oleting this form:				ח	ate:	

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

- Step 1 Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, http://fppa.nrcs.usda.gov/lesa/.
- Step 2 Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s)of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/scripts/ndISAPI.dll/oip_public/USA_map, or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)
- Step 3 NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.
- Step 4 For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.
- Step 5 NRCS will return the original copy of the form to the Federal agency involved in the project, and retain a file copy for NRCS records.
- Step 6 The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.
- Step 7 The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

(For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

- 1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
- 2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

- 1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weighted a maximum of 25 points and criterion #11 a maximum of 25 points.
- 2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160. Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

 $\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \text{ X } 160 = 144 \text{ points for Site A}$

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.





Golden Triangle Solar Project Wetland and Waterbody Delineation Report



MS Solar 5, LLC

Golden Triangle Solar Project

Revision 1.0 6/18/2020

Golden Triangle Solar Project Wetland and Waterbody Delineation Report

prepared for

MS Solar 5, LLC Golden Triangle Solar Project Artesia, MS

Revision 1.0 6/18/2020

prepared by

Burns & McDonnell Engineering Company, Inc. Atlanta, Georgia

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EXECUTIVE SUMMARY

MS Solar 5, LLC, is evaluating a site in Lowndes County, Mississippi for potential development of a 200 megawatt (MW) solar energy facility (Golden Triangle Solar Project or Project). Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) was contracted by MS Solar 5, LLC, to provide wetland delineation services for the proposed Project, specifically potential parcels upon which solar array facility sites may be installed, in Lowndes County, Mississippi (**Figure 1, Appendix A**). The Survey Area consists of approximately 3,980 acres of land that is predominantly used for agriculture. The Project is in the southeastern quadrant of the US Hwy Alt 45 and Mississippi Hwy 182 intersection in Mayhew and Artesia, MS, which is approximately 8 miles east of Starkville and 10 miles west of Columbus. The Project was surveyed for ecological resources on March 3-April 8, April 20-23, May 4-8, and June 10-11, 2020.

The Survey Area is composed of four distinct vegetative/land use communities, active agriculture, bottomland hardwood forest, upland forest, and utility rights-of way (ROW). A total of 178 aquatic resources were identified within the Survey Area for the Project including 93 ephemeral, intermittent, or perennial streams, 28 ponds, and 57 wetlands. These features may be subject to Section 404 of the Clean Water Act (CWA) regulations.

MS Solar 5, LLC i Burns & McDonnell

TABLE OF CONTENTS

ı	FY	E	CI	117	Г۱\	/F	SI		ИN	1 /	R	V	,
	ᄗ	·⊏	u	u		ᅜ	- OI	Uľ	VIIV	/I/	۱п	. 1	

	00114	LOMMAN	Page No.
1.0	INTF	RODUCTION	1-1
2.0	MET	HODOLOGY	2-1
	2.1	Existing Data Review	
	2.2	Environmental Field Survey	2-1
	2.3	Wetland and Waterbody Classifications	2-2
3.0	RES	ULTS AND DISCUSSION	3-4
	3.1	Existing Data Review	3-4
		3.1.1 Online Mapping and Databases	3-4
		3.1.2 Climate Information	
		3.1.3 Previous Delineations and Jurisdictional Determinations	3-6
	3.2	Wetland Delineation Survey	3-6
		3.2.1 Vegetation and Land Use Communities	3-6
		3.2.2 Waters of the US	3-9
	3.3	Conclusions	3-16
4.0	REF	ERENCES	4-18
APP	ENDIX ENDIX	A - FIGURES B - REPRESENTATIVE PHOTOGRAPHS C - RAINFALL DATA (STARKVILLE, MS) D - REPRESENTATIVE WETLAND DETERMINATION DATA FORMS	

LIST OF TABLES

		<u>Page No.</u>
Γable 3-1:	Historic Rainfall Data (Starkville, MS)	3-5
Γable 3-2:	Waterbodies within the Survey Area	3-9
Γable 3-3:	Wetlands Identified in the Survey Area	3-14
Γable 3-4:	Habitat Types	Error! Bookmark not defined.

LIST OF ABBREVIATIONS

Abbreviation Term/Phrase/Name

1987 Manual 1987 Corps of Engineers Wetlands Delineation Manual

° F Degrees Fahrenheit

Burns & McDonnell Engineering Company, Inc.

CWA Clean Water Act

FEMA Federal Emergency Management Agency

GPS Global Positioning Systems

HUC Hydrologic Unit Code

MSU Mississippi State University

NAIP National Agriculture Imagery Program

NFHL National Flood Hazard Layer

NHD National Hydrography Dataset

NRCS Natural Resources Conservation Service

NWI National Wetland Inventory

PEM Palustrine Emergent Wetland

PFO Palustrine Forested Wetland

PSS Palustrine Scrub-shrub Wetland

PUB Palustrine Unconsolidated Bottom - Pond

Regional Supplement to the Corps of Engineers Wetland Delineation

Manual: Atlantic and Gulf Coast Plain Region - Version 2.0

SSURGO Soil Survey Geographic

Survey Area The approximately 3,980 acres that were evaluated during field surveys

USACE U.S. Army Corps of Engineers

USDA U.S. Department of Agriculture

USEPA U.S. Environmental Protection Agency

USFWS U.S. Fish and Wildlife Service

USGS U.S. Geological Survey

WETS NRCS's Climate Analysis for Wetlands Table

MS Solar 5, LLC i Burns & McDonnell

1.0 INTRODUCTION

MS Solar 5, LLC plans to construct a new utility scale solar farm and associated infrastructure on certain parcels in Lowndes County, Mississippi. The Project is bounded by Hwy 82 to the north; Catalpa Creek, Artesia West Point Road/Old Mayhew Road, and Railroad Street to the West; and Gilmer Wilburn Road to the South. The Project extends from approximately 0.25 mile southeast of Mayhew, Mississippi to 0.25 mile east of Artesia, Mississippi. The Project has the potential to impact wetlands or other water bodies that may be under the jurisdiction of the US Army Corps of Engineers (USACE) as designated by Section 404 of the Clean Water Act (CWA). Burns and McDonnell teamed with Edwards-Pittman Environmental, Inc. to conduct a wetland delineation for the Project to evaluate the presence of wetlands and other water bodies, including streams, drainages, and ponds. The delineation was conducted within numerous parcels being considered for the proposed Project (Survey Area) as identified by MS Solar 5, LLC. The Survey Area included in the wetland delineation totaled approximately 3,980 acres.

2.0 METHODOLOGY

The following discussions summarize the methods used for the review of existing data and the wetland delineation.

2.1 Existing Data Review

Burns & McDonnell reviewed available background information for the proposed Project prior to conducting a site visit. This available background information included:

- U.S. Geological Survey (USGS) 7.5-minute topographic maps (Artesia and Bent Oak, MS quadrangles),
- USGS National Hydrography Dataset (NHD),
- U.S. Fish & Wildlife Service (USFWS) National Wetland Inventory (NWI) maps,
- National Agriculture Imagery Program (NAIP) aerial photography (2020),
- Federal Emergency Management Agency (FEMA) 2020 National Flood Hazard Layer (NFHL),
- U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) 2019
 Soil Survey Geographic (SSURGO) digital data for Lowndes County, Mississippi,
- Any wetland delineations performed in adjacent or abutting areas within the last five years, and
- NRCS Climate Analysis for Wetlands Table (WETS Table).

Figure sets 2 and 3 in Appendix A depict this data. A summary of historic and recent rainfall data is provided in Section 3, below.

2.2 Environmental Field Survey

A wetland delineation was completed March 3-April 8, April 20-23, May 4-8, and June 9-11, 2020. The delineation was conducted in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual (1987 Manual) and the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coast Plain Region – Version 2.0 (Regional Supplement).

Systematic transect lines were not used as part of the field delineation methodology due to the characteristics of the Study Area. Wetland data points were established as verification of the known or suspected wetland areas or other waters of the U.S. and to confirm the primary non-wetland habitat areas. All wetland points and potential waters of the U.S. were identified on Project mapping using Global Positioning Systems (GPS) with submeter accuracy.

Wetland (and non-wetland) points were established using the 1987 Manual and Regional Supplement based on observations of vegetation, topographic and hydrologic features, transitions in the field, and soils. Soil samples were taken using either a soil probe, hand auger, or shovel to a minimum depth of 12 inches. Munsell Color Charts were used to reference soil matrix, mottle and chroma. Observations were documented on the USACE Atlantic and Gulf Coastal Plain Regional Wetland Determination Data Forms from the Regional Supplement (**Appendix D**).

2.3 Wetland and Waterbody Classifications

Under typical conditions, wetlands are defined by three key criteria: vegetation, hydrology, and soils. Wetlands in the Survey Area that are anticipated to be jurisdictional are considered part of a palustrine wetland system within either a forested class (PFO), scrub-shrub class (PSS), unconsolidated bottom (PUB) and/or an emergent class (PEM).

Palustrine forested wetlands consist of an overstory dominated by deciduous broad-leaved tree species such as maples, elms, and oaks, and an assortment of herbaceous plants and vines in the understory. The dominant tree and sapling species found in the Survey Area included water oaks (*Quercus nigra*); green ash (*Fraxinus pennsylvanica*), sugarberry (*Celtis laevigata*), osage orange (*Maclura pomifera*), water locust, (*Gleditsia aquatica*), box elder (*Acer negundo*), red maple (*Acer rubrum*), American sycamore (*Platanus occidentalis*), American elm (*Ulmus americana*), and willow oak (*Quercus phellos*). Common vegetation comprising the understory includes poison ivy (*Toxicodendron radicans*), butterweed (*Packera glabella*), Virginia creeper (*Parthenocissus quinquefolia*), blackhaw (*Viburnum prunifolium*), resurrection fern (*Pleopeltis polypodioides*), and soft rush (*Juncus effusus*). Primary hydrological indicators observed in PFO wetlands include surface water, saturation in the upper 12 inches, water marks and/or water stained leaves, and sediment deposits.

Palustrine scrub-shrub wetlands typically occur where periodic mowing or animal activity prevent the establishment of mature tree species, but still allows for the establishment of shrubs and herbaceous species. Red maples and willows commonly appeared as saplings in scrub-shrub wetlands. Typical, dominant scrub shrub species encountered during surveys included osage orange, green ash, box elder, butterweed, bulbous bittercress, and soft rush. Primary hydrological indicators observed in PSS wetlands include surface water, saturation in the upper 12 inches, water marks and/or water stained leaves, and sediment deposits.

Species commonly found in the **palustrine emergent wetlands** along the Survey Area include joe-pye-weed (*Eutrochium fistulosum*), woolgrass (*Scirpus cyperinus*), prairie ironweed (*Vernonia fasciculata*),

curly dock (*Rumex crispus*), blackberries (*Rubus* spp.), and soft rush. Primary hydrological indicators observed in PEM wetlands include surface water and saturation in the upper 12 inches.

Perennial streams are typically characterized by a well-defined channel that contains waterflow all year. Due to the volume of rainfall that occurred in the Survey Area, the main source of flow for all streams present at the time of surveys was storm water runoff.

Intermittent streams also have a well-defined channel, with little to no vegetation through the middle; however, these streams may not flow year-round. All intermittent streams within the Survey Area presented greater than average flow due to stormwater runoff at the time of surveys. Under typical conditions, the intermittent streams within the Survey Area likely only contain water flow in the late winter and early spring when ground water levels are higher.

Ephemeral streams exist within the open agricultural and pasture throughout the Survey Area. These areas have been used for row crops, hay production, and livestock grazing areas and over the past century drainage improvements have been made. These are primarily drainages, intended to aid in agricultural production, have altered the historical drainage patterns that would have existed prior to farming in this region.

3.0 RESULTS AND DISCUSSION

The following sections describe the results of the desktop data review and the completed wetland delineation survey.

3.1 Existing Data Review

The initial phase of this study included a comprehensive review and assessment of all available information related to the Survey Area and adjacent properties.

3.1.1 Online Mapping and Databases

The existing USGS topographic maps were reviewed to familiarize Burns & McDonnell wetland personnel with the topography and potential locations of wetlands and other water bodies (Figure Set 2, Appendix A). The USGS topographic maps indicate the Survey Area crosses open fields with gentle slopes. There is a small area containing steeper slopes, which is visible on the maps. This area was surveyed; however, the topography is not favorable for solar development in certain locations due to slope direction and/or steepness.

A review of FEMA's NFHL indicates multiple locations within the Survey Area are within a 100-year floodplain as well as a regulatory floodway (Figure Set 2, Appendix A). The floodplain is predominately associated with Catalpa Creek, which comprises the northwest boundary of the Survey Area.

The NWI data identified a variety of wetland types, primarily associated with riparian areas along perennial stream. The NHD data identified perennial and intermittent streams, as well as manmade ephemeral agricultural stormwater conveyances and drainages (Figure Set 2, Appendix A). According to the available mapping, drain Basing the presence or absence of wetlands on only NWI maps cannot be assumed as an accurate assessment of potentially occurring jurisdictional wetlands. Wetland identification criteria differ between the USFWS and the USACE. As a result, wetlands shown on an NWI map may not be under the jurisdiction of the USACE; likewise, all USACE-jurisdictional wetlands are not always identified on NWI maps. Therefore, a detailed field survey was conducted to identify any wetlands or other water bodies that may be present.

The USDA NRCS SSURGO digital data indicate that portions of more than 20 soil map units are within the Survey Area (Figure Set 3, Appendix A). About 2,540 acres of the mapped soils (or approximately 64 percent of the Survey Area) are on the hydric soil lists (Map Unit Soil Key, Appendix A). The Survey Area is located within MLRA-135A (Alabama and Mississippi Blackland Prairie). Therefore, upland

soils will exhibit a low chroma matrix, which is characteristic of the native parent material and is not necessarily caused by extensive soil saturation.

The 2018 NAIP aerial photography indicates the Survey Area consists largely of actively cultivated fields with limited wooded and silviculture areas (Figure Set 4, Appendix A).

3.1.2 Climate Information

Prior to initiating pedestrian surveys at the beginning of March, the project area underwent numerous intense rain events with the region experiencing serious flooding in some areas. With 2019 being one of the wettest years on record in Starkville, the additional heavy rains in early 2020 increased the height of the water table and the high saturation levels in the region causing severe runoff and flooding events throughout the area (Vrbin, 2020). Rainfall for the year was above average at the time of survey as shown in Table 3-1.

Recorded Period Total Rainfall Normal Rainfall 2015 - total 59.4 55.22 55.22 2016 - total 49.83 2017 - total 55.22 58.05 68.19 2018 - total 55.22 2019 - total 88.88 55.22 5.40 January 2020 10.52 February 2020 14.96 5.70 4.85 March 2020 6.80 4.94 April 2020 11.6 May 2020 1.62 4.58

Table 3-1: Historic Rainfall Data (Starkville, MS)

Sources: MSU, 2020 and U.S. Climate Data, 2020

Throughout the delineation efforts, measurable rain events continued to occur either during field delineations or within 48-hours prior to when field surveys were conducted. Twenty-three rain events were recorded at the nearest certified weather station (MSU North Farm Starkville) during the course of the wetland delineations. Rainfall data reported from MSU's North Farm Starkville Agriculture Weather Station is available in **Appendix C.**

Weather conditions during the field surveys varied from clear to overcast and temperatures ranged from a low of 31° Fahrenheit (F) to a high of 86° F.

3.1.3 Previous Delineations and Jurisdictional Determinations

Burns & McDonnell was provided with a copy of the 2016 Wetland Delineation and Determination Report for the GTRA Mega Site in Lowndes County (Headwaters, Inc., 2016). Portions of the Mega Site Delineation Study Area overlap with the Golden Triangle Study Area. The Mega Site, which is the future location for an industrial and technology park, was first surveyed in 2009/2010. Similar results were obtained during the 2015/2016 study. The Mega Site Report provides a more baseline look at a site conditions during a typical year in terms of normal rainfall levels.

3.2 Wetland Delineation Survey

From March 3-April 8, April 20-23, May 4-8, and June 10-11, 2020, teams of wetland scientists conducted a wetland delineation over 3,980 acres of land that is being considered for the siting of the new Golden Triangle Solar Project. The field surveys documented wetter than average hydrologic conditions, and evaluated multiple parameters in addition to hydrology, including hydric soils, hydrophytic vegetation, and a variety of stream morphological characteristics in making resource determinations. Sample plots were established at multiple locations, and Wetland Determination Data Forms from the Regional Supplement were completed to characterize the Survey Area (Appendix D). Vegetation, soil conditions, and hydrologic indicators were recorded at each of these sample plots. Locations of sample plots and other identified features were surveyed using a sub-meter accurate GPS unit. Natural color photographs depicting water bodies, streams, and representative field conditions were taken and are included in Appendix B. Additional representative photographs were taken during the wetland delineation to document onsite conditions where sample plots were not collected. These additional photographs are not included in Appendix B but can be provided upon request. Land cover and delineated wetlands from field surveys are discussed in detail below.

3.2.1 Vegetation and Land Use Communities

The Project is in the US Environmental Protection Agency (USEPA) Blackland Prairie Ecoregion (Level 4) and is in the Middle Tombigbee River [Hydrologic Unit Code (HUC) 03160106] and Tibbee Creek (HUC 03160104) watersheds.

Four distinct vegetative cover/land use communities were observed in the Survey Area, including active agriculture and pasture, bottomland hardwood forest, upland forest, and right-of-way. Descriptions of these communities are provided below. Soils identified within the Survey Area as identified in the USDA NRCS geospatial data for Lowndes County included Leeper silty clay, Catalpa silty clay, Sumter silty clay loam, Okolona silty clay, Vaiden silty clay, Brooksville silty clay, Sumter-Demopolis-Chalk outcrop complex, Griffith silty clay, and Demopolis-Binnsville complex (Figure Set 3, Appendix A). Brooksville

silty clay, Catalpa silty clay, Griffith silty clay, Leeper silty clay, Okolona silty clay, Sumter silty clay loam, and Vaiden silty clay are identified by the NRCS as having hydric components.

Active Agriculture

Active agricultural and pasture is the primary land use community found in the Survey Area and composed approximately 76 percent (2,984 acres) of the Survey Area. Areas identified as active agriculture include cattle pasture, hay production, and row crop fields. Vegetation in these communities is maintained in an early successional state due to herbicide application, crop growth/harvesting, and cattle grazing. Soybeans and corn are planted in late spring and cover the row crop fields. Vegetation observed in pastures consists of primarily tall fescue grass (*Schedonorus arundinaceus*), Johnson grass (*Sorghum halepense*), annual bluegrass (*Poa annua*), scutch grass (*Elymus repens*), cheatgrass (*Bromus tectorum*), perennial ryegrass (*Lolium perenne*), rescuegrass (*Bromus catharticus*), butterweed (*Packera glabella*), bulbous bittercress (*Cardamine bulbosa*), soft rush (*Juncus effusus*), Cherokee sedge (*Carex cherokeensis*), Frank's sedge (*Carex frankii*), fox sedge (*Carex vulpinoidea*), path rush (*Juncus tenuis*), poorjoe (*Diodia teres*), red sorrel (*Rumex acetosella*), prairie fleabane (*Erigeron strigosus*), horseweed (*Erigeron canadensis*), dogfennel (*Eupatorium capillifolium*), jimsonweed (*Datura stramonium*), Carolina horsenettle (*Solanum carolinense*), spear thistle (*Cirsum vulgare*), sensitive partridge pea (*Chamaecrista nictitans*), and Palmer's pigweed (*Amaranthus palmeri*).

As shown in Table 3-1, due to the significant rainfall, most areas of active agriculture were highly saturated, and, in some areas, inundation was observed. The water table was unusually high at the time of survey due to atypical conditions. The soil matrix color throughout these areas ranged from a 3/2 (very dark grayish brown) to a 4/3 (brown) and 5/4 – 5/6 (yellowish brown) on the 10YR chart; however, little to no redox concentrations or depletions were present. The Survey Area is located within MLRA-135A (Alabama and Mississippi Blackland Prairie). Therefore, upland soils will exhibit a low chroma matrix, which is characteristic of the native parent material and is not caused by wetness of the soil. Since redox concentrations were not present within at least 4-inches of the first 12-inches (F6) or 6-inches of redox within the first 10-inches of soil samples collected, the soils in the active agricultural fields and pasturelands do not meet the requirements for hydric soil indicators.

Bottomland Hardwood Forest

Bottomland hardwood forest community is approximately 14 percent (542.9 acres) of the Survey Area and is composed of a canopy age ranging from approximately 15 to 70 years old. Of the nearly 543 acres of bottomland hardwood forest, approximately 196 acres include a parcel of hardwoods that were planted in 2004 for silviculture production. Dominant vegetation observed consisted of water hickory (Carva aquatica), willow oak (Ouercus phellos), cherrybark oak (Ouercus pagoda), swamp chestnut oak (Quercus michauxii), silky dogwood (Cornus amomum), osage orange (Maclura pomifera), green ash (Fraxinus pennsylvanica), eastern red cedar (Juniperus virginiana), water locust (Gleditsia aquatica), southern shagbark hickory (Carya carolinae-septentrionalis), box elder (Acer negundo), red maple (Acer rubrum), American sycamore (Platanus occidentalis), sugarberry (Celtis laevigata), possumhaw (Ilex decidua), blackhaw (Viburnum prunifolium), winterberry (Ilex verticillata), foxglove beardtongue (Penstemon digitalis), sharpscale sedge (Carex oxylepis), Mead's sedge (Carex meadii), Cherokee sedge (Carex cherokeensis), manyhead rush (Juncus polycephalos), grassleaf rush (Juncus marginatus), wild petunia (Ruellia humilis), nodding fescue (Festuca subverticillata), poison ivy (Toxicodendron radicans), greenbrier (Smilax spp.), Virginia spiderwort (Tradescantia virginiana), Virginia creeper (Parthenocissus quinquefolia), prairie ironweed (Vernonia fasciculata), hairy buttercup (Ranunculus sardous), resurrection fern (*Pleopeltis polypodioides*), and hairy sedge (*Carex lacustris*).

Upland Forest

Upland forest communities made up approximately 10 percent (400.30 acres) of the Survey Area and are composed of a canopy age ranging from approximately 20 to 70 years old. Dominant vegetation observed consisted of white oak (*Quercus alba*), southern red oak (*Quercus falcata*), post oak (*Quercus stellata*), blackjack oak (*Quercus marilandica*), mockernut hickory (*Carya tomentosa*), red hickory (*Carya ovalis*), shagbark hickory (*Carya ovata*), pignut hickory (*Carya glabra*), loblolly pine (*Pinus taeda*), eastern red cedar, American elm (*Ulmus americana*), honey locust (*Gleditsia triacanthos*), black locust (*Robinia pseudoacacia*), osage orange, Chinese privet (*Ligustrum sinense*), Devil's walkingstick (*Aralia spinosa*), Christmas fern (*Polystichum acrostichoides*), multiple greenbrier species (*Smilax spp.*), wild grapes (*Vitus spp.*), Virginia creeper, blackberry (*Rubus spp.*), false indigo bush (*Amorpha fruticosa*), wooly panic grass (*Dichanthelium acuminatum*), hirsute sedge (*Carex complanata*), Canadian black snakeroot (*Sanicula canadensis*), and little quaking-grass (*Briza minor*).

Utility Rights-of-Way (ROW)

Utility Rights-of-Way made up approximately 20 acres of the Survey Area; however, these ROWs function alongside the surrounding land use. Pipeline and transmission line easements still allow for agricultural and livestock operations. In general, the vegetation is maintained in an early successional

state because of herbicide application and mowing. Areas identified as ROW are consistently maintained. The vegetation in this land use community consists of prairie ironweed, Johnson grass, tall fescue, Palmer's pigweed, horse nettle, sensitive partridge pea, soft rush, perennial ryegrass, common wheat (*Triticum aestivum*), Cherokee sedge, Canadian black snakeroot (*Sanicula canadensis*), and little quakinggrass.

3.2.2 Waters of the US

Jurisdictional water(s) of the US are defined by 33 CFR Part 328.3 (b) and are protected by Section 404 of the CWA (33 USC 1344). An assessment of potential water(s) of the US that were identified within the Survey Area was performed using USGS topographic maps, NWI maps, county soil survey maps, and then refined during field investigations. Wetland locations were determined using the 1987 Corps of Engineers Wetlands Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: 2010 Atlantic and Gulf Coastal Plain. The multi-parameter approach requires that areas be considered jurisdictional wetlands if they exhibit evidence of all three wetland classification parameters. During the field surveys, a total of 93 potential ephemeral, intermittent, or perennial streams, 28 open waters, and 57 wetlands were identified within the Survey Area of the Project. Additionally, the USACE Mobile district has not made any official jurisdictional determinations on aquatic resources within the Survey Area for this project at this time (Table 3-2 and Figure Set 4, Appendix A).

There are no streams within the Survey Area listed on the final 2018 version of Mississippi's 303(d) list as "non-supporting" or located within one linear mile upstream of a stream listed as "non-supporting". No streams are located within one linear mile upstream of, and within the same watershed as a "non-supporting" biota impaired system.

Table 3-2: Waterbodies within the Survey Area

Waterbody ID	Waterbody Type	Length of Stream (feet) in Survey Area	Latitude (N°)	Longitude (W°)	Jurisdicationala
S-001	Perennial	478.76	33.48557	-88.62457	Yes
S-002	Intermittent	1094.18	33.4854	-88.62289	Yes
S-003	Intermittent	348.22	33.484301	-88.624091	Yes
S-004	Intermittent	1868.57	33.4837	-88.61907	Yes
S-005	Intermittent	5644.94	33.4728	-88.62323	Yes
S-006	Ephemeral	2005.07	33.47919	-88.6126	No
S-007	Intermittent	1692.44	33.47731	-88.62641	Yes
S-008	Perennial	8822.51	33.46077	-88.63525	Yes
S-009	Intermittent	123.10	33.47171	-88.63019	Yes

Waterbody ID	Waterbody Type	Length of Stream (feet) in Survey Area	Latitude (N°)	Longitude (W°)	Jurisdicational ^a
S-010	Intermittent	458.27	33.47168	-88.63045	Yes
S-011	Ephemeral	534.91	33.47115	-88.61601	No
S-012	Intermittent	936.85	33.46979	-88.62001	Yes
S-013	Intermittent	1371.71	33.46819	-88.63191	Yes
S-014	Perennial	7028.58	33.46301	-88.62532	Yes
S-015	Ephemeral	4973.96	33.45831	-88.63135	No
S-016	Ephemeral	3964.38	33.46031	-88.62739	No
S-017	Perennial	8445.74	33.455235	-88.637872	Yes
S-018	Ephemeral	1434.87	33.45378	-88.63682	No
S-019	Intermittent	475.69	33.45349	-88.61777	Yes
S-020	Ephemeral	70.47	33.45292	-88.61845	No
S-021	Ephemeral	81.63	33.45295	-88.61818	No
S-022	Intermittent	2058.14	33.45194	-88.62941	Yes
S-023	Perennial	2416.27	33.45032	-88.62456	Yes
S-023A	Intermittent	795.50	33.45032	-88.62456	Yes
S-024	Intermittent	81.99	33.45202	-88.62491	Yes
S-025	Perennial	1601.56	33.4498	-88.63093	Yes
S-026	Intermittent	550.65	33.45066	-88.6254	Yes
S-027	Intermittent	1417.93	33.44875	-88.63001	Yes
S-028	Intermittent	1407.18	33.44813	-88.44813	Yes
S-029	Perennial	1558.58	33.44778	-88.62283	Yes
S-030	Intermittent	526.74	33.4484	-88.62283	Yes
S-031	Intermittent	243.10	33.44854	-88.62244	Yes
S-032	Intermittent	63.84	33.44822	-88.62115	Yes
S-033	Intermittent	256.02	33.44792	-88.62193	Yes
S-034	Intermittent	113.04	33.44785	-88.63005	Yes
S-035	Intermittent	1043.00	33.44674	-88.62946	Yes
S-036	Intermittent	1302.88	33.44641	-88.63099	Yes
S-037	Intermittent	2142.68	33.44484	-88.62503	Yes
S-038	Intermittent	188.56	33.4468	-88.62402	Yes
S-039	Intermittent	216.34	33.44595	-88.62371	Yes
S-040	Intermittent	260.07	33.44596	-88.62327	Yes
S-041	Ephemeral	363.97	33.44582	-88.61957	No
S-042	Ephemeral	193.23	33.44615	-88.61938	No
S-043	Intermittent	307.96	33.44433	-88.62493	Yes
S-044	Intermittent	624.78	33.44357	-88.62858	Yes
S-045	Intermittent	118.02	33.44428	-88.62823	Yes
S-046	Intermittent	2004.53	33.44268	-88.63736	Yes

MS Solar 5, LLC 3-10 Burns & McDonnell

Waterbody ID	Waterbody Type	Length of Stream (feet) in Survey Area	Latitude (N°)	Longitude (W°)	Jurisdicational ^a
S-047	Perennial	429.06	33.44378	-88.64173	Yes
S-048	Intermittent	2132.65	33.4414	-88.63843	Yes
S-049	Intermittent	209.78	33.44297	-88.62312	Yes
S-050	Ephemeral	650.39	33.44121	-88.64157	No
S-051	Intermittent	1050.05	33.4411	-88.63267	Yes
S-052	Intermittent	928.15	33.44132	-88.63057	Yes
S-053	Ephemeral	506.87	33.44104	-88.6211	No
S-054	Intermittent	97.85	33.44083	-88.63311	Yes
S-055	Intermittent	68.58	33.44066	-88.63142	Yes
S-056	Intermittent	342.64	33.44005	-88.63676	Yes
S-057	Ephemeral	394.78	33.43873	-88.63824	No
S-058	Ephemeral	248.30	33.43891	-88.6373	No
S-059	Perennial	1406.67	33.43821	-88.62089	Yes
S-060	Ephemeral	301.02	33.43458	-88.61891	No
S-061	Ephemeral	617.89	33.43401	-88.61939	No
S-062	Ephemeral	1455.89	33.43235	-88.62074	No
S-063	Perennial	440.69	33.42582	-88.60892	Yes
S-064	Perennial	6878.43	33.42394	-88.59595	Yes
S-065	Intermittent	194.97	33.42509	-88.60453	Yes
S-066	Intermittent	908.20	33.42392	-88.61336	Yes
S-067	Intermittent	4126.59	33.4247	-88.60821	Yes
S-068	Perennial	1319.72	33.42321	-88.59981	Yes
S-069	Intermittent	310.58	33.42393	-88.59546	Yes
S-070	Ephemeral	254.94	33.4236	-88.59396	No
S-071	Perennial	5851.04	33.42212	-88.59778	Yes
S-072	Perennial	338.31	33.42337	-88.60104	Yes
S-073	Intermittent	3181.98	33.41982	-88.61767	Yes
S-074	Intermittent	172.95	33.42047	-88.60045	Yes
S-075	Intermittent	200.32	33.41972	-88.61845	Yes
S-076	Perennial	6467.70	33.41444	-88.61883	Yes
S-077	Intermittent	231.76	33.41801	-88.5991	Yes
S-078	Intermittent	809.78	33.41676	-88.59825	Yes
S-079	Perennial	2091.32	33.41664	-88.63828	Yes
S-080	Ephemeral	724.46	33.4155	-88.61998	No
S-081	Intermittent	845.98	33.41597	-88.61154	Yes
S-082	Perennial	1788.14	33.41427	-88.63878	Yes
S-083	Intermittent	835.53	33.41479	-88.61286	Yes
S-084	Perennial	620.83	33.41392	-88.61782	Yes

MS Solar 5, LLC 3-11 Burns & McDonnell

		Length of Stream (feet)	Latitude	Longitude	
Waterbody ID	Waterbody Type	in Survey Area	(N°)	(W°)	Jurisdicational
S-085	Perennial	2818.17	33.40903	-88.63231	Yes
S-086	Intermittent	362.04	33.41394	-88.62086	Yes
S-087	Intermittent	317.18	33.41442	-88.60033	Yes
S-088	Perennial	610.40	33.41391	-88.6033	Yes
S-089	Perennial	376.34	33.41043	-88.63045	Yes
S-090	Perennial	3724.74	33.40617	-88.63018	Yes
S-091	Ephemeral	382.95	33.40575	-88.6244	No
S-092	Intermittent	77.21	33.40405	-88.63488	Yes
		Open Water Re	sources		
Waterbody #	Waterbody Type	Area of Wetland (acre) in Survey Area	Latitude (N°)	Longitude (W°)	Jurisdicational ^a
PUB-001	PUB	0.418	33.467267	-88.623461	Yes
PUB-002	PUB	4.962	33.456059	-88.622717	No
PUB-003	PUB	0.054	33.451289	-88.616402	Yes
PUB-004	PUB	0.107	33.450325	-88.618641	No
PUB-005	PUB	1.063	33.448584	-88.621686	Yes
PUB-006	PUB	0.619	33.447986	-88.640499	No
PUB-007	PUB	1.078	33.446558	-88.619966	Yes
PUB-008	PUB	0.196	33.442111	-88.626402	No
PUB-009	PUB	0.627	33.441751	-88.634664	Yes
PUB-010	PUB	0.058	33.439927	-88.641096	No
PUB-011	PUB	0.511	33.438576	-88.63738	No
PUB-012	PUB	0.163	33.424437	-88.60372	No
PUB-013	PUB	0.052	33.422447	-88.628179	Yes
PUB-014	PUB	0.220	33.422447	-88.628075	Yes
PUB-015	PUB	6.891	33.420645	-88.595644	Yes
PUB-016	PUB	0.447	33.418054	-88.605312	No
PUB-017	PUB	0.372	33.417691	-88.637825	No
PUB-018	PUB	0.592	33.417016	-88.638521	Yes
PUB-019	PUB	3.741	33.416141	-88.596495	Yes
PUB-020	PUB	1.626	33.413622	-88.640062	Yes
PUB-021	PUB	0.205	33.41321	-88.622626	Yes
PUB-022	PUB	0.412	33.409441	-88.622463	No
PUB-023	PUB	0.454	33.408905	-88.633886	No
PUB-024	PUB	0.650	33.407687	-88.634747	No
PUB-025	PUB	0.381	33.406734	-88.631663	Yes
PUB-026	PUB	1.034	33.405407	-88.623923	No

Waterbody ID	Waterbody Type	Length of Stream (feet) in Survey Area	Latitude (N°)	Longitude (W°)	Jurisdicational ^a
PUB-027	PUB	0.262	33.40534	-88.625454	No
PUB-028	PUB	18.57	33.44886	-88.638313	Yes

⁽a) An official Jurisdictional Determination can only be provided by the USACE

Palustrine Forested Wetlands - PFO

Palustrine forested wetlands accounted for approximately 12.6 percent (501.1 acres) of the total Survey Area. The common overstory and understory vegetation consists of osage orange, green ash, sugarberry, water locust, box elder, American sycamore, and red maple; and common vines, shrubs, and herbaceous vegetation consists of poison ivy, butterweed, Virginia creeper, blackhaw, resurrection fern, and soft rush.

Palustrine Emergent Wetlands - PEM

Palustrine emergent wetlands accounted for just over one percent (48.2 acres) of the total Survey Area. Common vegetation observed within the emergent wetlands included hollow joe-pye-weed (*Eutrochium fistulosum*), woolgrass (*Scirpus cyperinus*), prairie ironweed, curly dock (*Rumex crispus*), blackberries (*Rubus spp.*), and soft rush.

Palustrine Scrub/Shrub - PSS

Palustrine scrub/shrub wetlands accounted for less than one percent (20.33 acres) of the total Survey Area. Common vegetation observed within the scrub/shrub wetlands included osage orange, green ash, box elder, red maple, butterweed, bulbous bittercress, and soft rush.

Table 3-3: Wetlands Identified in the Survey Area

Waterbody #	Waterbody Type	Area of Wetland (acre) in Survey Area	Latitude (N°)	Longitude (W°)	Jurisdicational
W-001	PFO	1.003	33.485735	-88.6238	Yes
W-004	PEM	0.100	33.485394	-88.624449	Yes
W-005	PEM	0.594	33.485203	-88.621585	Yes
W-006	PFO	0.129	33.484981	-88.624734	Yes
W-007	PFO	0.152	33.484884	-88.621437	Yes
W-008	PSS	1.358	33.483884	-88.623221	Yes
W-011	PFO	0.220	33.48289	-88.619004	Yes
W-012	PFO	0.473	33.482871	-88.616924	Yes
W-013	PFO	0.095	33.481744	-88.618053	No
W-014	PEM	0.199	33.481709	-88.620219	No
W-015	PEM	2.122	33.481017	-88.614243	No
W-017	PFO	194.976	33.471143	-88.627193	Yes
W-017A	PEM	15.8333	33.471143	-88.627193	Yes
W-019	PFO	7.002	33.460396	-88.635274	Yes
W-020	PEM	0.058	33.453697	-88.618007	No
W-021	PEM	1.061	33.453635	-88.61688	Yes
W-022	PFO	1.651	33.452134	-88.623756	Yes
W-023	PFO	122.341	33.45	-88.640214	Yes

Waterbody #	Waterbody Type	Area of Wetland (acre) in Survey Area	Latitude (N°)	Longitude (W°)	Jurisdicational ^a
W-024	PEM	6.383	33.449727	-88.624655	Yes
W-025	PEM	0.298	33.451042	-88.616525	Yes
W-026	PFO	0.098	33.45382	-88.616532	Yes
W-027	PFO	26.567	33.449514	-88.622379	Yes
W-028	PFO	1.465	33.447995	-88.627624	Yes
W-030	PFO	7.482	33.445699	-88.625122	Yes
W-031	PFO	0.703	33.446494	-88.623847	Yes
W-032	PEM	0.261	33.445486	-88.640427	No
W-033	PFO	0.909	33.44606	-88.619924	Yes
W-034	PFO	3.119	33.445044	-88.621716	No
W-035	PEM	0.300	33.444634	-88.640613	No
W-036	PEM	3.105	33.444274	-88.638479	Yes
W-037	PEM	0.610	33.443698	-88.624635	Yes
W-037A	PFO	0.263	33.44081	-88.63772	No
W-038	PFO	0.956	33.443438	-88.638696	Yes
W-039	PFO	1.135	33.443394	-88.641325	Yes
W-040	PFO	1.150	33.443353	-88.624076	Yes
W-041	PFO	2.302	33.442714	-88.640518	Yes
W-042	PFO	10.853	33.441542	-88.633234	Yes
W-044	PEM	1.054	33.440378	-88.641468	Yes
W-045	PFO	0.402	33.439218	-88.642758	Yes
W-046	PEM	0.847	33.438759	-88.641776	Yes
W-047	PFO	0.753	33.439105	-88.637873	No
W-048	PFO	0.384	33.438483	-88.636718	No
W-049	PFO	2.931	33.437638	-88.640557	Yes
W-051	PFO	0.654	33.423362	-88.618685	No
W-053	PFO	27.731	33.424386	-88.598476	Yes
W-054	PSS	4.993	33.425501	-88.594383	Yes
W-055	PSS	0.689	33.424653	-88.592962	No
W-056	PFO	49.308	33.420417	-88.599584	Yes
W-057	PFO	13.047	33.421681	-88.596553	Yes
W-058	PFO	3.076	33.422557	-88.628106	Yes
W-059	PSS	12.856	33.421762	-88.600419	Yes
W-060	PFO	0.904	33.419438	-88.592783	Yes
W-061	PFO	4.309	33.415413	-88.60589	Yes
W-062	PEM	15.206	33.413143	-88.619962	Yes
W-063	PEM	0.183	33.4144	-88.613454	Yes
W-064	PFO	13.241	33.404907	-88.633383	Yes

⁽a) An official Jurisdictional Determination can only be provided by the USACE

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3.3 Conclusions

Based on the review of past studies, available online databases and mapping, and the detailed field assessment performed on the Survey Area, it is concluded that the Survey Area is generally consistent with the surrounding geography. Topography and land use are similar with adjacent properties and land use activities have been primarily related to agricultural and hay production.

Based upon the field surveys, it was determined that approximately 3,331 acres of the Survey Area are classified as dry land (uplands). There are approximately 65,514 linear feet of perennial streams, 47,142 linear feet of intermittent streams, and 19,160 feet of ephemeral streams which are primarily man-made agricultural drainages. Approximately 7.5 acres are composed of manmade ponds primarily used for irrigation and livestock drinking water. Table 3-4 shows different habitat types, approximate acreage, and length of each feature present in the Survey Area.

Factors considered in determining jurisdictional waters of the U.S. included criteria as defined under the recent April 21, 2020 publication of The Navigable Waters Protection Rule: Definition of "Waters of the United States". Conditions observed during the wetland delineation determined that 59wetlands and 74 streams within the Survey Area meet the definition of waters of the U.S. (Tables 1 and 2). The features indicated as "Yes" in Tables 1 and 2 are presumed to be under the jurisdiction of the USACE; however, an official Jurisdictional Determination can only be made by the USACE.

If permanent impacts to jurisdictional waters of the U.S. cannot be completely avoided, they should be minimized to the extent practicable, and a Section 404 permit from the USACE will be required. Depending on the size and location of the permanent impacts, Nationwide Permit (NWP) 51 for Land-Based Renewable Energy Generation Facilities and/or NWP 33 for Temporary Construction, Access, and Dewatering may be appropriate. To qualify for NWP 51, permanent impacts to waters of the U.S. cannot exceed 0.50 acre of wetland and 300 linear feet of stream bed, considered cumulatively for the Project.

If permanent cumulative impacts are greater than 0.10 acre of waters of the U.S., a formal Pre-Construction Notification submittal is required, and compensatory mitigation will likely be required for losses that exceed 0.10 acre. If permanent impacts cannot be avoided but can be limited to 0.10 acre or less, for wetland and stream impacts considered cumulatively for the entire Project, and mechanical tree clearing can be avoided within wetland areas, the Project would likely qualify for a NWP 51 without the need for a formal PCN to the USACE.

If all impacts are temporary in nature the Project will likely be self-certified under the NWP 51, provided that all regional and general conditions are met. Regardless of which NWP(s) is applicable to the Project, the regional and general conditions of the NWP(s) would apply and would need to be followed during Project construction.

If you have any questions or require additional information, please contact me by telephone at (770) 510-4526 or by e-mail at jabrown3@burnsmcd.com.

Sincerely,

Jesse A Brown

Senior Environmental Scientist

Burns and McDonnell

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APPENDIX A - FIGURES





APPENDIX D	- REPRESENT	ATIVE WETLA	AND DETERMIN	IATION DATA FORMS



CREATE AMAZING.

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Site: PU	JB-001		Rater(s): OL; jb		Date: 03/2020
max 6 pts.	2 subtotal	Metric 1. Wetland	Area (SIZE) ope	en water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 X 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	5	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts.	subtotal	2a. Calculate average buffer wid WIDE. Buffers average 50 MEDIUM. Buffers average NARROW. Buffers average X VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of X LOW. Old field (>10 years MODERATELY HIGH. Re	th. Select only one and assig 0 m (164 ft) or more around v e 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arou use. Select one or double ch or older forest, prairie, savani	n score. Do not double check vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
	19	Metric 3. Hydrolog	gy		
max 30 pts.	subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless E Seasonal/intermittent surful X Perennial surface water (I X Perennial S	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat (2)] Seasonally satural ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] tted in upper 30 cm (12 in.) (1) [BR/CM (2)
	7	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) X Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) X Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) X Recovering (3) Recent or no recovery (1)	one or double check and average	check all disturbances of mowing □ grazing	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: PUB-001		Rater(s): OH:jb	Date: 03/2020			
33 subtotal previous page						
max 10 pts. subtotal	Metric 5. Special Wetlands					
	the documented raw score for	Metric 5 is 30 points or higher, the	e site is automatically considered a Category 3 wetland.			
	cumentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature suc Vernal pool (5); isolated, percl Island wetland >0.1 acre (0.04 Braided channel or floodplain/ Gross morph. adapt. in >5 tree Ecological community with glo Known occurrence state/feder [*use higher rank where mixe Superior/enhanced habitat/use	ultiple values apply in row, score row as single feature with highest point value. Provide ion (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) dj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) erched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) 0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) ain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] deral threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) mixed rank or qualifier] [exclude records which are only "historic"] /use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)				
1 M	etric 6. Plant Co	mmunities, Intersp	persion, Microtopography			
	Wetland vegetation community ore all present using 0 to 3 scate Aquatic bed Emergent Shrub Forest Mudflats Open water <20 acres (8 h	le. 0 = Absent or <0. For BR/CM < 1 = Present and 6	munity Cover Scale .1 ha (0.25 acre) contiguous acre <0.04 ha (0.1 acre)] either comprises a small part of wetland's vegetation and is of ality, or comprises a significant part but is of low quality either comprises a significant part of wetland's vegetation and the quality, or comprises a small part and is of high quality comprises a significant part or more of wetland's vegetation in quality			
6b.	Horizontal (plan view) interspe	ersion. Narrative Descrip	otion of Vegetation Quality			
	lect only one. High (5) Moderately high (4) [BR/C Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM Low (1) [BR/CM (2)] None (0)	Iow = Low specie native species M (5)] mod = Native species nonnative 8 and species w/o present high = A predomin tolerant nat	es diversity &/or dominance of nonnative or disturbance tolerant cies cies are dominant component of the vegetation, although &/or disturbance tolerant native species can also be present, es diversity moderate to moderately high, but generally accept of rare, threatened or endangered species nance of native species with nonnative sp &/or disturbance tive sp absent or virtually absent, and high sp diversity and often			
	Coverage of invasive plants. d or deduct points for coverage	Mudflat and Oper 0 = Absent <0.1 to <1 (0.1 to 0.5 ac (0)	n Water Class Quality ha (0.25 acres) [For BR/CM <0.04 ha (0.1 acre)] 1 ha (0.25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha cre)] 0 <4 ha (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] 9 acres) or more [BR/CM 2 ha (5 acres) or more]			
	Microtopography. ore all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Hypothetical Wet ale. socks cm (6 in.) in.) dbh None Lo Microtopography 0 = Absent 1 = Present in ve 2 = Present in mo amounts of hi	tland for Estimating Degree of Interspersion			
34	GRAND T (max 100	30- 59 = Catego	ory 1, low wetland function, condition, quality** ory 2, good/moderate wetland function, condition, quality** ory 3, superior wetland function, condition, quality**			

Site: PUB-003		Rater(s): OL; jb		Date: 03/2020
Max 6 pts. subtotal	Metric 1. Wetland	Area (SIZe) ope	n water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4) 0.3 to <3 acres (0.1 to <1) 0.1 to <0.3 acre (0.04 to <1)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
5	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts. subtotal	MEDIUM. Buffers average NARROW. Buffers average X VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of X LOW. Old field (>10 years MODERATELY HIGH. Re	0 m (164 ft) or more around w e 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8) average <10 m (<32 ft) arou	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) vth forest (5) rk, conservation tillage, new	(4) er (1)
19	Metric 3. Hydrolog	ду		
max 30 pts. subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless B Seasonal/intermittent surf X Perennial surface water (I A N O.4 to 0.7 m (16 to 27.6 in V O.4 m (<16 in.) (1) [BR/C I R Perennial Surface water (I I I R Perennial Surface water (I I I R Perennial Surface water (I I I I I I I I I I I I I I I I I I I	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d 2) Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) aturation. Score one or dbl. check & avg. intly inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
7	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts. subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) X Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) X Recovering (3) Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances o ☑ mowing ☐ grazing	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: PUB-003	R	Rater(s): OH:jb	Date: 03/2020			
31 subtotal previous page						
max 10 pts. subtotal	Metric 5. Special Wetlands					
	e documented raw score for Me	etric 5 is 30 points or higher, the site is au	tomatically considered a Category 3 wetland.			
	mentation for each selection (pl Bog, fen, wet prairie (10); acidopl Assoc. forest (wetl. &/or adj. upla Sensitive geologic feature such a Vernal pool (5); isolated, perched Island wetland >0.1 acre (0.04 ha Braided channel or floodplain/ter Gross morph. adapt. in >5 trees > Ecological community with global Known occurrence state/federal t [*use higher rank where mixed r Superior/enhanced habitat/use: n	e for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland. multiple values apply in row, score row as single feature with highest point value. Provide ction (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). c); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] re such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) (2) (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) plain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) (3) (4) (5) (5) (6) (6) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7				
1 Me	etric 6. Plant Com	munities, Interspersio	on, Microtopography			
	Vetland vegetation communities e all present using 0 to 3 scale. Aquatic bed Emergent Shrub Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	0 = Absent or <0.1 ha (0.2 [For BR/CM <0.04 ha 1 = Present and either cor moderate quality, or co 2 = Present and either cor is of moderate quality,	5 acre) contiguous acre			
	dorizontal (plan view) interspers ct 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)]	ion. Narrative Description of V low = Low species diversit native species mod = Native species are d nonnative &/or distur and species diversity and species diversity	egetation Quality y &/or dominance of nonnative or disturbance tolerant ominant component of the vegetation, although bance tolerant native species can also be present, or moderate to moderately high, but generally threatened or endangered species			
6c. C	\overline{\overl	tolerant native sp ab but not always, the p	ative species with nonnative sp &/or disturbance sent or virtually absent, and high sp diversity and often resence of rate, threatened, or endangered species			
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)	1 = Low 0.1 to <1 ha (0.25 (0.1 to 0.5 acre)] 2 = Moderate 1 to <4 ha (2	Class Quality (cres) [For BR/CM <0.04 ha (0.1 acre)] (to 2.5 acres) [BR/CM 0.04 to <0.2 ha (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] (or more [BR/CM 2 ha (5 acres) or more]			
	Microtopography. The all present using 0 to 3 scale. Vegetated hummocks/tussocy Coarse woody debris >15 cm Standing dead >25 cm (10 in Amphibian breeding pools	cks a (6 in.) a.) dbh	Estimating Degree of Interspersion Low Moderate Moderate High			
		2 = Present in moderate a amounts of highest qu	mounts or if more common of marginal quality mounts, but not of highest quality or in small			
32	GRAND TO	30- 59 = Category 2, goo	wetland function, condition, quality** d/moderate wetland function, condition, quality** erior wetland function, condition, quality**			

Site: PUB-005	Rater(s): OL; jb		Date: 03/2020
2 Metric	1. Wetland Area (size) 🦠	pen water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
Select one s >50	size class and assign score. acres (>20.2 ha) (6 pts) 0 <50 acres (10.1 to <20.2 ha) (5) [BR/CM (6)] 0 <25 acres (4 to <10.1 ha) (4) [BR/CM (6)] <10 acres (1.2 to <4 ha) (3) [BR/CM (5)] 0 <3 acres (0.1 to <1.2 ha) (2) [BR/CM (3)] to <0.3 acre (0.04 to <0.1 ha) (1) [BR/CM (2)] acre (0.04 ha) (0)	Sources/assumptions for s	size estimate (list):
8 Metric	2. Upland Buffers and Su	rrounding Land	Use
WID WED X NAR VER 2b. Intensity X VER LOW MOD	te average buffer width. Select only one and assi E. Buffers average 50 m (164 ft) or more around DIUM. Buffers average 25 m to <50 m (82 to <164 ROW. Buffers average 10 m to <25 m (32 ft to <17 y NARROW. Buffers average <10 m (<32 ft) arounding land use. Select one or double of y LOW. 2nd growth or older forest, prairie, sava //. Old field (>10 years), shrubland, young 2nd groperately HIGH. Residential, fenced pasture, p. Urban, industrial, open pasture, row cropping, p.	wetland perimeter (7) 4 ft) around wetland perimeter 82 ft) around wetland perimeter und wetland perimeter (0) check and average. nnah, wildlife area, etc. (7) owth forest (5) park, conservation tillage, new	(4) er (1)
19 Metric	3. Hydrology		
☐ High X Othe X Prec ☐ Seas X Pere 3c. Maximul ☐ >0.7 X 0.4 t ☐ <0.4 3e. Modifica ☐ None ☐ Recc X Recc	s of water. Score all that apply. pH groundwater (5) pH groundwater (3) [BR/CM (5)] sipitation (1) [unless BR/CM primary source (5)] sonal/intermittent surface water (3) sinnial surface water (lake or stream) (5) m water depth. Select only one and assign score m (27.6 in.) (3) o 0.7 m (16 to 27.6 in.) (2) [BR/CM (3)] m (<16 in.) (1) [BR/CM 0.15 to 0.4 m (6 to <16 in ations to natural hydrologic regime. Score one or e or none apparent (12) povered (7) overing (3) ent or no recovery (1) Check all disturbance diske weir stormwater input	X Part of wetland/up Part of riparian or Sd. Duration inundation/se. Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura double check and average. es observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) upland corridor (1) auturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] tted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
14 Metric	4. Habitat Alteration and	Development	
X None Reco Reco 4b. Habitate Very Good X Mod	erately good (4) (3) to fair (2)	Ü	observed ☐ shrub/sapling removal ☐ herbaceous/aquatic bed removal
4c. Habitat a None X Reco	alteration. Score one or double check and average e or none apparent (9) overing (3) ent or no recovery (1)		merbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: PUB-005	Rater(s):	OH:jb	Date: 03/2020			
43 subtotal previous page						
max 10 pts. subtotal Metric 5	Metric 5. Special Wetlands					
	nted raw score for Metric 5 is 30	points or higher, the site is automatically co	onsidered a Category 3 wetland.			
documentation Bog, fen. Assoc. fo Sensitive Vernal p Island w Braided Gross m Ecologic Known o [*use hi	for each selection (photos, chec, wet prairie (10); acidophilic veg., motorest (wetl. &/or adj. upland) incl. >0.2 et geologic feature such as spring/see cool (5); isolated, perched, or slope wetland >0.1 acre (0.04 ha) in reservoi channel or floodplain/terrace depressorph. adapt. in >5 trees >10 in. (25 crail community with global rank (Naturcurrence state/federal threatened/egher rank where mixed rank or qualif/enhanced habitat/use: migratory sor	for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland. ultiple values apply in row, score row as single feature with highest point value. Provide tion (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) dj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) terched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) ain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) (1) trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) (1) a global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] (1) dederal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) (2) mixed rank or qualifier] [exclude records which are only "historic"] (1) tuse: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) (3) (4) acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)				
1 Metric 6	. Plant Communit	ties, Interspersion, Micr	rotopography			
Score all prese Aquatic Emerge Shrub Forest Mudflat	ent	Vegetation Community Cover Scale 0 = Absent or <0.1 ha (0.25 acre) contig [For BR/CM <0.04 ha (0.1 acre)] 1 = Present and either comprises a sign moderate quality, or comprises a sign is of moderate quality, or comprises 2 = Present and either comprises a sign is of moderate quality, or comprises 3 = Present and comprises a significant and is of high quality	all part of wetland's vegetation and is of quificant part but is of low quality ificant part of wetland's vegetation and a small part and is of high quality			
6b. Horizontal	(plan view) interspersion.	Narrative Description of Vegetation Qu	uality			
Select only one High (5) Modera Modera Modera Modera	e.) tely high (4) [BR/CM (5)] te (3)[BR/CM (5)] tely low (2) [BR/CM (3)] [BR/CM (2)]	low = Low species diversity &/or domina native species mod = Native species are dominant compoundative &/or disturbance tolerar and species diversity moderate to w/o presence of rare, threatened of high = A predominance of native species tolerant native sp absent or virtual	ponent of the vegetation, although native species can also be present, moderately high, but generally or endangered species with nonnative sp &/or disturbance ly absent, and high sp diversity and often			
Add or deduct Extensi Modera Sparse	of invasive plants. points for coverage. ve >75% cover (-5) te 25-75% cover (-3) 5-25% cover (-1) absent <5% cover (0) (1)	Mudflat and Open Water Class Quality 0 = Absent <0.1 ha (0.25 acres) [For BR 1 = Low 0.1 to <1 ha (0.25 to 2.5 acres) (0.1 to 0.5 acre)] 2 = Moderate 1 to <4 ha (2.5 to 9.9 acre 3 = High 4 ha (9.9 acres) or more [BR/C	R/CM <0.04 ha (0.1 acre)] [BR/CM 0.04 to <0.2 ha as) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)]			
6d. Microtopoo Score all press Vegetat Coarse	` '	Hypothetical Wetland for Estimating D None Low Low Microtopography Cover Scale 0 = Absent 1 = Present in very small amounts or if r 2 = Present in moderate amounts, but n amounts of highest quality 3 = Present in moderate or greater amo	Moderate Moderate High more common of marginal quality ot of highest quality or in small			
44	GRAND TOTAL (max 100 pts)	0- 29 = Category 1, low wetland funct 30- 59 = Category 2, good/moderate w 60-100 = Category 3, superior wetland to	etland function, condition, quality**			

Site: PUB-007		Rater(s): OL; jb		Date: 03/2020
max 6 pts. subtotal	Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) <20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
8 max 14 pts. subtotal	MEDIUM. Buffers averag X NARROW. Buffers averag VERY NARROW. Buffers 2b. Intensity of surrounding land X VERY LOW. 2nd growth of the company of the comp	th. Select only one and assig 0 m (164 ft) or more around v e 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 a average <10 m (<32 ft) arou	n score. Do not double check vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5)	c. (4) er (1)
max 30 pts. subtotal	High. Urban, industrial, op Metric 3. Hydrolog 3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [B] X Precipitation (1) [unless E] Seasonal/intermittent surful Surface water (3) X Perennial surface water (3) 3c. Maximum water depth. Selection (27.6 in.) (3) X 0.4 to 0.7 m (16 to 27.6 ir.)	pen pasture, row cropping, m gy nat apply. R/CM (5)] BR/CM primary source (5)] face water (3) lake or stream) (5) et only one and assign score. n.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) plogic regime. Score one or d Check all disturbances ditch ditch ditch dike weir	ining, construction (1) 3b. Connectivity. Score a 100-year floodplai Between stream/li Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura louble check and average. Observed	all that apply. in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) upland corridor (1) inaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
14	Metric 4. Habitat	stormwater input Alteration and D	other	
max 20 pts. subtotal	4a. Substrate disturbance. Score X None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) X Moderately good (4) Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (S) Recovered (6) Recovering (3) Recent or no recovery (1)	e one or double check and av) only one and assign score. or double check and average	check all disturbances of mowing grazing	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: PUB-007		Rater(s): OH:jb	Date: 03/2020			
42 subtotal previous page						
max 10 pts. subtotal	Metric 5. Special Wetlands					
	*If the documented raw score for	Metric 5 is 30 points or higher, the site	e is automatically considered a Category 3 wetland.			
raw score*	documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. t. Sensitive geologic feature suc Vernal pool (5); isolated, perc Island wetland >0.1 acre (0.04 Braided channel or floodplain, Gross morph. adapt. in >5 tre Ecological community with glo Known occurrence state/fedet [*use higher rank where mix Superior/enhanced habitat/us	e for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland. multiple values apply in row, score row as single feature with highest point value. Provide ction (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). ; acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] to such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) plain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) (5 trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) th global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] [exclude records which are only "historic"] at/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) in the care in first of the plantage of the				
max 20 pts. subtotal	Metric 6. Plant Co	mmunities, Interspe	rsion, Microtopography			
max 20 pts. Subtotal	6a. Wetland vegetation communi Score all present using 0 to 3 sca Aquatic bed Emergent Shrub Forest Mudflats Open water <20 acres (8 l	0 = Absent or <0.1 h For BR/CM <0.0 1 = Present and eithe moderate quality 2 = Present and eithe is of moderate quality	a (0.25 acre) contiguous acre 4 ha (0.1 acre)] er comprises a small part of wetland's vegetation and is of or comprises a significant part but is of low quality er comprises a significant part of wetland's vegetation and uality, or comprises a small part and is of high quality prises a significant part or more of wetland's vegetation			
	Select only one. High (5)	rizontal (plan view) interspersion. only one. High (5) Narrative Description of Vegetation Quality low = Low species diversity &/or dominance of nonnative or disturbance of native species				
	Moderate (3)[BR/CM (5)]	Moderately low (2) [BR/CM (3)] and species diversity moderate to moderately high, but generally Low (1) [BR/CM (2)] w/o presence of rare, threatened or endangered species				
	6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5 Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) X Nearly absent <5% cover Absent (1)	e. Mudflat and Open W 0 = Absent <0.1 ha (0.3) 1 = Low 0.1 to <1 ha (0.1 to 0.5 acre)] 2 = Moderate 1 to <4	the presence of rate, threatened, or endangered species ater Class Quality 0.25 acres) [For BR/CM <0.04 ha (0.1 acre)] (0.25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha ha (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] ares) or more [BR/CM 2 ha (5 acres) or more]			
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tusa Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Hypothetical Wetland socks cm (6 in.) 0 in.) dbh	d for Estimating Degree of Interspersion			
		Microtopography Co 0 = Absent 1 = Present in very s 2 = Present in model amounts of higher	mall amounts or if more common of marginal quality rate amounts, but not of highest quality or in small			
43	GRAND 1 (max 100	30- 59 = Category 2	, low wetland function, condition, quality** , good/moderate wetland function, condition, quality** , superior wetland function, condition, quality**			

Site: PUB-009		Rater(s): OL; jb		Date: 03/2020
max 6 pts. subtotal	Metric 1. Wetland	Area (SIZE) ope	n water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	elect one size class and assign >50 acres (>20.2 ha) (6 pt 25 to <50 acres (10.1 to 10 to <25 acres (4 to <10.) 3 to <10 acres (1.2 to <4 h 0.3 to <3 acres (0.1 to <1.) 0.1 to <0.3 acre (0.04 to < <0.1 acre (0.04 ha) (0)</th <th>s) 20.2 ha) (5) [BR/CM (6)] 1 ha) (4) [BR/CM (6)] a) (3) [BR/CM (5)] 2 ha) (2) [BR/CM (3)]</th> <th>Sources/assumptions for s</th> <th>size estimate (list):</th>	s) 20.2 ha) (5) [BR/CM (6)] 1 ha) (4) [BR/CM (6)] a) (3) [BR/CM (5)] 2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
8 M	letric 2. Upland E	Buffers and Sur	rounding Land	Use
	MEDIUM. Buffers average X NARROW. Buffers average VERY NARROW. Buffers Intensity of surrounding land under the surrounding land	m (164 ft) or more around w 25 m to <50 m (82 to <164 to e 10 m to <25 m (32 ft to <85 average <10 m (<32 ft) around use. Select one or double char or older forest, prairie, savann), shrubland, young 2nd grow	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) vth forest (5) rk, conservation tillage, new	(4) er (1)
19 N	letric 3. Hydrolog	JY		
Зс	a. Sources of water. Score all th High pH groundwater (5) X Other groundwater (3) [BR X Precipitation (1) [unless BI Seasonal/intermittent surface water (late of the seasonal surface water (late of the seasona	A/CM (5)] R/CM primary source (5)] Ace water (3) Ake or stream) (5) Only one and assign score. (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) Hogic regime. Score one or divided.	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) aturation. Score one or dbl. check & avg. intly inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
14 N	letric 4. Habitat A	Alteration and D	evelopment	
4b	a. Substrate disturbance. Score X None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) D. Habitat development. Select of Excellent (7) Very good (6) Good (5) X Moderately good (4) Fair (3) Poor to fair (2) Poor (1) D. Habitat alteration. Score one of	only one and assign score. or double check and average	Check all disturbances of mowing grazing clearcutting	☐ shrub/sapling removal ☐ herbaceous/aquatic bed removal ☐ woody debris removal
	None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1)	· · · · · · · · · · · · · · · · · · ·	selective cutting farming toxic pollutants	☐ sedimentation ☐ dredging ☐ nutrient enrichment

Site: PUB-009	Rater(s): OH:jb	Date: 03/2020			
42 subtotal previous page					
Metric 5. Special \	Metric 5. Special Wetlands				
	Metric 5 is 30 points or higher, the site is a	utomatically considered a Category 3 wetland.			
documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. t Sensitive geologic feature suc Vernal pool (5); isolated, perc Island wetland >0.1 acre (0.04 Braided channel or floodplain Gross morph. adapt. in >5 tre Ecological community with gld Known occurrence state/fede [*use higher rank where mix Superior/enhanced habitat/us	for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland. nultiple values apply in row, score row as single feature with highest point value. Provide tion (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] s such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) alain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) for trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) for global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] dederal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) mixed rank or qualifier] [exclude records which are only "historic"] at/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)				
1 Metric 6. Plant Co	mmunities, Interspersi	on, Microtopography			
6a. Wetland vegetation communi Score all present using 0 to 3 sca Aquatic bed Emergent Shrub Forest Mudflats X Open water <20 acres (8) Moss/lichen. Other	lle. 0 = Absent or <0.1 ha (0.2 For BR/CM <0.04 ha 1 = Present and either commoderate quality, or c 2 = Present and either commoderate quality.	25 acre) contiguous acre			
6b. Horizontal (plan view) intersp Select only one. High (5) Moderately high (4) [BR/C Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CI Low (1) [BR/CM (2)] None (0)	ersion. Narrative Description of Normalizer	dominant component of the vegetation, although rbance tolerant native species can also be present, y moderate to moderately high, but generally a, threatened or endangered species native species with nonnative sp &/or disturbance			
6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5 Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) Nearly absent <5% cover Absent (1)	but not always, the page 2. but not always, the page 3. mudflat and Open Water 4. 0 = Absent < 0.1 ha (0.25 are) 1 = Low 0.1 to <1 ha (0.25 are) (0.1 to 0.5 acre) 2 = Moderate 1 to <4 ha (0.25 are)	consideration of the construction of the const			
6d. Microtopography. Score all present using 0 to 3 score all	ale. socks cm (6 in.) 0 in.) dbh None Microtopography Cover S 0 = Absent 1 = Present in very small se	amounts or if more common of marginal quality amounts, but not of highest quality or in small			
GRAND 7	3 = Present in moderate of 0-29 = Category 1, low 30-59 = Category 2, good 10-29 = Category 2, g	wetland function, condition, quality** ad/moderate wetland function, condition, quality** erior wetland function, condition, quality**			

Site: PUB-013	Rater(s): OL; jb		Date: 03/2020
0 Metric 1. Wet	iland Area (Size) ope	n water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
10 to <25 acres (3 to <10 acres (1 0.3 to <3 acres (ha) (6 pts) 10.1 to <20.2 ha) (5) [BR/CM (6)] 4 to <10.1 ha) (4) [BR/CM (6)] .2 to <4 ha) (3) [BR/CM (5)] 0.1 to <1.2 ha) (2) [BR/CM (3)] (0.04 to <0.1 ha) (1) [BR/CM (2)]	Sources/assumptions for s	size estimate (list):
max 14 pts. subtotal 2a. Calculate average b WIDE. Buffers average b MEDIUM. Buffers NARROW. Buffers VERY NARROW 2b. Intensity of surround VERY LOW. 2nd X LOW. Old field (x) MODERATELY B	uffer width. Select only one and assignater width. Select only one and assignater serage 50 m (164 ft) or more around we have average 25 m to <50 m (82 to <164 ft) or so average 10 m to <25 m (32 ft to <82 ft). Buffers average <10 m (<32 ft) around ingland use. Select one or double chargrowth or older forest, prairie, savannation years), shrubland, young 2nd growth GH. Residential, fenced pasture, par ustrial, open pasture, row cropping, mi	n score. Do not double check retland perimeter (7) t) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. hah, wildlife area, etc. (7) th forest (5) k, conservation tillage, new	<. (4) ∋r (1)
max 30 pts. subtotal 3a. Sources of water. So ☐ High pH groundwat ☐ Precipitation (1) ☐ Seasonal/intermi ☐ Perennial surfact 3c. Maximum water dep ☐ >0.7 m (27.6 in.) ☐ <0.4 m (<16 in.) (core all that apply. vater (5) er (3) [BR/CM (5)] funless BR/CM primary source (5)] ttent surface water (3) e water (lake or stream) (5) th. Select only one and assign score. (3) to 27.6 in.) (2) [BR/CM (3)] 1) [BR/CM 0.15 to 0.4 m (6 to <16 in.) tral hydrologic regime. Score one or deparent (12) Check all disturbances ditch	3b. Connectivity. Score a 100-year floodplai Between stream/li X Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura puble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) inturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)
8 Metric 4. Hab	itat Alteration and D	evelopment	
X None or none ap Recovered (3) Recovering (2) Recent or no rec 4b. Habitat developmen Excellent (7) Very good (6) Good (5) Moderately good Fair (3) Poor to fair (2) X Poor (1) 4c. Habitat alteration. So	overy (1) t. Select only one and assign score. (4) core one or double check and average	Check all disturbances of mowing grazing clearcutting	☐ shrub/sapling removal ☐ herbaceous/aquatic bed removal ☐ woody debris removal
None or none ap Recovered (6) Recovering (3) Recent or no rec		selective cutting farming toxic pollutants	☐ sedimentation ☐ dredging ☐ nutrient enrichment

Site: PUB-013		Rater(s): OH:jb	Date: 03/2020				
31 subtotal previous page							
max 10 pts. subtotal	Metric 5. Special \	Wetlands					
	*If the documented raw score for	locumented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.					
raw score*	documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature suc Vernal pool (5); isolated, perc Island wetland >0.1 acre (0.04 Braided channel or floodplain/ Gross morph. adapt. in >5 tre Ecological community with glo Known occurrence state/fedet [*use higher rank where mixe Superior/enhanced habitat/us	nultiple values apply in row, score row as single feature with highest point value. Provide stion (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). (acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] e such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) plain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) 5 trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) the global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] federal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) mixed rank or qualifier] [exclude records which are only "historic"] at/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)					
1	Metric 6. Plant Co	mmunities, Interspers	ion, Microtopography				
max 20 pts. subtotal	6a. Wetland vegetation communi Score all present using 0 to 3 sca Aquatic bed Emergent Shrub Forest Mudflats Open water <20 acres (8 l	ale. 0 = Absent or <0.1 ha (0 [For BR/CM <0.04 h 1 = Present and either c moderate quality, or 2 = Present and either c is of moderate quality	.25 acre) contiguous acre a (0.1 acre)] comprises a small part of wetland's vegetation and is of comprises a significant part but is of low quality comprises a significant part of wetland's vegetation and y, or comprises a small part and is of high quality ses a significant part or more of wetland's vegetation				
	6b. Horizontal (plan view) intersp	ersion. Narrative Description of	Vegetation Quality				
	Select only one. High (5) Moderately high (4) [BR/C Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM Low (1) [BR/CM (2)] None (0)	Iow = Low species diversinative species Iow = Native species Iow = Native species Iow = Native species Iow = Native species are Iow = Native species divers Iow = Native species divers Iow = Native species Iow = Native spec	dominant component of the vegetation, although turbance tolerant native species can also be present, city moderate to moderately high, but generally re, threatened or endangered species for native species with nonnative sp &/or disturbance absent or virtually absent, and high sp diversity and often				
	6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5 Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) X Nearly absent <5% cover Absent (1)	Mudflat and Open Wate 0 = Absent <0.1 ha (0.25) 1 = Low 0.1 to <1 ha (0.10) (0.1 to 0.5 acre) 2 = Moderate 1 to <4 ha	e presence of rate, threatened, or endangered species Class Quality Gacres) [For BR/CM <0.04 ha (0.1 acre)] 25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] or more [BR/CM 2 ha (5 acres) or more]				
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Hypothetical Wetland for socks cm (6 in.) 0 in.) dbh None Low Microtopography Cover 0 = Absent 1 = Present in very smal 2 = Present in moderate amounts of highest of the socks cm (6 in.) and the	r Estimating Degree of Interspersion Low Moderate Moderate High Scale I amounts or if more common of marginal quality amounts, but not of highest quality or in small				
32	GRAND 1 (max 100	30- 59 = Category 2, go	w wetland function, condition, quality** ood/moderate wetland function, condition, quality** uperior wetland function, condition, quality**				

Site: PUB-(014		Rater(s): OL; jb		Date: 03/2020
max 6 pts. subto		Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 pi 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10. 3 to <10 acres (1.2 to <4 h 0.3 to <3 acres (0.1 to <1. X	ts) 20.2 ha) (5) [BR/CM (6)] 1 ha) (4) [BR/CM (6)] na) (3) [BR/CM (5)] 2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	5	Metric 2. Upland E	Buffers and Sur	rounding Land	Use
max 14 pts. subto	otal	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of X LOW. Old field (>10 years MODERATELY HIGH. Re	o m (164 ft) or more around ve 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arou use. Select one or double chor older forest, prairie, savants), shrubland, young 2nd grov	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
1	8	Metric 3. Hydrolog	ЭУ		
max 30 pts. subte	otal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BF X Precipitation (1) [unless B Seasonal/intermittent surf X Perennial surface water (I Sc. Maximum water depth. Selectory 100	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. .) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or defining the store of the store of the store one or defining the store of the store one or defining the store of th	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat (2)] Seasonally satura louble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) aturation. Score one or dbl. check & avg. ntly inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
8	3	Metric 4. Habitat A	Alteration and D	evelopment	
max 20 pts. subte	otal	4a. Substrate disturbance. Score X None or none apparent (4 Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select (1) Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) X Poor (1) 4c. Habitat alteration. Score one	only one and assign score. or double check and average	Check all disturbances of mowing grazing e. clearcutting	☐ shrub/sapling removal ☐ herbaceous/aquatic bed removal ☐ woody debris removal
		None or none apparent (9 Recovered (6) X Recovering (3) Recent or no recovery (1)	9	selective cutting farming toxic pollutants	☐ sedimentation ☐ dredging ☐ nutrient enrichment

Site: PUB-014		Rater(s): OH:jb	Date: 03/2020				
32 subtotal previous page							
max 10 pts. subtotal	Metric 5. Special \	Wetlands					
·	*If the documented raw score for	mented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.					
raw score*	documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. to Sensitive geologic feature suc Vernal pool (5); isolated, perc Island wetland >0.1 acre (0.04 Braided channel or floodplain, Gross morph. adapt. in >5 tre Ecological community with glo Known occurrence state/fedet [*use higher rank where mix Superior/enhanced habitat/us	nultiple values apply in row, score row as single feature with highest point value. Provide tion (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) dj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) lain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) in (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) in global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] ederal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) mixed rank or qualifier] [exclude records which are only "historic"] t/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)					
1	Metric 6. Plant Co	mmunities, Interspers	ion, Microtopography				
max 20 pts. subtotal	6a. Wetland vegetation communi Score all present using 0 to 3 sca Aquatic bed Emergent Shrub Forest Mudflats X Open water <20 acres (8 Moss/lichen. Other	ale. 0 = Absent or <0.1 ha ((For BR/CM <0.04 h 1 = Present and either of moderate quality, or	2.25 acre) contiguous acre a (0.1 acre)] comprises a small part of wetland's vegetation and is of comprises a significant part but is of low quality comprises a significant part of wetland's vegetation and y, or comprises a small part and is of high quality ses a significant part or more of wetland's vegetation				
	6b. Horizontal (plan view) intersp	ersion. Narrative Description o	Vegetation Quality				
	Select only one. High (5) Moderately high (4) [BR/C Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CI Low (1) [BR/CM (2)] None (0)	low = Low species divernative species mod = Native species are nonnative &/or dis mod = Native species are nonnative &/or dis and species divers w/o presence of ra high = A predominance of tolerant native sp	e dominant component of the vegetation, although turbance tolerant native species can also be present, sity moderate to moderately high, but generally are, threatened or endangered species f native species with nonnative sp &/or disturbance absent or virtually absent, and high sp diversity and often				
	6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) X Nearly absent <5% cover Absent (1)	e. Mudflat and Open Wate 0 = Absent <0.1 ha (0.2 1 = Low 0.1 to <1 ha (0. (0.1 to 0.5 acre)] 2 = Moderate 1 to <4 ha	r Class Quality 5 acres) [For BR/CM <0.04 ha (0.1 acre)] 25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)]) or more [BR/CM 2 ha (5 acres) or more]				
	6d. Microtopography. Score all present using 0 to 3 sc: Vegetated hummocks/tus: Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Hypothetical Wetland for socks cm (6 in.) of in.) dbh None Low Microtopography Cover 0 = Absent 1 = Present in very sma 2 = Present in moderate amounts of highest of the socks cm (6 in.) of the so	Low Moderate Moderate High Scale Il amounts or if more common of marginal quality amounts, but not of highest quality or in small				
33	GRAND 1 (max 100	30- 59 = Category 2, go	w wetland function, condition, quality** pod/moderate wetland function, condition, quality** uperior wetland function, condition, quality**				

Site: PUB-015		Rater(s): OL; jb		Date: 03/2020
max 6 pts. subtotal	Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10. X 3 to <10 acres (1.2 to <4 l 0.3 to <3 acres (0.1 to <1. 0.1 to <0.3 acre (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] na) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
max 14 pts. subtotal	MEDIUM. Buffers average	th. Select only one and assig 0 m (164 ft) or more around v e 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8	In score. Do not double check wetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter	k. (4)
	2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years X MODERATELY HIGH. Re High. Urban, industrial, op	use. Select one or double chor older forest, prairie, savants), shrubland, young 2nd groesidential, fenced pasture, papen pasture, row cropping, manual pasture, row cropping,	neck and average. nah, wildlife area, etc. (7) wth forest (5) urk, conservation tillage, new	fallow field (3)
max 30 pts. subtotal	Metric 3. Hydrolog 3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [Bf X Precipitation (1) [unless B Seasonal/intermittent surf X Perennial surface water (1) 3c. Maximum water depth. Selection (27.6 in.) (3) X 0.4 to 0.7 m (16 to 27.6 in.) (3) 40.4 m (<16 in.) (1) [BR/C] 3e. Modifications to natural hydromy None or none apparent (1) Recovered (7) X Recovering (3) Recent or no recovery (1)	nat apply. R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) logic regime. Score one or of the control of the c	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat O(2)] Seasonally satura double check and average. s observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) saturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] sted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
8	Metric 4. Habitat	Alteration and D)evelopment	
max 20 pts. subtotal	4a. Substrate disturbance. Score X None or none apparent (4 Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5))	erage.	
	Moderately good (4) Fair (3) Poor to fair (2) X Poor (1) 4c. Habitat alteration. Score one None or none apparent (9 Recovered (6) X Recovering (3) Recent or no recovery (1))	Check all disturbances of mowing grazing clearcutting selective cutting farming toxic pollutants	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: PUB-015		Rater(s): OH:jb	Date: 03/2020				
32 subtotal previous page							
max 10 pts. subtotal	Metric 5. Special \	Wetlands					
	*If the documented raw score for	cumented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.					
raw score*	documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. to Sensitive geologic feature sur Vernal pool (5); isolated, perc Island wetland >0.1 acre (0.00 Braided channel or floodplain. Gross morph. adapt. in >5 tre Ecological community with glo Known occurrence state/fede [*use higher rank where mix: Superior/enhanced habitat/us	utilitiple values apply in row, score row as single feature with highest point value. Provide tion (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) (dj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] e such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) (3) (4) (4) (5) (5) (5) (6) (6) (6) (6) (7) (6) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7					
1	Metric 6. Plant Co	mmunities, Intersp	ersion, Microtopography				
max 20 pts. subtotal	6a. Wetland vegetation communi Score all present using 0 to 3 sca Aquatic bed Emergent Shrub Forest Mudflats Open water <20 acres (8 Moss/lichen. Other	ale. 0 = Absent or <0. For BR/CM < 1 = Present and e moderate qua 2 = Present and e is of moderate	ha (0.25 acre) contiguous acre 0.04 ha (0.1 acre)] ither comprises a small part of wetland's vegetation and is of ity, or comprises a significant part but is of low quality ither comprises a significant part of wetland's vegetation and quality, or comprises a small part and is of high quality omprises a significant part or more of wetland's vegetation				
	6b. Horizontal (plan view) intersp	ersion. Narrative Descript	ion of Vegetation Quality				
	Select only one. High (5) Moderately high (4) [BR/C Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CI Low (1) [BR/CM (2)] None (0)	Iow = Low species native speci mod = Native speci nonnative & M (3)] and species w/o presence high = A predomina tolerant nati	diversity &/or dominance of nonnative or disturbance tolerant es es are dominant component of the vegetation, although /or disturbance tolerant native species can also be present, diversity moderate to moderately high, but generally e of rare, threatened or endangered species ance of native species with nonnative sp &/or disturbance //e sp absent or virtually absent, and high sp diversity and often				
	6c. Coverage of invasive plants. Add or deduct points for coverag Extensive >75% cover (-5 Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) X Nearly absent <5% cover Absent (1)	e. Mudflat and Open (a) 0 = Absent <0.1 h (b) 1 = Low 0.1 to <1 (0.1 to 0.5 acr (c) 2 = Moderate 1 to	Water Class Quality a (0.25 acres) [For BR/CM <0.04 ha (0.1 acre)] ha (0.25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha e)] <4 ha (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] acres) or more [BR/CM 2 ha (5 acres) or more]				
	6d. Microtopography. Score all present using 0 to 3 sc Vegetated hummocks/tus Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Hypothetical Wetl ale. socks cm (6 in.) 0 in.) dbh None Lot Microtopography 0 = Absent 1 = Present in ver 2 = Present in mo amounts of his	And for Estimating Degree of Interspersion Low Moderate Moderate High Cover Scale y small amounts or if more common of marginal quality derate amounts, but not of highest quality or in small				
33	GRAND 1 (max 100	30- 59 = Categor	y 1, low wetland function, condition, quality** y 2, good/moderate wetland function, condition, quality** y 3, superior wetland function, condition, quality**				

Site: PUB-018	Site: PUB-018 Rater			Date: 03/2020
max 6 pts. subtotal	Metric 1. Wetland	Area (SIZe) ope	n water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 X 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
1	Metric 2. Upland I	Buffers and Sur	rounding Land	Use
max 14 pts. subtotal	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years MODERATELY HIGH. Re	0 m (164 ft) or more around we 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8. average <10 m (<32 ft) arou	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
18	Metric 3. Hydrolog	ду		
max 30 pts. subtotal	3a. Sources of water. Score all the High pH groundwater (5)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d 2) Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
3	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts. subtotal	4a. Substrate disturbance. Score None or none apparent (2) Recovered (3) Recovering (2) X Recent or no recovery (1) Ab. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) X Poor (1) 4c. Habitat alteration. Score one None or none apparent (S Recovered (6) Recovering (3) X Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances o ☐ mowing ☑ grazing	observed

Site: PUB-018		Rater(s): OH:jb	Date: 03/2020			
24 subtotal previous page						
max 10 pts. subtotal	Metric 5. Special \	Wetlands				
	*If the documented raw score for	Metric 5 is 30 points or higher, the sit	e is automatically considered a Category 3 wetland.			
raw score*	documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature suc Vernal pool (5); isolated, perc Island wetland >0.1 acre (0.04 Braided channel or floodplain, Gross morph. adapt. in >5 tre Ecological community with glo Known occurrence state/fedet [*use higher rank where mix Superior/enhanced habitat/us	ere multiple values apply in row, score row as single feature with highest point value. Provide selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) &/or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] eature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) ated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) t. in >5 trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) ity with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] state/federal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) where mixed rank or qualifier] [exclude records which are only "historic"] habitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) ality) : <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)				
1	Metric 6. Plant Co	mmunities, Interspe	rsion, Microtopography			
max 20 pts. subtotal	6a. Wetland vegetation communi Score all present using 0 to 3 sca Aquatic bed Emergent Shrub Forest Mudflats X Open water <20 acres (8 Moss/lichen. Other	ale. 0 = Absent or <0.1 h For BR/CM <0.0 1 = Present and eith moderate quality 2 = Present and eith is of moderate q	a (0.25 acre) contiguous acre 14 ha (0.1 acre)] er comprises a small part of wetland's vegetation and is of comprises a significant part but is of low quality er comprises a significant part of wetland's vegetation and comprises a significant part and is of high quality energies a significant part or more of wetland's vegetation			
	6b. Horizontal (plan view) interspersion. Select only one. High (5) Narrative Description of Vegetation Quality low = Low species diversity &/or dominance of nonnative or disturbance to native species					
	Moderately high (4) [BR/C] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/C] Low (1) [BR/CM (2)] None (0)	nonnative &/or and species di w/o presence	are dominant component of the vegetation, although disturbance tolerant native species can also be present, versity moderate to moderately high, but generally of rare, threatened or endangered species ce of native species with nonnative sp &/or disturbance			
			sp absent or virtually absent, and high sp diversity and often , the presence of rate, threatened, or endangered species			
	6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5 Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) X Nearly absent <5% cover Absent (1)	0 = Absent <0.1 ha (1 = Low 0.1 to <1 ha (0.1 to 0.5 acre)] (0)	0.25 acres) [For BR/CM <0.04 ha (0.1 acre)] (0.25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha			
	6d. Microtopography. Score all present using 0 to 3 sci Vegetated hummocks/tus: Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	ale. socks cm (6 in.)) in.) dbh	d for Estimating Degree of Interspersion Low Moderate Moderate High			
		2 = Present in mode amounts of high	mall amounts or if more common of marginal quality rate amounts, but not of highest quality or in small			
25	GRAND 1 (max 100	30- 59 = Category 2	1, low wetland function, condition, quality** 2, good/moderate wetland function, condition, quality** 3, superior wetland function, condition, quality**			

Site: PUB-019		Rater(s): OL; jb		Date: 03/2020
3 Metr	ric 1. Wetland	Area (SIZe) ope	en water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
Select o	one size class and assign s >50 acres (>20.2 ha) (6 pts 25 to <50 acres (10.1 to <2 10 to <25 acres (4 to <10.1 3 to <10 acres (1.2 to <4 ha) .3 to <3 acres (0.1 to <1.2 to <4 ha) .3 to <3 acres (0.04 to <1.2 0.1 to <0.3 acre (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 ha) (0)	s) 20.2 ha) (5) [BR/CM (6)] ha) (4) [BR/CM (6)] a) (3) [BR/CM (5)] 2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
max 14 pts. subtotal 2a. Calc V N X 2b. Inter	culate average buffer width WIDE. Buffers average 50 MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers a nsity of surrounding land uvery LOW. 2nd growth or LOW. Old field (>10 years). MODERATELY HIGH. Res	i. Select only one and assig m (164 ft) or more around w 25 m to <50 m (82 to <164 e 10 m to <25 m (32 ft to <8. average <10 m (<32 ft) arou se. Select one or double ch older forest, prairie, savant , shrubland, young 2nd grov	ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	c. (4) er (1)
max 30 pts. subtotal 3a. Soul K K S S S S S S S S S S S	>0.7 m (27.6 in.) (3) 0.4 to 0.7 m (16 to 27.6 in.) :0.4 m (<16 in.) (1) [BR/CM	at apply. /CM (5)] R/CM primary source (5)] ce water (3) ke or stream) (5) only one and assign score. (2) [BR/CM (3)] 1 0.15 to 0.4 m (6 to <16 in.) ogic regime. Score one or d	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane Regularly inundat Seasonally inundat (2)] Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
3 Metr	ric 4. Habitat A	Iteration and D		
4a. Suba	None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) sitat development. Select of Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1)	one or double check and avants on a some or double check and average	Check all disturbances o ☐ mowing ☑ grazing	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: PUB-019		Rater(s): OH:jb	Date: 03/2020				
26 subtotal previous page							
max 10 pts. subtotal	Metric 5. Special \	Wetlands					
	*If the documented raw score for	the documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.					
raw score*	documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature suc Vernal pool (5); isolated, perc Island wetland >0.1 acre (0.04 Braided channel or floodplain/ Gross morph. adapt. in >5 tree Ecological community with glo Known occurrence state/fedel [*use higher rank where mixe Superior/enhanced habitat/us	e multiple values apply in row, score row as single feature with highest point value. Provide ection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). 0); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] ure such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) d, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) re (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) adplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) resources >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] refederal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) re mixed rank or qualifier] [exclude records which are only "historic"] oitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3)): <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)					
max 20 pts. subtotal	Metric 6. Plant Co	mmunities, Intersp	ersion, Microtopography				
max 20 pts. Subtotal	6a. Wetland vegetation communi Score all present using 0 to 3 sca Aquatic bed Emergent Shrub Forest Mudflats X Open water <20 acres (8 l	0 = Absent or <0.1 For BR/CM < 1 = Present and e	nunity Cover Scale 1 ha (0.25 acre) contiguous acre 0.04 ha (0.1 acre)] wither comprises a small part of wetland's vegetation and is of lity, or comprises a significant part but is of low quality wither comprises a significant part of wetland's vegetation and a quality, or comprises a small part and is of high quality comprises a significant part or more of wetland's vegetation quality				
	6b. Horizontal (plan view) intersponded Select only one.		tion of Vegetation Quality s diversity &/or dominance of nonnative or disturbance tolerant				
	High (5) Moderately high (4) [BR/C Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CN Low (1) [BR/CM (2)] None (0)	nonnative & and species w/o presence high = A predominatolerant nation	ies are dominant component of the vegetation, although /or disturbance tolerant native species can also be present, diversity moderate to moderately high, but generally the of rare, threatened or endangered species ance of native species with nonnative sp &/or disturbance ve sp absent or virtually absent, and high sp diversity and often				
	6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5 Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) X Nearly absent <5% cover Absent (1)	Mudflat and Open 0 = Absent <0.1 h 1 = Low 0.1 to <1 (0.1 to 0.5 acr 2 = Moderate 1 to	hys, the presence of rate, threatened, or endangered species Water Class Quality as (0.25 acres) [For BR/CM <0.04 ha (0.1 acre)] ha (0.25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha e)] a <4 ha (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] a cares) or more [BR/CM 2 ha (5 acres) or more]				
	Absent (1) 6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Hypothetical Wetlander. socks cm (6 in.) 0 in.) dbh	and for Estimating Degree of Interspersion W Low Moderate Moderate High				
		0 = Absent 1 = Present in ver 2 = Present in mo amounts of high	y small amounts or if more common of marginal quality derate amounts, but not of highest quality or in small				
27	GRAND 1 (max 100	30- 59 = Categor	ry 1, low wetland function, condition, quality** ry 2, good/moderate wetland function, condition, quality** ry 3, superior wetland function, condition, quality**				

Site: PUB-020		Rater(s): OL; jb		Date: 03/2020
max 6 pts. subtotal	Metric 1. Wetland	Area (SIZe) ope	n water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 X 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
1	Metric 2. Upland I	Buffers and Sur	rounding Land	Use
max 14 pts. subtotal	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth LOW. Old field (>10 years MODERATELY HIGH. Re	0 m (164 ft) or more around w e 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8) average <10 m (<32 ft) arou	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) vth forest (5) rk, conservation tillage, new	(4) er (1)
18	Metric 3. Hydrolog	ду		
max 30 pts. subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless E Seasonal/intermittent surf X Perennial surface water (3c. Maximum water depth. Select >0.7 m (27.6 in.) (3) X 0.4 to 0.7 m (16 to 27.6 ir.) <0.4 m (<16 in.) (1) [BR/C] 3e. Modifications to natural hydromath None or none apparent (1) Recovered (7) X Recovering (3) Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d 2) Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) aturation. Score one or dbl. check & avg. intly inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
3	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts. subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recovering (2) X Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) X Poor (1) 4c. Habitat alteration. Score one None or none apparent (5) Recovered (6) Recovering (3) X Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances o ☐ mowing ☑ grazing	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: PUB-020	Rater(s)	:OH:jb	Date: 03/2020				
25 subtotal previous page							
max 10 pts. subtotal	5. Special Wetland	ds					
	umented raw score for Metric 5 is 3	nented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.					
document: Bog Ass Ser Ver Isla Bra Gro Kno	ation for each selection (photos, che, fen, wet prairie (10); acidophilic veg., n oc. forest (wetl. &/or adj. upland) incl. >0 isitive geologic feature such as spring/se nal pool (5); isolated, perched, or slope v ind wetland >0.1 acre (0.04 ha) in reservided channel or floodplain/terrace depress morph. adapt. in >5 trees >10 in. (25 isolated community with global rank (Naturally or occurrence state/federal threatened/use higher rank where mixed rank or quaperior/enhanced habitat/use: migratory so	ultiple values apply in row, score row as single feature with highest point value. Provide ion (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) dj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) erched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) 0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) ain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] aderal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) mixed rank or qualifier] [exclude records which are only "historic"] (vuse: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) 11 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)					
1 Metric	6. Plant Commun	ities, Interspersion, Micr	otopography				
Score all p Aqi Aqi Em Shi Mu X Op	nd vegetation communities. bresent using 0 to 3 scale. uatic bed lergent rub rest dflats en water <20 acres (8 ha) ss/lichen. Other	Vegetation Community Cover Scale 0 = Absent or <0.1 ha (0.25 acre) contig [For BR/CM <0.04 ha (0.1 acre)] 1 = Present and either comprises a siga moderate quality, or comprises a sign is of moderate quality, or comprises 2 = Present and either comprises a sign is of moderate quality, or comprises 3 = Present and comprises a significant and is of high quality	Ill part of wetland's vegetation and is of inificant part but is of low quality ificant part of wetland's vegetation and a small part and is of high quality				
6b. Horizo	ntal (plan view) interspersion.	Narrative Description of Vegetation Qu	ality				
Select only Select only Mo	y one. th (5) derately high (4) [BR/CM (5)] derate (3)[BR/CM (5)] derately low (2) [BR/CM (3)] v (1) [BR/CM (2)]	low = Low species diversity &/or domina native species mod = Native species are dominant comp nonnative &/or disturbance tolerar and species diversity moderate to w/o presence of rare, threatened chigh = A predominance of native species tolerant native sp absent or virtual	connect of the vegetation, although at native species can also be present, moderately high, but generally or endangered species with nonnative sp &/or disturbance ly absent, and high sp diversity and often				
Add or der Ext Mo Spr X Ne	age of invasive plants. duct points for coverage. ensive >75% cover (-5) derate 25-75% cover (-3) arse 5-25% cover (-1) arly absent <5% cover (0) sent (1)	Mudflat and Open Water Class Quality 0 = Absent <0.1 ha (0.25 acres) [For BR 1 = Low 0.1 to <1 ha (0.25 to 2.5 acres) (0.1 to 0.5 acre)] 2 = Moderate 1 to <4 ha (2.5 to 9.9 acres) 3 = High 4 ha (9.9 acres) or more [BR/C	(CM <0.04 ha (0.1 acre)] [BR/CM 0.04 to <0.2 ha s) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)]				
6d. Microt Score all Vei Co	opography. opesent using 0 to 3 scale. getated hummocks/tussocks arse woody debris >15 cm (6 in.) anding dead >25 cm (10 in.) dbh aphibian breeding pools	Hypothetical Wetland for Estimating D None Low Low Microtopography Cover Scale 0 = Absent 1 = Present in very small amounts or if r 2 = Present in moderate amounts, but n amounts of highest quality 3 = Present in moderate or greater amounts	egree of Interspersion Moderate Moderate High more common of marginal quality ot of highest quality or in small				
26	GRAND TOTAL (max 100 pts)	0- 29 = Category 1, low wetland funct 30- 59 = Category 2, good/moderate w 60-100 = Category 3, superior wetland f	etland function, condition, quality**				

Site: PUB-02	: PUB-021 Rater			Date: 03/2020
max 6 pts. subtotal	Metric 1. Wetland	Area (SIZe) ope	n water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 0.3 to <3 acres (0.1 to <1) X 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) <20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
1	Metric 2. Upland I	Buffers and Sur	rounding Land	Use
max 14 pts. subtotal	MEDIUM. Buffers averag NARROW. Buffers averag VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years MODERATELY HIGH. Re	0 m (164 ft) or more around w e 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8) average <10 m (<32 ft) arou	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) vth forest (5) rk, conservation tillage, new	(4) er (1)
18	Metric 3. Hydrolog	gy		
max 30 pts. subtotal	3a. Sources of water. Score all the limit of	R/CM (5)] R/CM primary source (5)] face water (3) lake or stream) (5) ct only one and assign score. a.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d 12) Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) aturation. Score one or dbl. check & avg. intly inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
3	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts. subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recovering (2) X Recent or no recovery (1) Ab. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) X Poor (1) Ac. Habitat alteration. Score one None or none apparent (5) Recovered (6) Recovered (6) Recovering (3) X Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances o ☐ mowing ☑ grazing	observed Shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: PUB-021	Rater(s):	OH:jb	Date: 03/2020			
24 subtotal previous page						
max 10 pts. subtotal	Metric 5. Special Wetlands					
	ed raw score for Metric 5 is 30	points or higher, the site is automatically co	onsidered a Category 3 wetland.			
documentation fo	or each selection (photos, check of prairie (10); acidophilic veg., most (wetl. &/or adj. upland) incl. >0.2 eologic feature such as spring/seel (5); isolated, perched, or slope we and >0.1 acre (0.04 ha) in reservois annel or floodplain/terrace depress oh. adapt. in >5 trees >10 in. (25 crecommunity with global rank (Nature urrence state/federal threatened/erer rank where mixed rank or qualifulanced habitat/use: migratory son	e multiple values apply in row, score row as single feature with highest point value. Provide election (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). 10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] ture such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) ed, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) cre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) odplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) n >5 trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] tite/federal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) ere mixed rank or qualifier] [exclude records which are only "historic"] bitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) y): <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)				
	Plant Communit	ies, Interspersion, Micr	otopography			
Score all present Aquatic be Emergent Shrub Forest Mudflats	er <20 acres (8 ha)	Vegetation Community Cover Scale 0 = Absent or <0.1 ha (0.25 acre) contige [For BR/CM <0.04 ha (0.1 acre)] 1 = Present and either comprises a small moderate quality, or comprises a sign is of moderate quality, or comprises 2 = Present and either comprises a significant and is of high quality	Il part of wetland's vegetation and is of nificant part but is of low quality ificant part of wetland's vegetation and a small part and is of high quality			
6b. Horizontal (pl. Select only one.	an view) interspersion.	Narrative Description of Vegetation Qu low = Low species diversity &/or domina				
Moderate Moderatel	ly high (4) [BR/CM (5)] (3)[BR/CM (5)] ly low (2) [BR/CM (3)] BR/CM (2)]	and species diversity moderate to w/o presence of rare, threatened of high = A predominance of native species tolerant native sp absent or virtuall	nt native species can also be present, moderately high, but generally or endangered species with nonnative sp &/or disturbance ly absent, and high sp diversity and often			
Extensive Moderate Sparse 5-2	ints for coverage. >75% cover (-5) 25-75% cover (-3) 25% cover (-1) sent <5% cover (0)	Mudflat and Open Water Class Quality 0 = Absent <0.1 ha (0.25 acres) [For BR 1 = Low 0.1 to <1 ha (0.25 to 2.5 acres) (0.1 to 0.5 acre)] 2 = Moderate 1 to <4 ha (2.5 to 9.9 acres) 3 = High 4 ha (9.9 acres) or more [BR/C	/CM <0.04 ha (0.1 acre)] [BR/CM 0.04 to <0.2 ha s) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)]			
6d. Microtopogra Score all present Vegetated Coarse wo		Hypothetical Wetland for Estimating Do None Low Low Microtopography Cover Scale 0 = Absent 1 = Present in very small amounts or if no company to the company cover seale or company to the company cover seale or company cover seale or company cover seale or covered to the c	Moderate Moderate High			
		amounts of highest quality 3 = Present in moderate or greater amounts.				
1 25 11	GRAND TOTAL max 100 pts)	0- 29 = Category 1, low wetland functi 30- 59 = Category 2, good/moderate we 60-100 = Category 3, superior wetland f	etland function, condition, quality**			

Site: PUB-025		Rater(s): OL; jb		Date: 03/2020
max 6 pts. subtotal	Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 X 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
1	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts. subtotal	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years MODERATELY HIGH. Re	0 m (164 ft) or more around v e 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arou	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
18	Metric 3. Hydrolog	ду		
max 30 pts. subtotal	3a. Sources of water. Score all the High pH groundwater (5)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d 2) Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane Regularly inundat Seasonally inundat (2)] Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
3	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts. subtotal	4a. Substrate disturbance. Score None or none apparent (2) Recovering (2) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (S Recovered (6) Recovering (3) Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances o ☐ mowing ☑ grazing	observed

Site: PUB-025		Rater(s): OH:jb	Date: 03/2020			
25 subtotal previous page						
max 10 pts. subtotal	Metric 5. Special V	Vetlands				
	f the documented raw score for	ed raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.				
	Documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature suc Vernal pool (5); isolated, percl Island wetland >0.1 acre (0.04 Braided channel or floodplain/ Gross morph. adapt. in >5 tree Ecological community with glo Known occurrence state/feder [*use higher rank where mixe Superior/enhanced habitat/use	ultiple values apply in row, score row as single feature with highest point value. Provide ion (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) dj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) erched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) (2.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) ain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] deral threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) inixed rank or qualifier] [exclude records which are only "historic"] (use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) (1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)				
1 N	Metric 6. Plant Co	mmunities, Interspers	ion, Microtopography			
	a. Wetland vegetation communit core all present using 0 to 3 sca Aquatic bed Emergent Shrub Forest Mudflats X Open water <20 acres (8 h	le. 0 = Absent or <0.1 ha (i For BR/CM <0.04 h 1 = Present and either of moderate quality, or	2.25 acre) contiguous acre (a (0.1 acre)] comprises a small part of wetland's vegetation and is of comprises a significant part but is of low quality comprises a significant part of wetland's vegetation and ty, or comprises a small part and is of high quality sees a significant part or more of wetland's vegetation			
6b	b. Horizontal (plan view) interspe	ersion. Narrative Description o	f Vegetation Quality			
	elect only one. High (5) Moderately high (4) [BR/C Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM Low (1) [BR/CM (2)] X None (0)	Iow = Low species diver native species M (5)] mod = Native species are nonnative &/or dis and species diver w/o presence of rehigh = A predominance of tolerant native sp	e dominant component of the vegetation, although turbance tolerant native species can also be present, sity moderate to moderately high, but generally are, threatened or endangered species of native species with nonnative sp &/or disturbance absent or virtually absent, and high sp diversity and often			
	c. Coverage of invasive plants. dd or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) X Nearly absent <5% cover (Absent (1)	Mudflat and Open Water 0 = Absent <0.1 ha (0.2 3) 1 = Low 0.1 to <1 ha (0.2 (0.1 to 0.5 acre)) 2 = Moderate 1 to <4 ha	r Class Quality 5 acres) [For BR/CM <0.04 ha (0.1 acre)] 25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha 1 (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] 3) or more [BR/CM 2 ha (5 acres) or more]			
	d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Hypothetical Wetland for socks cm (6 in.) in.) dbh None Low Microtopography Cove 0 = Absent 1 = Present in very sma 2 = Present in moderate amounts of highest	Degree of Interspersion Low Moderate Moderate High Scale Il amounts or if more common of marginal quality amounts, but not of highest quality or in small			
26	GRAND T (max 100	30- 59 = Category 2, g	ow wetland function, condition, quality** cod/moderate wetland function, condition, quality** uperior wetland function, condition, quality**			

Site: PUB-028		Rater(s): OL; jb		Date: 03/2020
max 6 pts. subtotal	Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < X	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] na) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
max 14 pts. subtotal	NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of X LOW. Old field (>10 years MODERATELY HIGH. Re	th. Select only one and assign m (164 ft) or more around we 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arounds. Select one or double char older forest, prairie, savans), shrubland, young 2nd gro	n score. Do not double check vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter and wetland perimeter (0) seck and average. nah, wildlife area, etc. (7) wth forest (5) irk, conservation tillage, new	<. (4) er (1)
max 30 pts. subtotal	Metric 3. Hydrolog 3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BR X Precipitation (1) [unless B Seasonal/intermittent surfix Perennial surface water (1) 3c. Maximum water depth. Selection (27.6 in.) (3) X 0.4 to 0.7 m (16 to 27.6 in.) (3) 40.4 m (<16 in.) (1) [BR/C] 3e. Modifications to natural hydromy None or none apparent (1) Recovered (7) X Recovering (3) Recent or no recovery (1)	nat apply. R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) logic regime. Score one or control Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura louble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)
17	Metric 4. Habitat	Alteration and D	Development	
max 20 pts. subtotal	4a. Substrate disturbance. Score X None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) X Moderately good (4))	erage.	
	Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1))	Check all disturbances of mowing grazing clearcutting selective cutting farming toxic pollutants	bbserved

Site: PUB-028	Rater(s): OH:jb	Date: 03/2020			
51 subtotal previous page					
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.				
documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. t Sensitive geologic feature suc Vernal pool (5); isolated, perc Island wetland >0.1 acre (0.04 Braided channel or floodplain Gross morph. adapt. in >5 tre Ecological community with gld Known occurrence state/fede [*use higher rank where mix Superior/enhanced habitat/us	lophilic veg., mossy substrate >10 sq.m, sphagnupland) incl. >0.25 acre (0.1 ha); old growth (10); ish as spring/seep, sink, losing/underground streamed, or slope wetland (4); headwater wetland [1st I ha) in reservoir, river, or perennial water >6 ft (2 terrace depressions (floodplain pool, slough, oxbes >10 in. (25 cm) dbh: buttress, multitrunk/stool, shalr ank (NatureServe): G1*(10), G2*(5), G3*(3) at threatened/endangered species (10); other rared rank or qualifier] [exclude records which are ore: migratory songbird/waterfowl (5); in-reservoir b	alist concurrence, data sources, references, etc). Im or other moss (5); muck, organic soil layer (3) mature >18 in. (45 cm) dbh (5) [exclude pine plantation] In, cave, waterfall, rock outcrop/cliff (5) It order perennial or above] (3) In m) deep (5) In meander scar, etc.) (3) It itied, shallow roots/tip-up, or pneumatophores (3) It use higher rank where mixed rank or qualifier] It is especies with global rank G1*(10), G2*(5), G3*(3)			
1 Metric 6. Plant Co	mmunities, Interspersi	on, Microtopography			
6a. Wetland vegetation communi Score all present using 0 to 3 sca Aquatic bed Emergent Shrub Forest Mudflats X Open water <20 acres (8)	lle. 0 = Absent or <0.1 ha (0.2 For BR/CM <0.04 ha 1 = Present and either cormoderate quality, or compared in the cormoderate quality and either cormoderate either	25 acre) contiguous acre			
Moss/lichen. Other 6b. Horizontal (plan view) intersp Select only one. High (5) Moderately high (4) [BR/C Moderate (3)[BR/CM (5)] Moderately low (2) [BR/C Moder	Iow = Low species diversit native species M (5)] mod = Native species are of nonnative &/or disturble and species diversit w/o presence of rare high = A predominance of i	dominant component of the vegetation, although rbance tolerant native species can also be present, y moderate to moderately high, but generally threatened or endangered species native species with nonnative sp &/or disturbance			
6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5 Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) Nearly absent <5% cover Absent (1)	but not always, the page. Mudflat and Open Water (1) 0 = Absent < 0.1 ha (0.25 are) 1 = Low 0.1 to <1 ha (0.25 are) (0.1 to 0.5 acre) 2 = Moderate 1 to <4 ha (2.25 are)	consent or virtually absent, and high sp diversity and often bresence of rate, threatened, or endangered species Class Quality Energy [For BR/CM < 0.04 ha (0.1 acre)] 5 to 2.5 acres) [BR/CM 0.04 to < 0.2 ha 2.5 to 9.9 acres) [BR/CM 0.2 to < 02 ha (0.5 to 5 acre)] 6 or more [BR/CM 2 ha (5 acres) or more]			
6d. Microtopography. Score all present using 0 to 3 sc: Vegetated hummocks/tus: Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Ale. Socks cm (6 in.) O in.) dbh None Low Microtopography Cover S 0 = Absent 1 = Present in very small a	Estimating Degree of Interspersion Low Moderate Moderate High Cale Amounts or if more common of marginal quality Impounts, but not of highest quality or in small			
52 GRAND 1	amounts of highest quadrate of a Present in moderate of the company of the compan				

Site: W-001		Rater(s): OL; jb		Date: 03/2020	
max 6 pts.	4 subtotal	Metric 1. Wetland	Area (SIZe) ope	n water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 X 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	1	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts.	subtotal	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years MODERATELY HIGH. Re	0 m (164 ft) or more around we 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8. average <10 m (<32 ft) arou	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
	17	Metric 3. Hydrolog	gy		
max 30 pts.	subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless E Seasonal/intermittent surful X Perennial surface water (I X Perennial S	R/CM (5)] R/CM primary source (5)] face water (3) ake or stream) (5) at only one and assign score. a.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
	3	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one	only one and assign score. or double check and average	Check all disturbances o	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation
		None or none apparent (S Recovered (6) Recovering (3) X Recent or no recovery (1)	,	☐ selective cutting ☐ farming ☐ toxic pollutants	☐ dredging ☐ nutrient enrichment

Site: W-001		Rater(s): OH:jb	Date: 03/2020		
26 subtotal previous page					
max 10 pts. subtotal	tric 5. Special W	etlands/			
	f the documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.				
	nentation for each selection (p Bog, fen, wet prairie (10); acidop Assoc. forest (wetl. &/or adj. upla Sensitive geologic feature such a Vernal pool (5); isolated, perched Island wetland >0.1 acre (0.04 h. Braided channel or floodplain/ter Gross morph. adapt. in >5 trees Ecological community with globa Known occurrence state/federal [*use higher rank where mixed Superior/enhanced habitat/use: I	re multiple values apply in row, score row as single feature with highest point value. Provide election (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). 10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) (or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] inture such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) ed, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) (ore (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) (or (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) (or (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) (or (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) (or (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) (or (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) (or (0.04 ha) in reservoir) (10), G2*(5), G3*(3) (*use higher rank where mixed rank or qualifier] (or (0.04 ha) (0.05 ft), G3*(3) (*use higher rank where mixed rank or qualifier] (or (0.04 ha) (0.05 ft), G3*(3) (
1 Met	tric 6. Plant Com	nmunities, Intersper	sion, Microtopography		
Score	etland vegetation communitie: all present using 0 to 3 scale. Aquatic bed Emergent Shrub Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	. 0 = Absent or <0.1 ha [For BR/CM <0.04] 1 = Present and eithe moderate quality, 2 = Present and eithe is of moderate quality	(0.25 acre) contiguous acre ha (0.1 acre)] r comprises a small part of wetland's vegetation and is of or comprises a significant part but is of low quality r comprises a significant part of wetland's vegetation and ality, or comprises a small part and is of high quality or see a significant part or more of wetland's vegetation		
6b. Ho	orizontal (plan view) interspers	sion. Narrative Description	of Vegetation Quality		
	only one. High (5) Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (1) [BR/CM (2)] Low (1) [BR/CM (2)] None (0)	[ow = Low species divented and investment of the content of the co	ersity &/or dominance of nonnative or disturbance tolerant are dominant component of the vegetation, although disturbance tolerant native species can also be present, ersity moderate to moderately high, but generally are, threatened or endangered species of native species with nonnative sp &/or disturbance p absent or virtually absent, and high sp diversity and often		
Add or	overage of invasive plants. r 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)	Mudflat and Open Wa 0 = Absent <0.1 ha (0 1 = Low 0.1 to <1 ha (0.1 to 0.5 acre)] 2 = Moderate 1 to <4	the presence of rate, threatened, or endangered species ter Class Quality .25 acres) [For BR/CM <0.04 ha (0.1 acre)] 0.25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha ha (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] es) or more [BR/CM 2 ha (5 acres) or more]		
	icrotopography. all present using 0 to 3 scale Vegetated hummocks/tussor Coarse woody debris >15 cn Standing dead >25 cm (10 ir Amphibian breeding pools	Hypothetical Wetland cks m (6 in.) n.) dbh None Low Microtopography Cov 0 = Absent 1 = Present in very sn 2 = Present in moders amounts of highes	for Estimating Degree of Interspersion Low Moderate Moderate High rer Scale mall amounts or if more common of marginal quality ate amounts, but not of highest quality or in small		
27	GRAND TO (max 100 p	30- 59 = Category 2,	low wetland function, condition, quality** good/moderate wetland function, condition, quality** superior wetland function, condition, quality**		

Site: W-004		Rater(s): OL; jb		Date: 03/2020	
max 6 pts.	1 subtotal	Metric 1. Wetland	Area (SIZe) ope	n water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
max o pis.	Subtotal	Select one size class and assign >50 acres (>20.2 ha) (6 pi 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10. 3 to <10 acres (1.2 to <4 h 0.3 to <3 acres (0.1 to <1. X 0.1 to <0.3 acre (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 ha) (0)	score. (s) 20.2 ha) (5) [BR/CM (6)] 1 ha) (4) [BR/CM (6)] (a) (3) [BR/CM (5)] 2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	
	3	Metric 2. Upland E	Buffers and Sur	rounding Land	Use
max 14 pts.	subtotal	MEDIUM. Buffers average NARROW. Buffers average X VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years X MODERATELY HIGH. Re	0 m (164 ft) or more around we 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8. average <10 m (<32 ft) arou	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
	27	Metric 3. Hydrolog	ЭУ		
max 30 pts.	subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BF X Precipitation (1) [unless B Seasonal/intermittent surform X Perennial surface water (I Sc. Maximum water depth. Selectory 20.7 m (27.6 in.) (3) 0.4 to 0.7 m (16 to 27.6 in.) X<0.4 m (<16 in.) (1) [BR/Cl Se. Modifications to natural hydrory X None or none apparent (1 Recovered (7) Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) saturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ated in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
	4	Metric 4. Habitat A	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) Recent or no recovery (1) 4b. Habitat development. Select (1) Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1)) only one and assign score. or double check and average	Check all disturbances o	observed Shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-004		Rater(s): OH:jb	Date: 03/2020
35 subtotal previous page			
max 10 pts. subtotal	Metric 5. Special V	Vetlands	
	If the documented raw score for I	Metric 5 is 30 points or higher, the site is au	utomatically considered a Category 3 wetland.
	ocumentation for each selection Bog, fen, wet prairie (10); acide Assoc. forest (wetl. &/or adj. up Sensitive geologic feature sucl Vernal pool (5); isolated, perch Island wetland >0.1 acre (0.04 Braided channel or floodplain/t Gross morph. adapt. in >5 tree Ecological community with glol Known occurrence state/federa [*use higher rank where mixe Superior/enhanced habitat/use	ophilic veg., mossy substrate >10 sq.m, sphagnu pland) incl. >0.25 acre (0.1 ha); old growth (10); ron as spring/seep, sink, losing/underground streamed, or slope wetland (4); headwater wetland [1st ha) in reservoir, river, or perennial water >6 ft (2 errace depressions (floodplain pool, slough, oxbot s >10 in. (25 cm) dbh: buttress, multitrunk/stool, boal rank (NatureServe): G1*(10), G2*(5), G3*(3) lal threatened/endangered species (10); other rard rank or qualifier] [exclude records which are on migratory songbird/waterfowl (5); in-reservoir b	list concurrence, data sources, references, etc). m or other moss (5); muck, organic soil layer (3) nature >18 in. (45 cm) dbh (5) [exclude pine plantation] n, cave, waterfall, rock outcrop/cliff (5) order perennial or above] (3) m) deep (5) ow, meander scar, etc.) (3) stilted, shallow roots/tip-up, or pneumatophores (3) (*use higher rank where mixed rank or qualifier] e species with global rank G1*(10), G2*(5), G3*(3)
	Metric 6. Plant Co	mmunities, Interspersio	on, Microtopography
	a. Wetland vegetation communition all present using 0 to 3 scal Aquatic bed X Emergent Shrub Forest Mudflats Open water <20 acres (8 h	e. 0 = Absent or <0.1 ha (0.2 For BR/CM <0.04 ha 1 = Present and either cor moderate quality, or co 2 = Present and either cor is of moderate quality,	5 acre) contiguous acre
	b. Horizontal (plan view) interspetielect only one. High (5) Moderately high (4) [BR/CI Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CN Low (1) [BR/CM (2)] None (0)	Iow = Low species diversit native species M (5)] mod = Native species are dononnative &/or disturble for the species diversity w/o presence of rare high = A predominance of r	y &/or dominance of nonnative or disturbance tolerant component of the vegetation, although rbance tolerant native species can also be present, w moderate to moderately high, but generally threatened or endangered species native species with nonnative sp &/or disturbance sent or virtually absent, and high sp diversity and often
	c. Coverage of invasive plants. dd or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) X Sparse 5-25% cover (-1) Nearly absent <5% cover (Absent (1)	but not always, the page 1. Mudflat and Open Water (1) 0 = Absent <0.1 ha (0.25 a) 1 = Low 0.1 to <1 ha (0.25 a) (0.1 to 0.5 acre)] 0) 2 = Moderate 1 to <4 ha (2)	presence of rate, threatened, or endangered species
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 o Standing dead >25 cm (10 Amphibian breeding pools	le. ocks cm (6 in.) in.) dbh None Low Microtopography Cover S 0 = Absent 1 = Present in very small a 2 = Present in moderate a	amounts or if more common of marginal quality mounts, but not of highest quality or in small
37	GRAND T	0- 29 = Category 1, low 30- 59 = Category 2, goo	ality r greater amounts and of highest quality wetland function, condition, quality** d/moderate wetland function, condition, quality** erior wetland function, condition, quality**

Site: W-0	005		Rater(s): OL; jb		Date: 03/2020
max 6 pts.	2 subtotal	Metric 1. Wetland	Area (SIZe) ope	n water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
шах о рьз. — <u>-</u>	Subtotal	Select one size class and assign >50 acres (>20.2 ha) (6 pt) 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10. 3 to <10 acres (1.2 to <4 t) X 0.3 to <3 acres (0.1 to <1. 0.1 to <0.3 acre (0.04 to <0.1 acres (0.04 to	score. (s) 20.2 ha) (5) [BR/CM (6)] 1 ha) (4) [BR/CM (6)] (a) (3) [BR/CM (5)] 2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	
	3	Metric 2. Upland E	Buffers and Sur	rounding Land	Use
max 14 pts.	subtotal	MEDIUM. Buffers average NARROW. Buffers average X VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years X MODERATELY HIGH. Re	0 m (164 ft) or more around we 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8. average <10 m (<32 ft) arou	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
	27	Metric 3. Hydrolog	ЭУ		
max 30 pts.	subtotal	3a. Sources of water. Score all th	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) saturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ated in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
	4	Metric 4. Habitat A	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select (2) Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1)) only one and assign score. or double check and average	Check all disturbances o	observed

Site: W-005		Rater(s): OH:jb	Date: 03/2020			
36						
subtotal previous page						
	Metric 5. Special V	Vetlands				
max 10 pts. subtotal	*If the decumented row coore for	Matria E ia 20 pointa ar highar, tha aita ir	a automatically considered a Catagory 2 watland			
raw score*	Select all that apply. Where multip documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature suc Vernal pool (5); isolated, perch Island wetland >0.1 acre (0.04 Braided channel or floodplain// Gross morph, adapt. in >5 tree Ecological community with glo Known occurrence state/feder [*use higher rank where mixe Superior/enhanced habitat/use	re for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland. multiple values apply in row, score row as single feature with highest point value. Provide action (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). i); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] are such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5), perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) a (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) adplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) >5 trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] [exclude records which are only "historic"] itat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) :<1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)				
2	Metric 6. Plant Co	mmunities, Interspers	sion, Microtopography			
max 20 pts. subtotal	6a. Wetland vegetation communit Score all present using 0 to 3 sca Aquatic bed X Emergent Shrub Forest Mudflats Open water <20 acres (8 h Moss/lichen. Other 6b. Horizontal (plan view) interspect Select only one. High (5) Moderately high (4) [BR/Ch Moderately low (2) [BR/Ch X 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 (-1) Nearly absent <5% cover (-1) Absent (1)	Description of the content of the	(0.25 acre) contiguous acre ha (0.1 acre)] comprises a small part of wetland's vegetation and is of or comprises a significant part but is of low quality comprises a significant part of wetland's vegetation and lity, or comprises a small part and is of high quality rises a significant part or more of wetland's vegetation ty of Vegetation Quality ersity &/or dominance of nonnative or disturbance tolerant re dominant component of the vegetation, although sturbance tolerant native species can also be present, resity moderate to moderately high, but generally rare, threatened or endangered species of native species with nonnative sp &/or disturbance to absent or virtually absent, and high sp diversity and often the presence of rate, threatened, or endangered species			
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Me. socks cm (6 in.) vin.) dbh None Low Microtopography Cove 0 = Absent 1 = Present in very sma 2 = Present in moderat amounts of highest	all amounts or if more common of marginal quality e amounts, but not of highest quality or in small			
38	GRAND T (max 100	30- 59 = Category 2, g	low wetland function, condition, quality** good/moderate wetland function, condition, quality** superior wetland function, condition, quality**			

Site: W-006		Rater(s): OL; jb		Date: 03/2020	
max 6 pts.	1 subtotal	Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4) 0.3 to <3 acres (0.1 to <1) X 0.1 to <0.3 acre (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	5	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts.	subtotal	MEDIUM. Buffers average NARROW. Buffers average X VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of X LOW. Old field (>10 years MODERATELY HIGH. Re	0 m (164 ft) or more around version of the 25 m to <50 m (82 to <164 ger 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arounds. Select one or double chor older forest, prairie, savant	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
	30	Metric 3. Hydrolog	ду		
max 30 pts.	subtotal	3a. Sources of water. Score all the light physical physic	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d 2) Check all disturbances	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
	15	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score X None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) X Fair (3)))	Check all disturbances of	
		Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1)	9)		☐ shrub/sapling removal ☐ herbaceous/aquatic bed removal ☐ woody debris removal ☐ sedimentation ☐ dredging ☐ nutrient enrichment

Site: W-006	ı	Rater(s): OH:jb	Date: 03/2020			
51 subtotal previous page						
max 10 pts. subtotal	Metric 5. Special W	/etlands				
·	*If the documented raw score for Me	etric 5 is 30 points or higher, the site is a	utomatically considered a Category 3 wetland.			
raw score*	documentation for each selection (p Bog, fen, wet prairie (10); acidop Assoc. forest (wetl. &/or adj. upla Sensitive geologic feature such a Vernal pool (5); isolated, perche Island wetland >0.1 acre (0.04 h Braided channel or floodplain/te Gross morph. adapt. in >5 trees Ecological community with globa Known occurrence state/federal [*use higher rank where mixed Superior/enhanced habitat/use:	that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide tation for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). 19, fen, wet prairie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) 19, soc. 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] 19 ensitive geologic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) 19 ernal pool (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) 20 and wetland >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) 21 acided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) 22 acided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) 23 acided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) 24 acided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) 25 acided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) 26 acided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) 27 acided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) 28 acided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) 29 acided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) 20 acided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) 20 acided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander s				
3	Metric 6. Plant Con	nmunities, Interspersi	on, Microtopography			
max 20 pts. subtotal	6a. Wetland vegetation communitie Score all present using 0 to 3 scale Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 ha Moss/lichen. Other	e. 0 = Absent or <0.1 ha (0. For BR/CM <0.04 ha Fresent and either comoderate quality, or or or is of moderate quality.	25 acre) contiguous acre			
	6b. Horizontal (plan view) interspers					
	Moderate (3)[BR/CM (5)]	ct only one. High (5) Moderately high (4) [BR/CM (5)] Moderatel (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] Moderately low (2) [BR/CM (2)] Moderately low (2) [BR/CM (3)] Moderately low (3) [BR/CM (3)] Moderately low (4) [BR/CM (5)] Moderately low (5) [BR/CM (5)] Moderately low (6) [BR/CM (6)] Moderately low (7) [BR/CM (8)] Moderately low (8) [BR/CM (8)] Moderately low (9) [BR/CM (3)]				
	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)	Mudflat and Open Water 0 = Absent < 0.1 ha (0.25	Class Quality acres) [For BR/CM <0.04 ha (0.1 acre)] 5 to 2.5 acres) [BR/CM 0.04 to <0.2 ha			
	Nearly absent <5% cover (0) Absent (1)	2 = Moderate 1 to < 4 ha	2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] or more [BR/CM 2 ha (5 acres) or more]			
	6d. Microtopography. Score all present using 0 to 3 scale Vegetated hummocks/tusso Coarse woody debris >15 cr X Standing dead >25 cm (10 ii	Hypothetical Wetland for each size of the control o	Estimating Degree of Interspersion Low Moderate Moderate High			
		2 = Present in moderate amounts of highest q	amounts or if more common of marginal quality amounts, but not of highest quality or in small			
54	GRAND TO (max 100 p	30- 59 = Category 2, go	w wetland function, condition, quality** od/moderate wetland function, condition, quality** perior wetland function, condition, quality**			

Site: W-007			Rater(s): OL; jb		Date: 03/2020
max 6 pts.	1 subtotal	Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 0.3 to <3 acres (0.1 to <1 X 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	3	Metric 2. Upland I	Buffers and Sur	rounding Land	Use
max 14 pts.	subtotal	MEDIUM. Buffers average NARROW. Buffers average X VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years X MODERATELY HIGH. Re	0 m (164 ft) or more around v e 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arou	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
	19	Metric 3. Hydrolog	gy		
max 30 pts.	subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BIX Precipitation (1) [unless Bix Seasonal/intermittent surfix Perennial surface water (1) 3c. Maximum water depth. Selection (27.6 in.) (3) 0.4 to 0.7 m (16 to 27.6 in.) (3) 4.0.4 m (<16 in.) (1) [BR/C] 3e. Modifications to natural hydromath (1) Recovered (7) Recovering (3) X Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat (2)] Seasonally satural ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ited in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
	12	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score X None or none apparent (2) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2)))	Check all disturbances o	☐ shrub/sapling removal
		X Poor (1) 4c. Habitat alteration. Score one X None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1)	9)	e. grazing clearcutting selective cutting farming toxic pollutants	☐ herbaceous/aquatic bed removal ☐ woody debris removal ☐ sedimentation ☐ dredging ☐ nutrient enrichment

Site: W-007	1	Rater(s): OH:jb	Date: 03/2020			
35 subtotal previous page						
max 10 pts. subtotal	Metric 5. Special W	/etlands				
	*If the documented raw score for M	letric 5 is 30 points or higher, the site is	automatically considered a Category 3 wetland.			
raw score*	documentation for each selection (p Bog, fen, wet prairie (10); acidop Assoc. forest (wetl. &/or adj. upl. Sensitive geologic feature such Vernal pool (5); isolated, perche Island wetland >0.1 acre (0.04 h Braided channel or floodplain/te Gross morph. adapt. in >5 trees Ecological community with globa Known occurrence state/federal [*use higher rank where mixed Superior/enhanced habitat/use:	all that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide entation 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) /ernal pool (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) sland wetland >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) araided 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)				
3	Metric 6. Plant Con	nmunities, Interspers	on, Microtopography			
max 20 pts. subtotal	6a. Wetland vegetation communities Score all present using 0 to 3 scale Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 ha Moss/lichen. Other	e. 0 = Absent or <0.1 ha (0 [For BR/CM <0.04 ha 1 = Present and either or moderate quality, or 2 = Present and either or is of moderate quality	25 acre) contiguous acre			
	Moderate (3)[BR/CM (5)]	izontal (plan view) interspersion. Inly one. High (5) Moderately high (4) [BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] Marrative Description of Vegetation Quality low = Low species diversity &/or dominance of nonnative or disturnative species mod = Native species are dominant component of the vegetation, nonnative &/or disturbance tolerant native species can also and species diversity moderate to moderately high, but gen w/o presence of rare, threatened or endangered species				
	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)	but not always, the Mudflat and Open Water 0 = Absent <0.1 ha (0.25) 1 = Low 0.1 to <1 ha (0.25) (0.1 to 0.5 acre) 2 = Moderate 1 to <4 ha	bsent or virtually absent, and high sp diversity and often presence of rate, threatened, or endangered species Class Quality acres) [For BR/CM <0.04 ha (0.1 acre)] 5 to 2.5 acres) [BR/CM 0.04 to <0.2 ha (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] or more [BR/CM 2 ha (5 acres) or more]			
	6d. Microtopography. Score all present using 0 to 3 scale Vegetated hummocks/tusso Coarse woody debris >15 ct X Standing dead >25 cm (10 it Amphibian breeding pools	Hypothetical Wetland for e. cocks m (6 in.) n.) dbh None Low Microtopography Cover 0 = Absent	Estimating Degree of Interspersion Low Moderate Moderate High			
		2 = Present in moderate amounts of highest of	amounts, but not of highest quality or in small			
38	GRAND TO (max 100)	30- 59 = Category 2, go	w wetland function, condition, quality** od/moderate wetland function, condition, quality** perior wetland function, condition, quality**			

	Site: W-008			Date: 03/2020
max 6 pts. subtotal	Metric 1. Wetland	Area (SIZE) ope	n water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
·	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10. 3 to <10 acres (1.2 to <4 l 0.3 to <3 acres (0.1 to <1. 0.1 to <0.3 acre (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] na) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
3	Metric 2. Upland E	Buffers and Sur	rounding Land	Use
max 14 pts. subtotal	MEDIUM. Buffers average NARROW. Buffers average X VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years X MODERATELY HIGH. Re	o m (164 ft) or more around we 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8. average <10 m (<32 ft) arou use. Select one or double chor older forest, prairie, savants), shrubland, young 2nd grov	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) vth forest (5) rk, conservation tillage, new	(4) er (1)
19	Metric 3. Hydrolog	ду		
max 30 pts. subtotal	3a. Sources of water. Score all the High pH groundwater (5) \[\begin{align*} \text{ High pH groundwater (3) [Bf \overline{X} Precipitation (1) [unless B \overline{S} Seasonal/intermittent surform the surform of the seasonal surface water (1) as the seasonal surface water (1)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. .) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) ologic regime. Score one or d 2) Check all disturbances	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane Regularly inundat Seasonally inundat (2)] Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) auturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2) stormwater)
12	Metric 4. Habitat A	Alteration and D	evelopment	
max 20 pts. subtotal	4a. Substrate disturbance. Score None or none apparent (4 Recovered (3) Recovering (2) Recent or no recovery (1) Ab. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (9 Recovered (6)	only one and assign score. or double check and average	Check all disturbances o	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging

Site: W-008	F	Rater(s): OH:jb	Date: 03/2020			
36 subtotal previous page						
max 10 pts. subtotal	Metric 5. Special W	etlands				
	*If the documented raw score for Me	etric 5 is 30 points or higher, the site is autom	natically considered a Category 3 wetland.			
raw score*	documentation for each selection (p Bog, fen, wet prairie (10); acidop Assoc. forest (wetl. &/or adj. upla Sensitive geologic feature such a Vernal pool (5); isolated, perchec Island wetland >0.1 acre (0.04 ha Braided channel or floodplain/ter Gross morph. adapt. in >5 trees: Ecological community with globa Known occurrence state/federal i [*use higher rank where mixed i Superior/enhanced habitat/use: r	at apply. Where multiple values apply in row, score row as single feature with highest point value. Provide ion for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). fen, wet prairie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) c. 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] itive geologic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) al pool (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) d wetland >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) ed channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) s morph. adapt. in >5 trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) regical community with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] on occurrence state/federal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) e higher rank where mixed rank or qualifier] [exclude records which are only "historic"] rior/enhanced habitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) I (very low quality) : <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)				
3	Metric 6. Plant Com	nmunities, Interspersion	, Microtopography			
max 20 pts. subtotal	6a. Wetland vegetation communities Score all present using 0 to 3 scale. Aquatic bed Emergent X Shrub Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	0 = Absent or <0.1 ha (0.25 ac [For BR/CM <0.04 ha (0.1 1 = Present and either comprises moderate quality, or comprises of moderate quality.	cre) contiguous acre			
	6b. Horizontal (plan view) interspers Select only one. High (5)	low = Low species diversity &/ native species	or dominance of nonnative or disturbance tolerant			
	Moderate (3)[BR/CM (5)]	Moderately high (4) [BR/CM (5)] mod = Native species are dominant component of the vegetar nonnative &/or disturbance tolerant native species can and species diversity moderate to moderately high, but w/o presence of rare, threatened or endangered species.				
	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)	Mudflat and Open Water Clas 0 = Absent <0.1 ha (0.25 acres 1 = Low 0.1 to <1 ha (0.25 to 2 (0.1 to 0.5 acres)] 2 = Moderate 1 to <4 ha (2.5 to	s Quality s) [For BR/CM <0.04 ha (0.1 acre)] 2.5 acres) [BR/CM 0.04 to <0.2 ha 0 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] ore [BR/CM 2 ha (5 acres) or more]			
	6d. Microtopography. Score all present using 0 to 3 scale Vegetated hummocks/tussod Coarse woody debris >15 cn X Standing dead >25 cm (10 ir	Hypothetical Wetland for Esti	mating Degree of Interspersion			
	Amphibian breeding pools	None Low	Low Moderate Moderate High			
		2 = Present in moderate amounts of highest quality	unts or if more common of marginal quality unts, but not of highest quality or in small			
39	GRAND TO (max 100 p	30- 59 = Category 2, good/mo	land function, condition, quality** oderate wetland function, condition, quality** wetland function, condition, quality**			

Site: W-011		Rater(s): OL; jb		Date: 03/2020	
max 6 pts.	1 subtotal	Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 0.3 to <3 acres (0.1 to <1 X 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	1	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts.	subtotal	MEDIUM. Buffers average NARROW. Buffers average X VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years	O m (164 ft) or more around ve 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arou use. Select one or double chor older forest, prairie, savants), shrubland, young 2nd groesidential, fenced pasture, pa	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
	19	Metric 3. Hydrolog	gy		
max 30 pts.	subtotal	3a. Sources of water. Score all the High pH groundwater (5) \overline{X} Other groundwater (3) [BI X] Precipitation (1) [unless B Seasonal/intermittent surful X] Perennial surface water (1) 3c. Maximum water depth. Select Source Sou	R/CM (5)] R/CM primary source (5)] face water (3) ake or stream) (5) at only one and assign score. a.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura louble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) aturation. Score one or dbl. check & avg. intly inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
	12	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3)	i)	Check all disturbances of	II
		Poor to fair (2) X Poor (1) 4c. Habitat alteration. Score one X None or none apparent (9 Recovered (6) Recovering (3) Recent or no recovery (1)	9)		☐ shrub/sapling removal ☐ herbaceous/aquatic bed removal ☐ woody debris removal ☐ sedimentation ☐ dredging ☐ nutrient enrichment

Site: W-011 Rater(Rater(s): OH:jb	Date: 03/2020			
33 subtotal previous page						
max 10 pts. subtot	Metric 5. Special W	/etlands				
		letric 5 is 30 points or higher, the site is a	utomatically considered a Category 3 wetland.			
raw score*	documentation for each selection (Bog, fen, wet prairie (10); acido Assoc. forest (wetl. &/or adj. upl Sensitive geologic feature such Vernal pool (5); isolated, perche Island wetland >0.1 acre (0.04 h Braided channel or floodplain/te Gross morph. adapt. in >5 trees Ecological community with glob Known occurrence state/federal [*use higher rank where mixed Superior/enhanced habitat/use:	tall that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide nentation 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)				
3	Metric 6. Plant Con	nmunities, Interspersi	on, Microtopography			
max 20 pts. subtot	6a. Wetland vegetation communities Score all present using 0 to 3 scales Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 has moss/lichen. Other	e. 0 = Absent or <0.1 ha (0 [For BR/CM <0.04 ha 1 = Present and either co moderate quality, or c 2 = Present and either co is of moderate quality	25 acre) contiguous acre			
	6b. Horizontal (plan view) intersper					
	High (5) Moderately high (4) [BR/CN Moderate (3)[BR/CM (5)]	low = Low species diversity &/or dominance of nonnative or disturb native species High (5)				
	6c. Coverage of invasive plants. Add or deduct points for coverage. Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) Nearly absent <5% cover (0) Absent (1)	Mudflat and Open Water 0 = Absent < 0.1 ha (0.25) 1 = Low 0.1 to <1 ha (0.2 (0.1 to 0.5 acre)) 2 = Moderate 1 to <4 ha (0.25)	Class Quality acres) [For BR/CM <0.04 ha (0.1 acre)] 5 to 2.5 acres) [BR/CM 0.04 to <0.2 ha 2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] or more [BR/CM 2 ha (5 acres) or more]			
	6d. Microtopography. Score all present using 0 to 3 scale Vegetated hummocks/tusso Coarse woody debris >15 c X Standing dead >25 cm (10 i Amphibian breeding pools	Hypothetical Wetland for e. cocks m (6 in.) in.) dbh	Estimating Degree of Interspersion			
		2 = Present in moderate a amounts of highest qu	amounts or if more common of marginal quality amounts, but not of highest quality or in small			
36	GRAND To	30- 59 = Category 2, god	wetland function, condition, quality** od/moderate wetland function, condition, quality** perior wetland function, condition, quality**			

Page 2 of 2

Site: W-	012		Rater(s): OL; jb		Date: 03/2020
max 6 pts.	1 subtotal	Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 X 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 to)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	1	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts.	subtotal	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years	O m (164 ft) or more around version of the 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arounds. Select one or double charrolder forest, prairie, savants), shrubland, young 2nd grovesidential, fenced pasture, pa	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
	16	Metric 3. Hydrolog	ду		
max 30 pts.	subtotal	3a. Sources of water. Score all the High pH groundwater (5) \overline{X} Other groundwater (3) [BI \overline{X} Precipitation (1) [unless B Seasonal/intermittent surform [X] Perennial surface water (I) 3c. Maximum water depth. Select solution [X] = 0.7 m (27.6 in.) (3)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
	8	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) Recent or no recovery (1) Labitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1)	e) only one and assign score.	Check all disturbances o	observed shrub/sapling removal herbaceous/aquatic bed removal
		4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1)	9)		woody debris removal sedimentation dredging nutrient enrichment

Site: W-012		Rater(s): OH:jb	Date: 03/2020				
26 subtotal previous page							
max 10 pts. subtota	Metric 5. Special W	etlands					
	*If the documented raw score for Me	etric 5 is 30 points or higher, the site is automa	tically considered a Category 3 wetland.				
raw score*	documentation for each selection (p Bog, fen, wet prairie (10); acidop Assoc. forest (wetl. &/or adj. upla Sensitive geologic feature such a Vernal pool (5); isolated, perchec Island wetland >0.1 acre (0.04 ha Braided channel or floodplain/ter Gross morph. adapt. in >5 trees: Ecological community with globa Known occurrence state/federal t [*use higher rank where mixed is Superior/enhanced habitat/use: r	all that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide entation 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)					
3	Metric 6. Plant Com	nmunities, Interspersion,	Microtopography				
max 20 pts. subtota	6a. Wetland vegetation communities Score all present using 0 to 3 scale. Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	0 = Absent or <0.1 ha (0.25 acre [For BR/CM <0.04 ha (0.1 a) 1 = Present and either comprise moderate quality, or comprise is of moderate quality, or co	e) contiguous acre				
	6b. Horizontal (plan view) interspers						
	High (5) Moderately high (4) [BR/CM Moderate (3)[BR/CM (5)]	Select only one. High (5) Moderately high (4) [BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] I w = Low species diversity &/or dominance native species mod = Native species are dominant component nonnative &/or disturbance tolerant native species diversity moderate to mode					
		but not always, the presence of rate, threatened, or endangered special content of the presence of rate and the presence of rate, threatened, or endangered special					
	6d. Microtopography. Score all present using 0 to 3 scale Vegetated hummocks/tussod Coarse woody debris >15 cm X Standing dead >25 cm (10 in						
		Microtopography Cover Scale 0 = Absent 1 = Present in very small amour 2 = Present in moderate amoun amounts of highest quality	Low Moderate Moderate High Ints or if more common of marginal quality ts, but not of highest quality or in small Inter amounts and of highest quality				
29	GRAND TO (max 100 p	0- 29 = Category 1, low wetla 30- 59 = Category 2, good/mod	nd function, condition, quality** derate wetland function, condition, quality** wetland function, condition, quality**				

Site: W-	Site: W-017		Rater(s): OL; jb		Date: 03/2020
max 6 pts.	6 subtotal	Metric 1. Wetland	Area (SIZE) ope	en water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	2	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts.	subtotal	MEDIUM. Buffers average X NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years	O m (164 ft) or more around version of the 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arounds. Select one or double charrolder forest, prairie, savants, shrubland, young 2nd growstidential, fenced pasture, pagesidential, pa	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
	20	Metric 3. Hydrolog	gy		
max 30 pts.	subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless B Seasonal/intermittent surf X Perennial surface water (I X Perennial surface water (I Sc. Maximum water depth. Select >0.7 m (27.6 in.) (3) 0.4 to 0.7 m (16 to 27.6 in.) X <0.4 m (<16 in.) (1) [BR/C Se. Modifications to natural hydromaphology in None or none apparent (1 Recovered (7) X Recovering (3) Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d Check all disturbances	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) auturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2) stormwater)
	8	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recent or no recovery (1) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) X Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) X Recovering (3) Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances o	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-017		Rater(s): OH:jb	Date: 03/2020				
36 subtotal previous page							
max 10 pts. subtotal	Metric 5. Special W	etlands					
	*If the documented raw score for Me	etric 5 is 30 points or higher, the site is auto	omatically considered a Category 3 wetland.				
raw score*	documentation for each selection (p Bog, fen, wet prairie (10); acidopl Assoc. forest (wetl. &/or adj. upla Sensitive geologic feature such a Vernal pool (5); isolated, perchec Island wetland >0.1 acre (0.04 ha Braided channel or floodplain/ten Gross morph. adapt. in >5 trees : Ecological community with global Known occurrence state/federal t [*use higher rank where mixed r Superior/enhanced habitat/use: n	Ill that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide ntation for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). Sog, fen, wet prairie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) sasoc. 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) (ernal pool (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) (3) (5) (6) (6) (7) (8) (8) (8) (9) (9) (10) (10) (10) (10) (10) (10) (10) (10					
4	Metric 6. Plant Com	nmunities, Interspersio	n, Microtopography				
max 20 pts. subtotal	6a. Wetland vegetation communities Score all present using 0 to 3 scale. Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	0 = Absent or <0.1 ha (0.25 [For BR/CM <0.04 ha (0.01) 1 = Present and either component equality, or component equality, or component is of moderate quality, or component equality, or component equality.	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				
	6b. Horizontal (plan view) interspers Select only one.	sion. Narrative Description of Ve	getation Quality &/or dominance of nonnative or disturbance tolerant				
	High (5) Moderately high (4) [BR/CM Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3) Low (1) [BR/CM (2)] None (0)	(5)] native species mod = Native species are dor nonnative &/or disturbation and species diversity row/o presence of rare, to high = A predominance of national tolerant native splasses.	· · · · · · · · · · · · · · · · · · ·				
	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)	but not always, the presence of rate, threatened, or endangered set. 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)]					
	6d. Microtopography. Score all present using 0 to 3 scale Vegetated hummocks/tussoc Coarse woody debris >15 cm Standing dead >25 cm (10 in	Hypothetical Wetland for Es	stimating Degree of Interspersion				
	Amphibian breeding pools	None Low Microtopography Cover Sca	Low Moderate Moderate High				
		0 = Absent 1 = Present in very small am 2 = Present in moderate amandunts of highest quali	nounts or if more common of marginal quality ounts, but not of highest quality or in small				
40	GRAND TO (max 100 p	30- 59 = Category 2, good/i	etland function, condition, quality** moderate wetland function, condition, quality** ior wetland function, condition, quality**				

Site: W-017a			Rater(s): OL; jb		Date: 03/2020
max 6 pts.	4 subtotal	Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < X 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	4	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts.	subtotal	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years	O m (164 ft) or more around version of the 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arounds. Select one or double charrolder forest, prairie, savants, shrubland, young 2nd growstidential, fenced pasture, pagesidential, pa	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
	17	Metric 3. Hydrolog	ду		
max 30 pts.	subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless E Seasonal/intermittent surful X Perennial surface water (1) Sc. Maximum water depth. Select >0.7 m (27.6 in.) (3) 0.4 to 0.7 m (16 to 27.6 in.) X <0.4 m (<16 in.) (1) [BR/C] 3e. Modifications to natural hydromaphology (1) Recovered (7) Recovered (7) Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d Check all disturbances	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura louble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
	3	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score None or none apparent (2) Recovering (2) X Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) X Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) Recovering (3) X Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances of ☑ mowing ☐ grazing	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-017a		Rater(s): OH:jb	Date: 03/2020			
28 subtotal previous page						
max 10 pts. subtotal	Metric 5. Special V	Vetlands				
	*If the documented raw score for I	Metric 5 is 30 points or higher, the site is a	automatically considered a Category 3 wetland.			
raw score*	documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature sucl Vernal pool (5); isolated, perch Island wetland >0.1 acre (0.04 Braided channel or floodplain/H Gross morph. adapt. in >5 tree Ecological community with glo Known occurrence state/feder: [*use higher rank where mixe Superior/enhanced habitat/use	Itiple values apply in row, score row as single feature with highest point value. Provide on (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). cidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3). upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] uch as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) rched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) 0.4 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) in/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) rees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] deral threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) ixed rank or qualifier] [exclude records which are only "historic"] use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)				
0	Metric 6. Plant Co	mmunities, Interspersi	on, Microtopography			
max 20 pts. subtotal	6a. Wetland vegetation communit Score all present using 0 to 3 scal Aquatic bed X Emergent Shrub Forest Mudflats Open water <20 acres (8 h	e. 0 = Absent or <0.1 ha (0. For BR/CM <0.04 ha Fresent and either comoderate quality, or or or is of moderate quality.	25 acre) contiguous acre			
	6b. Horizontal (plan view) interspe	ersion. Narrative Description of	Vegetation Quality			
	Select only one. High (5) Moderately high (4) [BR/Cl Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CN X Low (1) [BR/CM (2)] None (0)	low = Low species diversity &/or dominance of nonnative or disturbance to native species M (5)] mod = Native species are dominant component of the vegetation, although nonnative &/or disturbance tolerant native species can also be pres				
	6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) Nearly absent <5% cover (Absent (1)	Mudflat and Open Water 0 = Absent <0.1 ha (0.25 3) 1 = Low 0.1 to <1 ha (0.2 (0.1 to 0.5 acre)] 0) 2 = Moderate 1 to <4 ha	Class Quality acres) [For BR/CM <0.04 ha (0.1 acre)] 5 to 2.5 acres) [BR/CM 0.04 to <0.2 ha (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] or more [BR/CM 2 ha (5 acres) or more]			
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Hypothetical Wetland for ocks cm (6 in.) in.) dbh None Low Microtopography Cover 0 = Absent 1 = Present in very small	Estimating Degree of Interspersion Low Moderate Moderate High Scale amounts or if more common of marginal quality			
		amounts of highest q	amounts, but not of highest quality or in small uality or greater amounts and of highest quality			
28	GRAND T (max 100	O- 29 = Category 1, lov 30- 59 = Category 2, go	v wetland function, condition, quality** od/moderate wetland function, condition, quality** oerior wetland function, condition, quality**			

Site: W-019	Rater(s): OL; jb	Date: 03/2020
3 Metric 1. We	tiand Area (Size) open wa	R/CM = adjusted points for Blue Ridge and Cumberland Mountains. If an ter body (excluding aquatic beds and seasonal mudflats) is >20 acres en add only 0.5 acre (0.2 ha) of it to the wetland size for Metric 1.
Select one size class at >50 acres (>20.: 25 to <50 acres 10 to <25 acres X 3 to <10 acres (0.3 to <3 acres (2 ha) (6 pts) (10.1 to <20.2 ha) (5) [BR/CM (6)] (4 to <10.1 ha) (4) [BR/CM (6)] 1.2 to <4 ha) (3) [BR/CM (5)] 0.1 to <1.2 ha) (2) [BR/CM (3)] (0.04 to <0.1 ha) (1) [BR/CM (2)]	ources/assumptions for size estimate (list): GPS
max 14 pts. subtotal 2a. Calculate average by WIDE. Buffers a MEDIUM. Buffer NARROW. Buffer X VERY NARROW 2b. Intensity of surround VERY LOW. 2nd LOW. Old field (X MODERATELY)	and Buffers and Surrous outfer width. Select only one and assign scoverage 50 m (164 ft) or more around wetlar is average 25 m to <50 m (82 to <164 ft) are as average 10 m to <25 m (32 ft to <82 ft) as d. Buffers average <10 m (<32 ft) around widing land use. Select one or double check at growth or older forest, prairie, savannah, >10 years), shrubland, young 2nd growth ft HIGH. Residential, fenced pasture, park, contractions.	ore. Do not double check. and perimeter (7) bund wetland perimeter (4) around wetland perimeter (1) etland perimeter (0) and average. wildlife area, etc. (7) brest (5) bonservation tillage, new fallow field (3)
3a. Sources of water. S High pH groundwa X Precipitation (1) Seasonal/interm X Perennial surface 3c. Maximum water dep >0.7 m (27.6 in.) 0.4 to 0.7 m (16 X < 0.4 m (<16 in.)	core all that apply. water (5) ter (3) [BR/CM (5)] [unless BR/CM primary source (5)] ittent surface water (3) e water (lake or stream) (5) oth. Select only one and assign score. (3) to 27.6 in.) (2) [BR/CM (3)] (1) [BR/CM 0.15 to 0.4 m (6 to <16 in.) (2)] ural hydrologic regime. Score one or double oparent (12) Check all disturbances observations.	b. Connectivity. Score all that apply. X 100-year floodplain (1) X Between stream/lake and other human use (1) X Part of wetland/upland (e.g., forest), complex (1) X Part of riparian or upland corridor (1) Duration inundation/saturation. Score one or dbl. check & avg. Semi- to permanently inundated/saturated (4) X 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) e check and average.
20 Metric 4. Hak	itat Alteration and Dev	elopment
4a. Substrate disturban X None or none application	ce. Score one or double check and average oparent (4) covery (1) it. Select only one and assign score. d (4) core one or double check and average. oparent (9)	•

Site: W-019		Rater(s): OH:jb	Date: 03/2020				
46 subtotal previous page							
max 10 pts. subtotal	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.				
raw score*	documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature suc Vernal pool (5); isolated, perci Island wetland >0.1 acre (0.04 Braided channel or floodplain/ Gross morph. adapt. in >5 tree Ecological community with gld Known occurrence state/fedet [*use higher rank where mixe Superior/enhanced habitat/use	Where multiple values apply in row, score row as single feature with highest point value. Provide ch selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). airie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) ett. &/or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] gic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) etc. 1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) etc. 1 or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) etc. 1 or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) etc. 1 or floodplain (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] (acc state/federal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) (acc) have the mixed rank or qualifier] [exclude records which are only "historic"] (acc) state/federal treatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) (acc) have mixed rank or qualifier] [exclude records which are only "historic"] (acc) etc. 4 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)					
0	Metric 6. Plant Co	mmunities, Interspers	ion, Microtopography				
max 20 pts. subtotal	6a. Wetland vegetation communit Score all present using 0 to 3 sca Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 l	le. 0 = Absent or <0.1 ha (0 For BR/CM <0.04 ha For BR/CM <0.04 ha	.25 acre) contiguous acre a (0.1 acre)] comprises a small part of wetland's vegetation and is of comprises a significant part but is of low quality comprises a significant part of wetland's vegetation and y, or comprises a small part and is of high quality es a significant part or more of wetland's vegetation				
	6b. Horizontal (plan view) interspe						
	Select only one. High (5) Moderately high (4) [BR/C Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CN Low (1) [BR/CM (2)] None (0)	low = Low species diversity &/or dominance of nonnative or disturbance native species #) [BR/CM (5)] mod = Native species are dominant component of the vegetation, althous nonnative &/or disturbance tolerant native species can also be proposed [BR/CM (3)] and species diversity moderate to moderately high, but generally					
	6c. Coverage of invasive plants.	•	presence of rate, threatened, or endangered species				
	Add or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) Nearly absent <5% cover Absent (1)	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 < 02 ha (0.5 to 5 acres) a = High 4 ha (9.9 acres) or more [BR/CM 2 ha (5 acres) or more] Hypothetical Wetland for Estimating Degree of Interspersion 15 cm (6 in.) (10 in.) dbh					
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools						
		1 = Present in very smal2 = Present in moderate amounts of highest of	amounts or if more common of marginal quality amounts, but not of highest quality or in small quality or greater amounts and of highest quality				
46	GRAND 7 (max 100	30- 59 = Category 2, go	w wetland function, condition, quality** od/moderate wetland function, condition, quality** perior wetland function, condition, quality**				

Site: W-021		Rater(s): OL; jb		Date: 03/2020
max 6 pts. subtotal	Metric 1. Wetland	Area (SIZe) ope	n water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 0.3 to <3 acres (0.1 to <1) 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
2	Metric 2. Upland I	Buffers and Sur	rounding Land	Use
max 14 pts. subtotal	MEDIUM. Buffers averag NARROW. Buffers averag X VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth LOW. Old field (>10 years MODERATELY HIGH. Re	0 m (164 ft) or more around w e 25 m to <50 m (82 to <164 l ge 10 m to <25 m (32 ft to <82 average <10 m (<32 ft) arou	retland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) vth forest (5) rk, conservation tillage, new	(4) er (1)
16	Metric 3. Hydrolog	ду		
max 30 pts. subtotal	3a. Sources of water. Score all the limit of	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d 2) Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) aturation. Score one or dbl. check & avg. intly inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
3	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts. subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recovering (2) X Recent or no recovery (1) Ab. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) X Poor (1) 4c. Habitat alteration. Score one None or none apparent (5) Recovered (6) Recovering (3) X Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances o ☑ mowing ☐ grazing	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-	Site: W-021		ı	Rater(s): OH:jb		Date: 03/2020				
23 subtotal previo	ous page									
max 10 pts.	subtotal	Metric 5	. Special W	etland:	S					
		*If the docume	nted raw score for M	etric 5 is 30 p	oints or higher,	the site is a	utomatically co	onsidered a Cat	tegory 3 wetlar	nd.
raw score*		documentation Bog, fen Assoc. fi Sensitivi Vernal p Island w Braided Gross m Ecologic Known c [*use h Superior	of for each selection (p. wet prairie (10); acidoporest (wetl. &/or adj. uplate geologic feature such a cool (5); isolated, perchetland >0.1 acre (0.04 h channel or floodplain/telorph. adapt. in >5 trees all community with global cocurrence state/federal igher rank where mixed r/enhanced habitat/use:	ultiple values apply in row, score row as single feature with highest point value. Provide ion (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) 4j. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) erched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) 0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) ain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] deral threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) mixed rank or qualifier] [exclude records which are only "historic"] /use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) 11 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)						
	0	Metric 6	. Plant Con	nmuniti	es, Inter	spersi	on, Micr	otopogr	aphy	
max 20 pts.	subtotal	Score all prese Aquatic X Emerge Shrub Forest Mudflat	ent		1 = Present ar moderate 2 = Present ar	<0.1 ha (0.2 M <0.04 ha nd either corquality, or cond either corrate quality, and comprise	25 acre) contiguates (0.1 acre)] mprises a smales a significates a significates a comprises a significates (2.2 comprises)	Il part of wetlar nificant part bu ificant part of w a small part an	t is of low qual retland's veget d is of high qu	lity ation and ality
		6b. Horizontal Select only on	(plan view) interspers	sion.	Narrative Desc				/e or disturban	ce tolerant
		High (5 Modera Modera Modera) ately high (4) [BR/CM ate (3)[BR/CM (5)] ately low (2) [BR/CM () [BR/CM (2)]	nonnative &/or disturbance tolerant native species can also be presented and species diversity moderate to moderately high, but generally				ough present, ly bance		
			of invasive plants. points for coverage.					te, threatened,	or endangered	d species
		Extensi Modera X Sparse	ve >75% cover (-5) ate 25-75% cover (-3) 5-25% cover (-1) absent <5% cover (0	5) 0 = Absent < 0.1 ha (0.25 acres) [For BR/CM < 0.04 ha (0.1 acre)] (-3) 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)]					to 5 acre)]	
		Vegeta Coarse Standir	graphy. ent using 0 to 3 scale ted hummocks/tusso woody debris >15 cr g dead >25 cm (10 in pian breeding pools	cks m (6 in.)	None Microtopograp 0 = Absent 1 = Present in 2 = Present in	Low hy Cover S very small a	Low Scale	Moderate more common of	Moderate of marginal qua	
						f highest qu	ality			
	23		GRAND TO		30- 59 = Cate	gory 2, goo	d/moderate we	ion, condition, o etland function, unction, condit	condition, qua	ality**

Site: W	Site: W-022		Rater(s): OL; jb		Date: 03/2020
max 6 pts.	1 subtotal	Metric 1. Wetland	Area (SIZE) ope	n water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	2	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts.	subtotal	MEDIUM. Buffers average NARROW. Buffers average X VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years MODERATELY HIGH. Re	0 m (164 ft) or more around v e 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arou	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
	27	Metric 3. Hydrolog	gy		
max 30 pts.	subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless E Seasonal/intermittent surful X Perennial surface water (1) Sc. Maximum water depth. Select >0.7 m (27.6 in.) (3) 0.4 to 0.7 m (16 to 27.6 in.) X <0.4 m (<16 in.) (1) [BR/C] 3e. Modifications to natural hydrox X None or none apparent (1) Recovered (7) Recovering (3) Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] face water (3) face water (4) face water (4) face water (5) face water (5) face water (3) face water (4) face wate	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
	16	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score X None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4)	!)	erage. Check all disturbances of	phenyed
		X Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one X None or none apparent (9 Recovered (6) Recovering (3) Recent or no recovery (1)	9)	☑ mowing ☐ grazing	

Site: W-022	ı	Rater(s): OH:jb	Date: 03/2020				
46							
subtotal previous page							
	Metric 5. Special W	/etlands					
max 10 pts. subtotal	-						
		etric 5 is 30 points or higher, the site is automatic	,				
raw score*	documentation for each selection (p Bog, fen, wet prairie (10); acidop Assoc. forest (wetl. &/or adj. upla Sensitive geologic feature such a Vernal pool (5); isolated, perche Island wetland >0.1 acre (0.04 h Braided channel or floodplain/tel Gross morph. adapt. in >5 trees Ecological community with globa Known occurrence state/federal [*use higher rank where mixed Superior/enhanced habitat/use:	that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide ation for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). g, fen, wet prairie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) soc. 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] insitive geologic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) mal pool (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) and wetland >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) ided channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) ses morph. adapt. in >5 trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) plogical community with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] [exclude records which are only "historic"] perior/enhanced habitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) and (10) in the control of invasives OR nonvegetated on mined/excavated land (-10)					
3	Metric 6. Plant Con	nmunities, Interspersion, I	Microtopography				
max 20 pts. subtotal	6a. Wetland vegetation communities Score all present using 0 to 3 scale Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 hat Moss/lichen. Other 6b. Horizontal (plan view) interspers Select only one. High (5) Moderately high (4) [BR/CM (5)] X Moderately low (2) [BR/CM (5)] X Moderately low (2) [BR/CM (6)] 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 (-1) Nearly absent <5% cover (0	Ses. Vegetation Community Cover Sec. 0 = Absent or <0.1 ha (0.25 acre)	cale contiguous acre re) a small part of wetland's vegetation and is of se a significant part but is of low quality a significant part of wetland's vegetation and aprises a small part and is of high quality inficant part or more of wetland's vegetation cion Quality dominance of nonnative or disturbance tolerant tomponent of the vegetation, although tolerant native species can also be present, trate to moderately high, but generally tened or endangered species pecies with nonnative sp &/or disturbance virtually absent, and high sp diversity and often the of rate, threatened, or endangered species Quality For BR/CM < 0.04 ha (0.1 acre) acres) [BR/CM 0.04 to < 0.2 ha the open continuous				
	Absent (1) 6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks						
	Coarse woody debris >15 cr X Standing dead >25 cm (10 in	m (6 in.)					
	Amphibian breeding pools		ow Moderate Moderate High				
			s or if more common of marginal quality s, but not of highest quality or in small er amounts and of highest quality				
49	GRAND TO (max 100 p	30- 39 = Category 2, good/mode	d function, condition, quality** erate wetland function, condition, quality** etland function, condition, quality**				

Page 2 of 2

Site: W-023	3		Rater(s): OL; jb		Date: 03/2020
max 6 pts. subt		Metric 1. Wetland	Area (SIZE) ope	en water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign X >50 acres (>20.2 ha) (6 pi 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10. 3 to <10 acres (1.2 to <4 h 0.3 to <3 acres (0.1 to <1. 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) 20.2 ha) (5) [BR/CM (6)] 1 ha) (4) [BR/CM (6)] na) (3) [BR/CM (5)] 2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	6	Metric 2. Upland E	Buffers and Sur	rounding Land	Use
max 14 pts. subt	total	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years MODERATELY HIGH. Re	o m (164 ft) or more around ve 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arou use. Select one or double chor older forest, prairie, savant), shrubland, young 2nd grov	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
28	8	Metric 3. Hydrolog	ЭУ		
max 30 pts. subt	total	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BF X Precipitation (1) [unless B Seasonal/intermittent surf X Perennial surface water (I Sc. Maximum water depth. Selection (27.6 in.) (3) 0.4 to 0.7 m (16 to 27.6 in.) (3) 0.4 to 0.7 m (16 in.) (1) [BR/Cl Se. Modifications to natural hydrox X None or none apparent (1 Recovered (7) Recovering (3) Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) elogic regime. Score one or described.	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat (2)] Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
1	18	Metric 4. Habitat A	Alteration and D	evelopment	
max 20 pts. subt	total	4a. Substrate disturbance. Score X None or none apparent (4 Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select of Excellent (7) Very good (6) X Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one X None or none apparent (9)) only one and assign score. or double check and average	Check all disturbances of ☑ mowing ☐ grazing	observed ☑ shrub/sapling removal ☐ herbaceous/aquatic bed removal ☐ woody debris removal ☐ sedimentation
		Recovering (3) Recent or no recovery (1)	,	☐ farming ☐ toxic pollutants	☐ dredging ☐ nutrient enrichment

Site: W-023	Rater(s): OH:jb		Date: 03/2020			
58 subtotal previous page						
Metric 5. Spe	Metric 5. Special Wetlands					
	core for Metric 5 is 30 points or higher, t	he site is automatically co	nsidered a Category 3 wetland.			
documentation for each Bog, fen, wet prairie Assoc. forest (wetl. Sensitive geologic f Vernal pool (5); isol Island wetland >0.1 Braided channel or Gross morph. adapt Ecological commun Known occurrence : [*use higher rank w	ere multiple values apply in row, score roselection (photos, checklists, maps, reso (10); acidophilic veg., mossy substrate >10 so (30); acidophilic veg., solid, losing/undernoted, perched, or slope wetland (4); headwater (5); here mixed rank or qualifier] [exclude records (4); headwater (4); headwa	urce specialist concurrence, m, sphagnum or other moss growth (10); mature >18 in. (4 ground stream, cave, waterfal r wetland [1st order perennial water >6 ft (2 m) deep (5), slough, oxbow, meander scaltitrunk/stool, stilted, shallow rote, (5), G3*(3) [*use higher rank 10); other rare species with gl which are only "historic"] in-reservoir buttonbush (4); other states are species with gl which are only "historic"]	ve, data sources, references, etc). (5); muck, organic soil layer (3) 5 cm) dbh (5) [exclude pine plantation] I, rock outcrop/cliff (5) or above] (3) ver, etc.) (3) oots/tip-up, or pneumatophores (3) obstylip-up, or pneumatophores (3) obstylip-up, or qualifier] obal rank G1*(10), G2*(5), G3*(3) her fish/wildlife management/designation (3)			
7 Metric 6. Plar	t Communities, Inters	spersion, Micr	otopography			
6a. Wetland vegetation of Score all present using of Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 a Moss/lichen. Other	to 3 scale.	quality, or comprises a sign d either comprises a signi rate quality, or comprises a d comprises a significant	I part of wetland's vegetation and is of nificant part but is of low quality ficant part of wetland's vegetation and a small part and is of high quality part or more of wetland's vegetation			
6b. Horizontal (plan view Select only one. High (5) Moderately high (1) Moderate (3)[BR/X] Moderately low (2) Low (1) [BR/CM (1)]	low = Low spenative spen	pecies pecies are dominant comp pe &/or disturbance tolerant pies diversity moderate to be pence of rare, threatened of ninance of native species	onent of the vegetation, although t native species can also be present, moderately high, but generally			
6c. Coverage of invasive Add or deduct points for Extensive >75% Moderate 25-75% X Sparse 5-25% co Nearly absent <5 Absent (1)	but not a plants. coverage. cover (-5) cover (-3) ver (-1) cover (0) but not a plants. Mudflat and Op 0 = Absent <0. 1 = Low 0.1 to (0.1 to 0.5) 2 = Moderate of	lways, the presence of rate on Water Class Quality 1 ha (0.25 acres) [For BR. <1 ha (0.25 to 2.5 acres) acre)]	(CM < 0.04 ha (0.1 acre)) (BR/CM 0.04 to < 0.2 ha (BR/CM 0.2 to < 0.2 ha (0.5 to 5 acre))			
6d. Microtopography. Score all present using Vegetated humm Coarse woody de Amphibian breed	0 to 3 scale. ocks/tussocks bris >15 cm (6 in.) 5 cm (10 in.) dbh ng pools None Microtopograp 0 = Absent 1 = Present in 2 = Present in amounts o		Moderate Moderate High more common of marginal quality of of highest quality or in small			
	30- 59 = Cate		on, condition, quality** etland function, condition, quality** unction, condition, quality**			

Metric 1. Wetland Area (size) Motor: BR/CM = adjusted points for Blue Ridge and Cumberland Mour open water body (excluding aquatic beds and seasonal mudflats) is (8 ha), then add only 0.5 acre (0.2 ha) of it to the wetland size for Metric Select one size class and assign score. Sources/assumptions for size estimate (list): Sources/assumptions for size estimate (list):	>20 acres
>50 acres (>20.2 ha) (6 pts)	
10 to <25 acres (4 to <10.1 ha) (4) [BR/CM (6)] X 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)] <	
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)	
28 Metric 3. Hydrology	
3a. Sources of water. Score all that apply. High pH groundwater (5) X 100-year floodplain (1) Between stream/lake and other human use (1) Part of riparian or upland corridor (1) Part of riparian or upland corridor (1) Seasonall/intermittent surface water (3) Seasonall/intermittent surface water (3) Part of riparian or upland corridor (1) Seasonall/intermittent surface water (3) Seasonall/intermittent surface water (3) Part of riparian or upland corridor (1) Seasonall/intermittent surface water (3) Seasonally inundated/saturated (4) Regularly inundated/saturated (4) X Regularly inundated/saturated (3) Regularly inundated/saturated (3) Regularly inundated/saturated (4) Seasonally inundated (2) Regularly inundated (3) Regularly inundated (2) Regularly inundated (3) Regularly inundated (4) Regularly inundated (4) Regularly inundated (4) Regularly inundated (3) Regularly inundated (4) Regu	neck & avg.
15 Metric 4. Habitat Alteration and Development	
4a. Substrate disturbance. Score one or double check and average. X 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. Moderately good (5) Moderately good (6) Good (7) Poor (1) Poor (1) Grazing Herbaceous/aquatic bed (1) Grazing Herbaceous/aquatic bed (1) Glearcutting Woody debris removal Selective cutting Selective cut	removal

Site: W-024		Rater(s): OH:jb	Date: 03/2020		
50 subtotal previous page					
max 10 pts. subtotal	Metric 5. Special V	Vetlands			
·	*If the documented raw score for N	Metric 5 is 30 points or higher, the site is	automatically considered a Category 3 wetland.		
raw score*	documentation for each selection Bog, fen, wet prairie (10); acide Assoc. forest (wetl. &/or adj. up Sensitive geologic feature such Vernal pool (5); isolated, perch Island wetland >0.1 acre (0.04 Braided channel or floodplain/t Gross morph. adapt. in >5 tree Ecological community with glol Known occurrence state/federa [*use higher rank where mixe Superior/enhanced habitat/use	(photos, checklists, maps, resource speciphilic veg., mossy substrate >10 sq.m, sphagibland) incl. >0.25 acre (0.1 ha); old growth (10) in as spring/seep, sink, losing/underground streed, or slope wetland (4); headwater wetland [1 ha) in reservoir, river, or perennial water >6 ft errace depressions (floodplain pool, slough, ox s >10 in. (25 cm) dbh: buttress, multitrunk/stocoal rank (NatureServe): G1*(10), G2*(5), G3*(3 all threatened/endangered species (10); other red rank or qualifier] [exclude records which are it migratory songbird/waterfowl (5); in-reservoir	st order perennial or above] (3) (2 m) deep (5) (bow, meander scar, etc.) (3) I, stilted, shallow roots/tip-up, or pneumatophores (3) () [*use higher rank where mixed rank or qualifier] are species with global rank G1*(10), G2*(5), G3*(3)		
2	Metric 6. Plant Coi	mmunities, Interspers	ion, Microtopography		
max 20 pts. subtotal	6a. Wetland vegetation communiti Score all present using 0 to 3 scal Aquatic bed X Emergent Shrub Forest Mudflats Open water <20 acres (8 h	e. 0 = Absent or <0.1 ha (0 For BR/CM <0.04 ha Fresent and either or moderate quality, or	.25 acre) contiguous acre a (0.1 acre)] comprises a small part of wetland's vegetation and is of comprises a significant part but is of low quality comprises a significant part of wetland's vegetation and y, or comprises a small part and is of high quality es a significant part or more of wetland's vegetation		
	6b. Horizontal (plan view) interspe				
	Moderate (3)[BR/CM (5)]	only one. High (5) Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low 1			
	6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) Nearly absent <5% cover (Absent (1)	Mudflat and Open Water 0 = Absent <0.1 ha (0.25) 1 = Low 0.1 to <1 ha (0.35) (0.1 to 0.5 acre) 2 = Moderate 1 to <4 ha	Class Quality 5 acres) [For BR/CM <0.04 ha (0.1 acre)] 25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] 0 or more [BR/CM 2 ha (5 acres) or more]		
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 o Standing dead >25 cm (10 Amphibian breeding pools	Hypothetical Wetland for ocks cm (6 in.) in.) dbh None Low Microtopography Cover 0 = Absent 1 = Present in very smal 2 = Present in moderate amounts of highest of the ocks.	r Estimating Degree of Interspersion Low Moderate Moderate High Scale I amounts or if more common of marginal quality amounts, but not of highest quality or in small quality		
52	GRAND T (max 100	OTAL 0- 29 = Category 1, lo 30- 59 = Category 2, gc	or greater amounts and of highest quality w wetland function, condition, quality** od/moderate wetland function, condition, quality** perior wetland function, condition, quality**		

Site: W-	025		Rater(s): OL; jb		Date: 03/2020
max 6 pts.	1 subtotal	Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4) 0.3 to <3 acres (0.1 to <1) 0.1 to <0.3 acre (0.04 to <0.1) <p><0.1 acre (0.04 ha) (0)</p>	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] na) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	1	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts.	subtotal	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years	o m (164 ft) or more around version of the 25 m to <50 m (82 to <164 ger 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arounds. Select one or double charrolder forest, prairie, savants), shrubland, young 2nd grovesidential, fenced pasture, pa	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
	17	Metric 3. Hydrolog	ду		
max 30 pts.	subtotal	3a. Sources of water. Score all the High pH groundwater (5)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. .) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d 2) Check all disturbances	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura louble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) aturation. Score one or dbl. check & avg. intly inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
	4	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances of ☑ mowing ☐ grazing	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-025		Rater(s): OH:jb	Date: 03/2020
23 subtotal previous page			
max 10 pts. subtotal	Metric 5. Special \	Vetlands	
max 10 pts. Subtotal	*If the documented raw score for	Metric 5 is 30 points or higher, the site is	automatically considered a Category 3 wetland.
raw score*	Select all that apply. Where multiple documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature suc Vernal pool (5); isolated, percl Island wetland >0.1 acre (0.04 Braided channel or floodplain/ Gross morph. adapt. in >5 tree Ecological community with glo Known occurrence state/feder [*use higher rank where mixe Superior/enhanced habitat/use	ple values apply in row, score row as sing (photos, checklists, maps, resource spec ophilic veg., mossy substrate >10 sq.m, sphagr pland) incl. >0.25 acre (0.1 ha); old growth (10) has spring/seep, sink, losing/underground strend, or slope wetland (4); headwater wetland [1 ha) in reservoir, river, or perennial water >6 ft (terrace depressions (floodplain pool, slough, oxes >10 in. (25 cm) dbh: buttress, multitrunk/sobal rank (NatureServe): G1*(10), G2*(5), G3*(3 al threatened/endangered species (10); other raded rank or qualifier] [exclude records which are de: migratory songbird/waterfowl (5); in-reservoir	le feature with highest point value. Provide ialist concurrence, data sources, references, etc). hum or other moss (5); muck, organic soil layer (3); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] am, cave, waterfall, rock outcrop/cliff (5) st order perennial or above] (3) (2 m) deep (5) bow, meander scar, etc.) (3) I, stilted, shallow roots/tip-up, or pneumatophores (3)) [*use higher rank where mixed rank or qualifier] are species with global rank G1*(10), G2*(5), G3*(3)
1	Metric 6. Plant Co	mmunities, Interspers	ion, Microtopography
max 20 pts. subtotal	6a. Wetland vegetation communit Score all present using 0 to 3 sca Aquatic bed X Emergent Shrub Forest Mudflats Open water <20 acres (8 h	le. 0 = Absent or <0.1 ha (0 [For BR/CM <0.04 ha 1 = Present and either or moderate quality, or 2 = Present and either or is of moderate quality	25 acre) contiguous acre
	6b. Horizontal (plan view) interspe	ersion. Narrative Description of	Vegetation Quality
	Select only one. High (5) Moderately high (4) [BR/C Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM Low (1) [BR/CM (2)] None (0)	Iow = Low species divers native species M (5)] mod = Native species are nonnative &/or dist and species divers w/o presence of ra high = A predominance of tolerant native species.	dominant component of the vegetation, although urbance tolerant ative species can also be present, ity moderate to moderately high, but generally re, threatened or endangered species ative species with nonnative sp &/or disturbance absent or virtually absent, and high sp diversity and often
	6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) X Nearly absent <5% cover Absent (1)	Mudflat and Open Water 0 = Absent <0.1 ha (0.25 3) 1 = Low 0.1 to <1 ha (0.2 (0.1 to 0.5 acre)] (0) 2 = Moderate 1 to <4 ha	Class Quality acres) [For BR/CM <0.04 ha (0.1 acre)] 25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] or more [BR/CM 2 ha (5 acres) or more]
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Hypothetical Wetland for socks cm (6 in.) in.) dbh None Low Microtopography Cover 0 = Absent 1 = Present in very small 2 = Present in moderate amounts of highest of the socks of the soc	r Estimating Degree of Interspersion Low Moderate Moderate High Scale amounts or if more common of marginal quality amounts, but not of highest quality or in small
24	GRAND T (max 100	30- 59 = Category 2, go	w wetland function, condition, quality** od/moderate wetland function, condition, quality** perior wetland function, condition, quality**

Site: W-026		Rater(s): OL; jb		Date: 03/2020
max 6 pts. subto		Area (SIZe) ope	en water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
1	Metric 2. Upland I	Buffers and Sur	rounding Land	Use
max 14 pts. subto	2a. Calculate average buffer wid WIDE. Buffers average 50 MEDIUM. Buffers averag NARROW. Buffers averag VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years	O m (164 ft) or more around ve 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arounds. Select one or double char older forest, prairie, savans), shrubland, young 2nd groesidential, fenced pasture, pastidential, fenced pastidential,	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter and wetland perimeter (0) seck and average. hah, wildlife area, etc. (7) wth forest (5) irk, conservation tillage, new	(4) er (1)
17	Metric 3. Hydrolog	ду		
max 30 pts. subto	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [B] X Precipitation (1) [unless B] Seasonal/intermittent surful X Perennial surface water (3c. Maximum water depth. Selection > 0.7 m (27.6 in.) (3) X 0.4 to 0.7 m (16 to 27.6 ir.)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. a.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or color Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat (2)] Seasonally satura louble check and average.	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)
6	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts. subto	4a. Substrate disturbance. Score X None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5)	!)	erage.	
	Moderately good (4) Fair (3) Poor to fair (2) X Poor (1) 4c. Habitat alteration. Score one None or none apparent (5) Recovered (6) Recovering (3) X Recent or no recovery (1)	9)	Check all disturbances of mowing grazing clearcutting selective cutting farming toxic pollutants	bbserved shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-026		Rater(s): OH:jb	Date: 03/2020			
24 subtotal previous page						
max 10 pts. subtotal	Metric 5. Special Wetlands					
·	*If the documented raw score for I	e documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.				
raw score*	documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature sucl Vernal pool (5); isolated, perch Island wetland >0.1 acre (0.04 Braided channel or floodplain/ Gross morph. adapt. in >5 tree Ecological community with glo Known occurrence state/feder: [*use higher rank where mixe Superior/enhanced habitat/use	here multiple values apply in row, score row as single feature with highest point value. Provide a selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). ie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3). 8/or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) olated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) 1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) 1 floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) 1 ot. in >5 trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) 1 inity with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] 1 estate/federal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) where mixed rank or qualifier] [exclude records which are only "historic"] 3 habitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) tality): <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)				
max 20 pts. subtotal	Metric 6. Plant Co	mmunities, Interspers	ion, Microtopography			
max 20 pts. Subtotal	6a. Wetland vegetation communit Score all present using 0 to 3 sca Aquatic bed X Emergent Shrub Forest Mudflats Open water <20 acres (8 h	le. 0 = Absent or <0.1 ha (For BR/CM <0.04 1 = Present and either of moderate quality, or is of moderate quality.	2.25 acre) contiguous acre (a. (0.1 acre)] comprises a small part of wetland's vegetation and is of comprises a significant part but is of low quality comprises a significant part of wetland's vegetation and ty, or comprises a small part and is of high quality ses a significant part or more of wetland's vegetation			
	6b. Horizontal (plan view) interspe					
	Select only one. High (5) Moderately high (4) [BR/Cl Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CN Low (1) [BR/CM (2)] None (0)	e dominant component of the vegetation, although sturbance tolerant native species can also be present, sity moderate to moderately high, but generally are, threatened or endangered species of native species with nonnative sp &/or disturbance absent or virtually absent, and high sp diversity and often				
	6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) X Nearly absent <5% cover (Absent (1)	Mudflat and Open Water 0 = Absent <0.1 ha (0.2 3) 1 = Low 0.1 to <1 ha (0 (0.1 to 0.5 acre)] (0) 2 = Moderate 1 to <4 ha	r Class Quality 5 acres) [For BR/CM <0.04 ha (0.1 acre)] 25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha 1 (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] 3 or more [BR/CM 2 ha (5 acres) or more]			
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Hypothetical Wetland for socks cm (6 in.) None Low Microtopography Cove 0 = Absent 1 = Present in very sma 2 = Present in moderate amounts of highest	Low Moderate Moderate High T Scale Il amounts or if more common of marginal quality amounts, but not of highest quality or in small			
27	GRAND T (max 100	0- 29 = Category 1, lo 30- 59 = Category 2, g	ow wetland function, condition, quality** ood/moderate wetland function, condition, quality** uperior wetland function, condition, quality**			

Page 2 of 2

Site: W-027		Rater(s): OL; jb		Date: 03/2020
5 max 6 pts. subtotal	Metric 1. Wetland	Area (Size) op	en water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
max 14 pts. subtotal	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years MODERATELY HIGH. Re	O m (164 ft) or more around a 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <6 average <10 m (<32 ft) arouse. Select one or double clor older forest, prairie, savars), shrubland, young 2nd gro	wetland perimeter (7) ft) around wetland perimeter ft) around wetland perimeter ft) around wetland perimeter ft) ft) around wetland perimeter ft)	(4) er (1)
25	Metric 3. Hydrolog	ду		
max 30 pts. subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless B Seasonal/intermittent surf X Perennial surface water (1) 3c. Maximum water depth. Select >0.7 m (27.6 in.) (3) X 0.4 to 0.7 m (16 to 27.6 in.) <0.4 m (<16 in.) (1) [BR/C] 3e. Modifications to natural hydromaphology (1) Recovered (7) Recovered (7) Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score 1.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or (2) Check all disturbances	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura double check and average. s observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) saturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] sted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
14	Metric 4. Habitat	Alteration and [Development	
max 20 pts. subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one	only one and assign score.	Check all disturbances of ☑ mowing ☐ grazing	observed ☑ shrub/sapling removal ☐ herbaceous/aquatic bed removal ☐ woody debris removal
	4c. Habitat alteration. Score one None or none apparent (S Recovered (6) Recovering (3) Recent or no recovery (1)	9)	e.	woody debris removal sedimentation dredging nutrient enrichment

Site: W-027	R	Rater(s): OH:jb	Date: 03/2020				
subtotal previous page							
max 10 pts. subtotal	Metric 5. Special Wetlands						
	*If the documented raw score for Me	*If the documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.					
raw score*	documentation for each selection (pl Bog, fen, wet prairie (10); acidopl Assoc. forest (wetl. &/or adj. upla Sensitive geologic feature such a Vernal pool (5); isolated, perched Island wetland >0.1 acre (0.04 ha Braided channel or floodplain/ter Gross morph. adapt. in >5 trees > Ecological community with global Known occurrence state/federal t [*use higher rank where mixed r Superior/enhanced habitat/use: n	y. Where multiple values apply in row, score row as single feature with highest point value. Provide each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). prairie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) (wetl. &/or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] ologic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) (3) (4) (1) (4) (4); headwater wetland [1st order perennial or above] (3) (4) (5) (6) (6) (7) (7) (8) (8) (9) (9) (10) (10) (10) (10) (10) (10) (10) (10					
4	Metric 6. Plant Com	munities, Interspersio	n, Microtopography				
max 20 pts. subtotal	6a. Wetland vegetation communities Score all present using 0 to 3 scale. Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 ha)	0 = Absent or <0.1 ha (0.25 [For BR/CM <0.04 ha (0) 1 = Present and either comp moderate quality, or com 2 = Present and either comp is of moderate quality, or 3 = Present and comprises a	acre) contiguous acre				
	Moss/lichen. Other and is of high quality 6b. Horizontal (plan view) interspersion. Narrative Description of Vegetation Quality						
	Select only one. High (5) Moderately high (4) [BR/CM (5)] Moderately low (2) [BR/CM (5)] Moderately low (2) [BR/CM (5)] Low (1) [BR/CM (2)] None (0)	[ow = Low species diversity native species mod = Native species are dornonnative &/or disturb and species diversity reference of rare, thigh = A predominance of natolerant native splasses	&/or dominance of nonnative or disturbance tolerant minant component of the vegetation, although ance tolerant native species can also be present, moderate to moderately high, but generally threatened or endangered species tive species with nonnative sp &/or disturbance ent or virtually absent, and high sp diversity and often				
	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)	Mudflat and Open Water Classes 0 = Absent < 0.1 ha (0.25 ac 1 = Low 0.1 to <1 ha (0.25 to (0.1 to 0.5 acre)) 2 = Moderate 1 to <4 ha (2.5)	ass Quality res) [For BR/CM <0.04 ha (0.1 acre)] o 2.5 acres) [BR/CM 0.04 to <0.2 ha 5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] more [BR/CM 2 ha (5 acres) or more]				
	6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussoc Coarse woody debris >15 cm Standing dead >25 cm (10 in Amphibian breeding pools	Hypothetical Wetland for Es	stimating Degree of Interspersion Low Moderate Moderate High				
		2 = Present in moderate am amounts of highest qual	nounts or if more common of marginal quality nounts, but not of highest quality or in small				
52	GRAND TO (max 100 p	30- 59 = Category 2, good/	vetland function, condition, quality** (moderate wetland function, condition, quality** ior wetland function, condition, quality**				

Site: W-028		Rater(s): OL; jb		Date: 03/2020
max 6 pts. subtotal	Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 X 0.3 to <3 acres (0.1 to <1) 0.1 to <0.3 acre (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
max 14 pts. subtotal	Metric 2. Upland E	Buffers and Sur	rounding Land	Use
max 14 pts. subtotal	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of the company of	O m (164 ft) or more around to a 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <6 average <10 m (<32 ft) arounds. Select one or double char older forest, prairie, savans), shrubland, young 2nd gro	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter and wetland perimeter (0) seck and average. nah, wildlife area, etc. (7) wth forest (5) irk, conservation tillage, new	(4) er (1)
29	Metric 3. Hydrolog	ду		
max 30 pts. subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless B Seasonal/intermittent surf X Perennial surface water (I X Perennial surface water (I Sc. Maximum water depth. Select >0.7 m (27.6 in.) (3) X 0.4 to 0.7 m (16 to 27.6 in.) <0.4 m (<16 in.) (1) [BR/C Se. Modifications to natural hydrox X None or none apparent (1 Recovered (7) Recovering (3) Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) lologic regime. Score one or	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura louble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) saturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] sted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
16	Metric 4. Habitat	Alteration and D	evelopment (
max 20 pts. subtotal	4a. Substrate disturbance. Score X None or none apparent (4 Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) X Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one X None or none apparent (9 Recovered (6) Recovering (3) Recent or no recovery (1)	only one and assign score. or double check and averag	Check all disturbances o ☑ mowing ☐ grazing	observed Shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-028		Rater(s): OH:jb	Date: 03/2020
52 subtotal previous page			
	Metric 5. Special W	/etlands	
raw score*	Select all that apply. Where multipl documentation for each selection (Bog, fen, wet prairie (10); acido Assoc. forest (wetl. &/or adj. up Sensitive geologic feature such Vernal pool (5); isolated, perche Island wetland >0.1 acre (0.04 Braided channel or floodplain/te Gross morph. adapt. in >5 trees Ecological community with glob Known occurrence state/federa [*use higher rank where mixec Superior/enhanced habitat/use:	e values apply in row, score row as single photos, checklists, maps, resource specia philic veg., mossy substrate >10 sq.m, sphagni land) incl. >0.25 acre (0.1 ha); old growth (10); as spring/seep, sink, losing/underground streated, or slope wetland (4); headwater wetland [1strace depressions (floodplain pool, slough, oxtrace depressions) (floodplain pool, sl	t order perennial or above] (3) 2 m) deep (5) ow, meander scar, etc.) (3) stilted, shallow roots/tip-up, or pneumatophores (3) [*use higher rank where mixed rank or qualifier] re species with global rank G1*(10), G2*(5), G3*(3)
max 20 pts. subtotal	Metric 6. Plant Cor	nmunities, Interspersi	on, Microtopography
	6a. Wetland vegetation communities Score all present using 0 to 3 scales Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 hat Moss/lichen. Other	e. 0 = Absent or <0.1 ha (0.0 For BR/CM <0.04 ha 1 = Present and either comoderate quality, or comoderate quality. 2 = Present and either comoderate quality.	25 acre) contiguous acre
	6b. Horizontal (plan view) interspet Select only one. High (5) Moderately high (4) [BR/CM Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM Low (1) [BR/CM (2)] None (0)	low = Low species diversinative species mod = Native species are on nonnative &/or distuant species diversinative w/o presence of rare high = A predominance of	Vegetation Quality ty &/or dominance of nonnative or disturbance tolerant dominant component of the vegetation, although irbance tolerant native species can also be present, y moderate to moderately high, but generally e, threatened or endangered species native species with nonnative sp &/or disturbance psent or virtually absent, and high sp diversity and often
	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)	but not always, the Mudflat and Open Water 0 = Absent < 0.1 ha (0.25) 1 = Low 0.1 to <1 ha (0.29) (0.1 to 0.5 acre)] 2 = Moderate 1 to <4 ha (0.29)	presence of rate, threatened, or endangered species
	6d. Microtopography. Score all present using 0 to 3 scal Vegetated hummocks/tusso Coarse woody debris >15 c Standing dead >25 cm (10) Amphibian breeding pools	Microtopography Cover S 0 = Absent 1 = Present in very small 2 = Present in moderate a amounts of highest que	amounts or if more common of marginal quality amounts, but not of highest quality or in small
55	GRAND To	0- 29 = Category 1, low 30- 59 = Category 2, god	or greater amounts and of highest quality wetland function, condition, quality** od/moderate wetland function, condition, quality** erior wetland function, condition, quality**

Site: W-	-030		Rater(s): OL; jb		Date: 03/2020
max 6 pts.	3 subtotal	Metric 1. Wetland	Area (SIZe) ope	n water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 X 3 to <10 acres (1.2 to <4 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 to)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] na) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	6	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts.	subtotal	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers Intensity of surrounding land VERY LOW. 2nd growth of the surrounding land MODERATELY HIGH. Re	0 m (164 ft) or more around we 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8) average <10 m (<32 ft) arou	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) vth forest (5) rk, conservation tillage, new	(4) er (1)
	27	Metric 3. Hydrolog	ду		
max 30 pts.	subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless B Seasonal/intermittent surf X Perennial surface water (I X Perennial surface water (I Sc. Maximum water depth. Select >0.7 m (27.6 in.) (3) 0.4 to 0.7 m (16 to 27.6 in.) X <0.4 m (<16 in.) (1) [BR/C Se. Modifications to natural hydrox X None or none apparent (1 Recovered (7) Recovering (3) Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) logic regime. Score one or d Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) auturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2) stormwater)
	15	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score X None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) X Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one X None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances o ☑ mowing ☐ grazing	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-030		Rater(s): OH:jb	Date: 03/2020
51 subtotal previous page			
	Metric 5. Special V	Vetlands	
raw score* Se	elect all that apply. Where multip	ole values apply in row, score row as single f	st concurrence, data sources, references, etc).
	Sensitive geologic feature such vernal pool (5); isolated, perch Island wetland >0.1 acre (0.04 Braided channel or floodplain/d Gross morph. adapt. in >5 tree Ecological community with glol Known occurrence state/federa [*use higher rank where mixe Superior/enhanced habitat/use	n as spring/seep, sink, losing/underground stream, ned, or slope wetland (4); headwater wetland [1st o ha) in reservoir, river, or perennial water >6 ft (2 merrace depressions (floodplain pool, slough, oxbov sts >10 in. (25 cm) dbh: buttress, multitrunk/stool, st bal rank (NatureServe): G1*(10), G2*(5), G3*(3) [*ual threatened/endangered species (10); other rare d rank or qualifier] [exclude records which are only	rder perennial or above] (3) n) deep (5) v, meander scar, etc.) (3) ilted, shallow roots/tip-up, or pneumatophores (3) use higher rank where mixed rank or qualifier] species with global rank G1*(10), G2*(5), G3*(3) "historic"] tonbush (4); other fish/wildlife management/designation (3)
	Metric 6. Plant Co	mmunities, Interspersio	n, Microtopography
	a. Wetland vegetation communit core all present using 0 to 3 scal Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 h	e. 0 = Absent or <0.1 ha (0.25 [For BR/CM <0.04 ha (0.25) 1 = Present and either companderate quality, or cor 2 = Present and either companies of moderate quality, or core	acre) contiguous acre
	D. Horizontal (plan view) interspecielect only one. High (5) Moderately high (4) [BR/CI Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CN Low (1) [BR/CM (2)] None (0)	Iow = Low species diversity native species M (5)] mod = Native species are do nonnative &/or disturb and species diversity w/o presence of rare, high = A predominance of na	&/or dominance of nonnative or disturbance tolerant minant component of the vegetation, although hance tolerant native species can also be present, moderate to moderately high, but generally threatened or endangered species titive species with nonnative sp &/or disturbance ent or virtually absent, and high sp diversity and often
	c. Coverage of invasive plants. dd or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) Nearly absent <5% cover (Absent (1)	but not always, the product of the p	esence of rate, threatened, or endangered species
	d. Microtopography. core all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	lle. ocks cm (6 in.) in.) dbh None Low Microtopography Cover Sc 0 = Absent 1 = Present in very small an	nounts or if more common of marginal quality nounts, but not of highest quality or in small
54	GRAND T	3 = Present in moderate or	retland function, condition, quality** froderate wetland function, condition, quality** frooderate wetland function, condition, quality**

Site: W-033		Rater(s): OL; jb		Date: 03/2020	
max 6 pts.	2 subtotal	Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 X 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	1	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts.	subtotal	MEDIUM. Buffers average NARROW. Buffers average X VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years	O m (164 ft) or more around version of the 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arounds. Select one or double charrolder forest, prairie, savants), shrubland, young 2nd grovesidential, fenced pasture, pa	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
	19	Metric 3. Hydrolog	ду		
max 30 pts.	subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless E Seasonal/intermittent surf X Perennial surface water (I Sc. Maximum water depth. Selection (20.4 m (27.6 in.) (3) 40.4 to 0.7 m (16 to 27.6 in.) (3) 40.4 to 0.7 m (16 in.) (1) [BR/C Se. Modifications to natural hydromaphology (1) X Recovered (7) X Recovering (3) Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d 2) Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat (2)] Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)]
	6	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recovering (2) X Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) X Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) X Recovering (3) Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances o	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-033	Rater(s): OH:jb	Date: 03/2020
subtotal previous page		
Metric 5. Special	Wetlands	
*If the documented raw score for Select all that apply. Where mu documentation for each selection Bog, fen, wet prairie (10); a	or Metric 5 is 30 points or higher, the site is automa itiple values apply in row, score row as single featurn (photos, checklists, maps, resource specialist co- cidophilic veg., mossy substrate >10 sq.m, sphagnum or or upland) incl. >0.25 acre (0.1 ha); old growth (10); mature	re with highest point value. Provide incurrence, data sources, references, etc). ther moss (5); muck, organic soil layer (3)
Vernal pool (5); isolated, per Island wetland >0.1 acre (0	uch as spring/seep, sink, losing/underground stream, caverched, or slope wetland (4); headwater wetland [1st order 04 ha) in reservoir, river, or perennial water >6 ft (2 m) den/terrace depressions (floodplain pool, slough, oxbow, merees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, global rank (NatureServe): 61*(10), G2*(5), G3*(3) [*use heral threatened/endangered species (10); other rare specixed rank or qualifier] [exclude records which are only "hist use: migratory songbird/waterfowl (5); in-reservoir buttonbuacre (0.4 ha) AND EITHER >80% cover of invasives OR	perennial or above] (3) ep (5) ep (5) eander scar, etc.) (3) shallow roots/tip-up, or pneumatophores (3) iigher rank where mixed rank or qualifier] ies with global rank G1*(10), G2*(5), G3*(3) toric"] ush (4); other fish/wildlife management/designation (3)
	ommunities, Interspersion,	Microtopography
6a. Wetland vegetation commu Score all present using 0 to 3 s Aquatic bed Emergent X Shrub Forest Mudflats Open water <20 acres (i	cale. 0 = Absent or <0.1 ha (0.25 acre For BR/CM <0.04 ha (0.1 acre) 1 = Present and either comprise moderate quality, or comprise is of moderate quality, or comprise is of moderate quality, or comprise	e) contiguous acre
6b. Horizontal (plan view) intersectionly one. High (5) Moderately high (4) [BR Moderate (3)[BR/CM (5) Moderately low (2) [BR/M Low (1) [BR/CM (2)] None (0)	Iow = Low species diversity &/or native species [CM (5)] mod = Native species are dominative &/or disturbance and species diversity mod w/o presence of rare, three high = A predominance of native	ation Quality dominance of nonnative or disturbance tolerant ant component of the vegetation, although the tolerant native species can also be present, the erate to moderately high, but generally the attened or endangered species species with nonnative sp &/or disturbance or virtually absent, and high sp diversity and often
6c. Coverage of invasive plants Add or deduct points for covera Extensive >75% cover (Moderate 25-75% cover (-1 Sparse 5-25% cover (-1 Nearly absent <5% cover Absent (1)	ge. Mudflat and Open Water Class 5) 0 = Absent < 0.1 ha (0.25 acres) (-3) 1 = Low 0.1 to <1 ha (0.25 to 2.6 (0.1 to 0.5 acre)] ar (0) 2 = Moderate 1 to <4 ha (2.5 to	[For BR/CM <0.04 ha (0.1 acre)]
6d. Microtopography. Score all present using 0 to 3 s Vegetated hummocks/tu Coarse woody debris >1 Standing dead >25 cm (Amphibian breeding poo	ssocks 5 cm (6 in.) 10 in.) dbh Is None Low Microtopography Cover Scale 0 = Absent	Low Moderate Moderate High
	2 = Present in moderate amoun amounts of highest quality	nts or if more common of marginal quality ts, but not of highest quality or in small ter amounts and of highest quality
GRAND (max 10	30-59 = Category 2, good/mod	nd function, condition, quality** derate wetland function, condition, quality** vetland function, condition, quality**

Site: W-033a		Rater(s): OL; jb		Date: 03/2020	
max 6 pts.	2 subtotal	Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4) X 0.3 to <3 acres (0.1 to <1) 0.1 to <0.3 acre (0.04 to <0.1) <p><0.1 acre (0.04 ha) (0)</p>	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] na) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	1	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts.	subtotal	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years	o m (164 ft) or more around version of the 25 m to <50 m (82 to <164 ger 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arounds. Select one or double charrolder forest, prairie, savants), shrubland, young 2nd grovesidential, fenced pasture, pa	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
	19	Metric 3. Hydrolog	ду		
max 30 pts.	subtotal	3a. Sources of water. Score all the High pH groundwater (5)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d 2) Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat (2)] Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)]
	6	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recovering (2) X Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) X Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) X Recovering (3) Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances o	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-033a		Rater(s): OH:jb	Date: 03/2020
27 subtotal previous page			
	Metric 5. Special V	Vetlands	
raw score*	Select all that apply. Where multip documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature sucl Vernal pool (5); isolated, perch Island wetland >0.1 acre (0.04 Braided channel or floodplain/t Gross morph. adapt. in >5 tree	ole values apply in row, score row as sin (photos, checklists, maps, resource spe ophilic veg., mossy substrate >10 sq.m, sphapland) incl. >0.25 acre (0.1 ha); old growth (10 has spring/seep, sink, losing/underground strated, or slope wetland (4); headwater wetland [ha) in reservoir, river, or perennial water >6 ferrace depressions (floodplain pool, slough, ces >10 in. (25 cm) dbh: buttress, multitrunk/sto	1st order perennial or above] (3) (2 m) deep (5) xbow, meander scar, etc.) (3) ol, stilted, shallow roots/tip-up, or pneumatophores (3)
	Known occurrence state/federatives higher rank where mixe Superior/enhanced habitat/use	al threatened/endangered species (10); other d rank or qualifier] [exclude records which are migratory songbird/waterfowl (5); in-reservo	3) [*use higher rank where mixed rank or qualifier] rare species with global rank G1*(10), G2*(5), G3*(3) only "historic"] r buttonbush (4); other fish/wildlife management/designation (3) sives OR nonvegetated on mined/excavated land (-10)
max 20 pts. subtotal	6a. Wetland vegetation communit Score all present using 0 to 3 scal Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 h	ies. Vegetation Community le. 0 = Absent or <0.1 ha (2.25 acre) contiguous acre (a. (0.1 acre)] comprises a small part of wetland's vegetation and is of comprises a significant part but is of low quality comprises a significant part of wetland's vegetation and ty, or comprises a small part and is of high quality ses a significant part or more of wetland's vegetation
	Moss/lichen. Other 6b. Horizontal (plan view) interspectionly one. High (5) Moderately high (4) [BR/CI Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CN X Low (1) [BR/CM (2)] None (0)	Iow = Low species dive native species M (5)] mod = Native species ar nonnative &/or dis and species diver w/o presence of rhigh = A predominance of the native species and species diver w/o presence of respective to the native species and species diver w/o presence of respective to the native species are nonnative species.	
	6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) Nearly absent <5% cover (Absent (1)	but not always, the Mudflat and Open Water 0 = Absent <0.1 ha (0.2) 1 = Low 0.1 to <1 ha (0.2) (0.1 to 0.5 acre) 2 = Moderate 1 to <4 ha	e presence of rate, threatened, or endangered species
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	lde. socks cm (6 in.) in.) dbh None Low Microtopography Cove 0 = Absent	
29	GRAND T	2 = Present in moderate amounts of highest 3 = Present in moderate 0 - 29 = Category 1, le 30 - 59 = Category 2, generate 10 - 29 = Category 2, generate 30 - 59 = Category 2, generate 30 - 50 - 50 - 50 - 50 - 50 - 50 - 50 -	Il amounts or if more common of marginal quality a amounts, but not of highest quality or in small quality or or greater amounts and of highest quality by wetland function, condition, quality** cod/moderate wetland function, condition, quality** uperior wetland function, condition, quality**

Site: W-036			Rater(s): OL; jb		Date: 03/2020
max 6 pts.	3 subtotal	Metric 1. Wetland	Area (SIZE) ope	en water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 X 3 to <10 acres (1.2 to <4 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	1	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts.	subtotal	MEDIUM. Buffers average NARROW. Buffers average X VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years MODERATELY HIGH. Re	0 m (164 ft) or more around v e 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arou	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
	17	Metric 3. Hydrolog	ду		
max 30 pts.	subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless E Seasonal/intermittent surf X Perennial surface water (1) 3c. Maximum water depth. Select >0.7 m (27.6 in.) (3) X 0.4 to 0.7 m (16 to 27.6 in.) <0.4 m (<16 in.) (1) [BR/C] 3e. Modifications to natural hydromaphology (1) Recovered (7) Recovered (7) Recovering (3) X Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) at only one and assign score. a.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat (2)] Seasonally saturations check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] tted in upper 30 cm (12 in.) (1) [BR/CM (2)
	3	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recovering (2) X Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) X Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) Recovering (3) X Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances of ☑ mowing ☐ grazing	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-036		Rater(s): OH:jb	Date: 03/2020
24			
subtotal previous page			
max 10 pts. subtotal	Metric 5. Special \	Wetlands	
max 10 pts. Subtotal	*If the documented raw score for	Metric 5 is 30 points or higher, the site is	automatically considered a Category 3 wetland.
raw score*	documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature sur Vernal pool (5); isolated, perc Island wetland >0.1 acre (0.0 Braided channel or floodplain. Gross morph. adapt. in >5 tre Ecological community with glo Known occurrence state/fede [*use higher rank where mix: Superior/enhanced habitat/us	I (photos, checklists, maps, resource spectophilic veg., mossy substrate >10 sq.m, sphaupland) incl. >0.25 acre (0.1 ha); old growth (10 sh as spring/seep, sink, losing/underground stream, or slope wetland (4); headwater wetland (4 ha) in reservoir, river, or perennial water >6 for terrace depressions (floodplain pool, slough, ces >10 in. (25 cm) dbh: buttress, multitrunk/stobbal rank (NatureServe): G1*(10), G2*(5), G3* rall threatened/endangered species (10); other ed rank or qualifier] [exclude records which are e: migratory songbird/waterfowl (5); in-reservo	(1st order perennial or above] (3) t (2 m) deep (5) exbow, meander scar, etc.) (3) eol, stilted, shallow roots/tip-up, or pneumatophores (3) (3) [*use higher rank where mixed rank or qualifier] rare species with global rank G1*(10), G2*(5), G3*(3)
0	Metric 6. Plant Co	mmunities, Interspers	sion, Microtopography
max 20 pts. subtotal	6a. Wetland vegetation communi Score all present using 0 to 3 sca Aquatic bed Emergent Shrub Forest Mudflats Open water <20 acres (8 Moss/lichen. Other 6b. Horizontal (plan view) intersp Select only one. High (5) Moderately high (4) [BR/CI Moderately low (2) [BR/CI Low (1) [BR/CM (2)] None (0) 6c. Coverage of invasive plants. Add or deduct points for coverag Extensive >75% cover (-5	ale. 0 = Absent or <0.1 ha (0.25 acre) contiguous acre na (0.1 acre)] comprises a small part of wetland's vegetation and is of r comprises a significant part but is of low quality comprises a significant part of wetland's vegetation and ity, or comprises a small part and is of high quality ses a significant part or more of wetland's vegetation y If Vegetation Quality rsity &/or dominance of nonnative or disturbance tolerant e dominant component of the vegetation, although sturbance tolerant native species can also be present, rsity moderate to moderately high, but generally are, threatened or endangered species of native species with nonnative sp &/or disturbance absent or virtually absent, and high sp diversity and often the presence of rate, threatened, or endangered species
	Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) Nearly absent <5% cover Absent (1)	$ \begin{array}{rcl} $	2.25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha a (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] s) or more [BR/CM 2 ha (5 acres) or more]
	6d. Microtopography. Score all present using 0 to 3 sc. Vegetated hummocks/tus Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Hypothetical Wetland f ale. socks cm (6 in.) 0 in.) dbh None Low Microtopography Cove 0 = Absent 1 = Present in very sma 2 = Present in moderat amounts of highest	or Estimating Degree of Interspersion Low Moderate Moderate High r Scale all amounts or if more common of marginal quality amounts, but not of highest quality or in small
24	GRAND 1 (max 100	30- 59 = Category 2, g	ow wetland function, condition, quality** lood/moderate wetland function, condition, quality** uperior wetland function, condition, quality**

Site: W-037		Rater(s): OL; jb		Date: 03/2020
max 6 pts. subtotal	Metric 1. Wetland	Area (SIZe) ope	n water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4) X 0.3 to <3 acres (0.1 to <1) 0.1 to <0.3 acre (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] na) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
1	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts. subtotal	MEDIUM. Buffers average NARROW. Buffers average X VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years	o m (164 ft) or more around we 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arou use. Select one or double chor older forest, prairie, savants), shrubland, young 2nd grovesidential, fenced pasture, pa	retland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) vth forest (5) rk, conservation tillage, new	(4) er (1)
17	Metric 3. Hydrolog	ду		
max 30 pts. subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless B Seasonal/intermittent surf X Perennial surface water (I X Perennial Sur	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. .) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) ologic regime. Score one or d 2) Check all disturbances	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)]
3	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts. subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recovering (2) X Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) X Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) Recovering (3)	only one and assign score. or double check and average	Check all disturbances o ☑ mowing ☐ grazing	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-037		Rater(s): OH:jb	Date: 03/2020		
23 subtotal previous page					
max 10 pts. subtotal	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.		
raw score*	documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature suc Vernal pool (5); isolated, percl Island wetland >0.1 acre (0.04 Braided channel or floodplain/ Gross morph. adapt. in >5 tree Ecological community with glo Known occurrence state/feder [*use higher rank where mixe Superior/enhanced habitat/use	(photos, checklists, maps, resource specification) (photos, checklists, maps, resource specification) (photos), massy substrate >10 sq.m, sphagipland) incl. >0.25 acre (0.1 ha); old growth (10 th as spring/seep, sink, losing/underground strended, or slope wetland (4); headwater wetland [14 ha) in reservoir, river, or perennial water >6 terrace depressions (floodplain pool, slough, ose >10 in. (25 cm) dbh: buttress, multitrunk/stowbal rank (NatureServe): G1*(10), G2*(5), G3*(5) all threatened/endangered species (10); other rad rank or qualifier] [exclude records which are exemigratory songbird/waterfowl (5); in-reservoir	Ist order perennial or above] (3) (2 m) deep (5) xbow, meander scar, etc.) (3) bl, stilted, shallow roots/tip-up, or pneumatophores (3) 3) [*use higher rank where mixed rank or qualifier] rare species with global rank G1*(10), G2*(5), G3*(3)		
0	Metric 6. Plant Co	mmunities, Interspers	ion, Microtopography		
max 20 pts. subtotal	6a. Wetland vegetation communit Score all present using 0 to 3 sca Aquatic bed Emergent Shrub Forest Mudflats Open water <20 acres (8 h	lle. 0 = Absent or <0.1 ha (0 For BR/CM <0.04 h 1 = Present and either of moderate quality, or 2 = Present and either of is of moderate quality.	2.25 acre) contiguous acre a (0.1 acre)] comprises a small part of wetland's vegetation and is of comprises a significant part but is of low quality comprises a significant part of wetland's vegetation and ty, or comprises a small part and is of high quality ses a significant part or more of wetland's vegetation		
	6b. Horizontal (plan view) interspe				
	Select only one. High (5) Moderately high (4) [BR/C Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CN Low (1) [BR/CM (2)] None (0)	low = Low species diversity &/or dominance of nonnative or disturbance tolernative species m (4) [BR/CM (5)] 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			
	6c. Coverage of invasive plants.	but not always, the	e presence of rate, threatened, or endangered species		
	Add or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) Nearly absent <5% cover Absent (1)	0 = Absent <0.1 ha (0.2 1 = Low 0.1 to <1 ha (0.2 (0.1 to 0.5 acre)] 2 = Moderate 1 to <4 ha	r Class Quality 5 acres) [For BR/CM <0.04 ha (0.1 acre)] 25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] s) or more [BR/CM 2 ha (5 acres) or more]		
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Ale. Socks cm (6 in.) O in.) dbh None Low Microtopography Cover 0 = Absent 1 = Present in very sma 2 = Present in moderate amounts of highest	Il amounts or if more common of marginal quality amounts, but not of highest quality or in small quality		
23	GRAND T (max 100	0- 29 = Category 1, lo 30- 59 = Category 2, gr	ow wetland function, condition, quality** cod/moderate wetland function, condition, quality** uperior wetland function, condition, quality**		

Site: W-038	Site: W-038			Date: 03/2020
max 6 pts. subtota	Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 0.3 to <3 acres (0.1 to <1) 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
max 14 pts. subtota	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years	O m (164 ft) or more around version 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arounds. Select one or double char older forest, prairie, savans), shrubland, young 2nd groesidential, fenced pasture, pastidential, fenced pastident	wetland perimeter (7) ft) around wetland perimeter (2 ft) around wetland perimeter (3 ft) around wetland perimeter (4 wetland perimeter (0) (5 eck and average. (7) (6 math, wildlife area, etc. (7) (7) (8 wth forest (5) (8 conservation tillage, new	(4) er (1)
19	Metric 3. Hydrolog	ду		
max 30 pts. subtota	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless B Seasonal/intermittent surform X Perennial surface water (I Sc. Maximum water depth. Select >0.7 m (27.6 in.) (3) X 0.4 to 0.7 m (16 to 27.6 in.) <0.4 m (<16 in.) (1) [BR/C Se. Modifications to natural hydrom None or none apparent (1 Recovered (7) X Recovering (3) Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or of color of the c	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat O(2)] Seasonally satura double check and average. s observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) inturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
15	Metric 4. Habitat A	Alteration and D)evelopment	
max 20 pts. subtota	4a. Substrate disturbance. Score X None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1)	only one and assign score.	Check all disturbances o ☑ mowing ☐ grazing	
	4c. Habitat alteration. Score one X None or none apparent (9 Recovered (6) Recovering (3) Recent or no recovery (1)	9)	e. clearcutting selective cutting farming toxic pollutants	□ woody debris removal □ sedimentation □ dredging □ nutrient enrichment

Site: W-038		Rater(s): OH:jb	Date: 03/2020		
41 subtotal previous page					
max 10 pts. subtotal	Metric 5. Special V	Vetlands			
	*If the documented raw score for I	Metric 5 is 30 points or higher, the site is	automatically considered a Category 3 wetland.		
raw score*	documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. up Sensitive geologic feature such Vernal pool (5); isolated, perch Island wetland >0.1 acre (0.04 Braided channel or floodplain/t Gross morph. adapt. in >5 tree Ecological community with glod Known occurrence state/federa [*use higher rank where mixe Superior/enhanced habitat/use	(photos, checklists, maps, resource speophilic veg., mossy substrate >10 sq.m, sphappland) incl. >0.25 acre (0.1 ha); old growth (10 has spring/seep, sink, losing/underground strued, or slope wetland (4); headwater wetland [ha) in reservoir, river, or perennial water >6 feerace depressions (floodplain pool, slough, ces >10 in. (25 cm) dbh: buttress, multitrunk/stobal rank (NatureServe): G1*(10), G2*(5), G3*(al threatened/endangered species (10); other d rank or qualifier] [exclude records which are emigratory songbird/waterfowl (5); in-reservo	1st order perennial or above] (3) (2 m) deep (5) (2 m) deep (5) (3) (4 m) deep (5) (5 m) (5 m) (7 m) (8 m) (9 m) (1 m) (1 m) (1 m) (1 m) (1 m) (2 m) (3 m) (4 m) (5 m) (6 m) (7 m) (8 m) (9 m) (9 m) (1 m) (
max 20 pts. subtotal	Metric 6. Plant Co	mmunities, Interspers	sion, Microtopography		
max 20 pts. Subtotal	6a. Wetland vegetation communit Score all present using 0 to 3 scal Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 h	le. 0 = Absent or <0.1 ha (For BR/CM <0.04 1 = Present and either of moderate quality, or 2 = Present and either of is of moderate qual	2.25 acre) contiguous acre (0.1 acre) comprises a small part of wetland's vegetation and is of comprises a significant part but is of low quality comprises a significant part of wetland's vegetation and ty, or comprises a small part and is of high quality ses a significant part or more of wetland's vegetation		
	6b. Horizontal (plan view) interspe				
	Select only one. High (5) Moderately high (4) [BR/CI Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM Low (1) [BR/CM (2)] None (0)	low = Low species diversity &/or dominance of nonnative or disturbance tole native species			
	6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) Nearly absent <5% cover (Absent (1)	Mudflat and Open Water 0 = Absent <0.1 ha (0.2 1 = Low 0.1 to <1 ha (0 (0.1 to 0.5 acre)] 2 = Moderate 1 to <4 ha	e presence of rate, threatened, or endangered species Pr Class Quality 5 acres) [For BR/CM <0.04 ha (0.1 acre)] .25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha a (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] b) or more [BR/CM 2 ha (5 acres) or more]		
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Hypothetical Wetland for socks cm (6 in.) None Low Microtopography Cove 0 = Absent 1 = Present in very sma 2 = Present in moderate amounts of highest	Low Moderate Moderate High T Scale Ill amounts or if more common of marginal quality amounts, but not of highest quality or in small		
42	GRAND T (max 100	30- 59 = Category 2, g	ow wetland function, condition, quality** ood/moderate wetland function, condition, quality** uperior wetland function, condition, quality**		

Site: W-03	9		Rater(s): OL; jb		Date: 03/2020
	2 ototal	Metric 1. Wetland	Area (SIZE) ope	en water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 pi 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10. 3 to <10 acres (1.2 to <4 h X 0.3 to <3 acres (0.1 to <1. 0.1 to <0.3 acre (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 ha) (0)	ts) 20.2 ha) (5) [BR/CM (6)] 1 ha) (4) [BR/CM (6)] na) (3) [BR/CM (5)] 2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	1	Metric 2. Upland E	Buffers and Sur	rounding Land	Use
max 14 pts. sub	ototal	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years	o m (164 ft) or more around ve 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arou use. Select one or double chor older forest, prairie, savant), shrubland, young 2nd grov sidential, fenced pasture, pa	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
1	9	Metric 3. Hydrolog	ЭУ		
max 30 pts. sub	ototal	3a. Sources of water. Score all the light pH groundwater (5) X Other groundwater (3) [BF X Precipitation (1) [unless B Seasonal/intermittent surf X Perennial surface water (I Sc. Maximum water depth. Selectory 100	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) elogic regime. Score one or described.	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat (2)] Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
	16	Metric 4. Habitat A	Alteration and D	evelopment	
max 20 pts. sub	ototal	4a. Substrate disturbance. Score X None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select (1) Excellent (7) Very good (6) Good (5) Moderately good (4) X Fair (3) Poor to fair (2))	Check all disturbances o	☑ shrub/sapling removal
		Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1)	•	e. grazing clearcutting selective cutting farming toxic pollutants	☐ herbaceous/aquatic bed removal ☐ woody debris removal ☐ sedimentation ☐ dredging ☐ nutrient enrichment

Site : W-039		Rater(s): OH:jb	Date: 03/2020			
38 subtotal previous page						
max 10 pts. subtotal	Metric 5. Special \	Wetlands				
·	*If the documented raw score for	Metric 5 is 30 points or higher, the sit	e is automatically considered a Category 3 wetland.			
raw score*	documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature suc Vernal pool (5); isolated, perc Island wetland >0.1 acre (0.04 Braided channel or floodplain/ Gross morph. adapt. in >5 tre Ecological community with glo Known occurrence state/fedet [*use higher rank where mixe Superior/enhanced habitat/us	nultiple values apply in row, score row as single feature with highest point value. Provide tion (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) dj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) lain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) (3) (4) (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) (4) (5) (6) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7				
1	Metric 6. Plant Co	mmunities, Interspe	rsion, Microtopography			
max 20 pts. subtotal	6a. Wetland vegetation communi Score all present using 0 to 3 sca Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 l	Ide. 0 = Absent or <0.1 h For BR/CM <0.0 1 = Present and eith moderate quality 2 = Present and eith is of moderate q	a (0.25 acre) contiguous acre 24 ha (0.1 acre)] er comprises a small part of wetland's vegetation and is of a comprises a significant part but is of low quality er comprises a significant part of wetland's vegetation and uality, or comprises a small part and is of high quality en prises a significant part or more of wetland's vegetation			
	6b. Horizontal (plan view) intersp		n of Vegetation Quality			
	Select only one. High (5) Moderately high (4) [BR/C Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CN Low (1) [BR/CM (2)] None (0)	iversity &/or dominance of nonnative or disturbance tolerant are dominant component of the vegetation, although disturbance tolerant native species can also be present, versity moderate to moderately high, but generally of rare, threatened or endangered species ce of native species with nonnative sp &/or disturbance sp absent or virtually absent, and high sp diversity and often				
	6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) Nearly absent <5% cover Absent (1)	9. Mudflat and Open W 0 = Absent < 0.1 ha 13) 1 = Low 0.1 to <1 ha (0.1 to 0.5 acre) 2 = Moderate 1 to <	0.25 acres) [For BR/CM <0.04 ha (0.1 acre)] (0.25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha			
	6d. Microtopography. Score all present using 0 to 3 sc: Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Hypothetical Wetlan ale. socks cm (6 in.) 0 in.) dbh None Low Microtopography Co 0 = Absent 1 = Present in very s 2 = Present in mode amounts of high	d for Estimating Degree of Interspersion Low Moderate Moderate High over Scale Imall amounts or if more common of marginal quality rate amounts, but not of highest quality or in small			
39	GRAND 1 (max 100	30- 59 = Category	1, low wetland function, condition, quality** 2, good/moderate wetland function, condition, quality** 3, superior wetland function, condition, quality**			

Site: W-	040		Rater(s): OL; jb		Date: 03/2020
max 6 pts.	2 subtotal	Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 X 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	9	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts.	subtotal	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of the surrounding land MODERATELY HIGH. Re	O m (164 ft) or more around ve 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arou use. Select one or double chor older forest, prairie, savant	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
	19	Metric 3. Hydrolog	gy		
max 30 pts.	subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless E Seasonal/intermittent surf X Perennial surface water (1) 3c. Maximum water depth. Selection (20.4 m (27.6 in.) (3) X 0.4 to 0.7 m (16 to 27.6 in.) (4) [BR/C] 3e. Modifications to natural hydromath (1) [BR/C] None or none apparent (1) [Recovered (7)] X Recovering (3) Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] face water (3) fake or stream) (5) for only one and assign score. A.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) Clogic regime. Score one or decided of the content of the	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat (2)] Seasonally satura louble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) aturation. Score one or dbl. check & avg. intly inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
	18	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score X None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) X Good (5) Moderately good (4) Fair (3)	i)	erage. Check all disturbances of	observed
		Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1)	9)		

Site: W-040 Rater(s		Rater(s): OH:jb		Date: 03/2020				
48								
subtotal previous page								
	Metric 5. Special V	Vetlands						
max 10 pts. subtotal	*If the decumented raw score for	Motrio 5 is 30 points or higher th	oo sito is automatically co	onsidered a Category 3 wetla	nd			
raw score*	Select all that apply. Where multip documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature suc Vernal pool (5); isolated, percl Island wetland >0.1 acre (0.04 Braided channel or floodplain/ Gross morph. adapt. in >5 tree Ecological community with glo Known occurrence state/feder [*use higher rank where mixe Superior/enhanced habitat/use	ole values apply in row, score ro (photos, checklists, maps, resouphilic veg., mossy substrate >10 sq pland) incl. >0.25 acre (0.1 ha); old gen as spring/seep, sink, losing/underged, or slope wetland (4); headwater ha) in reservoir, river, or perennial verrace depressions (floodplain pool, es >10 in. (25 cm) dbh: buttress, mubal rank (NatureServe): G1*(10), G2 all threatened/endangered species (1 drank or qualifier] [exclude records ex migratory songbird/waterfowl (5); in	alues apply in row, score row as single feature with highest point value. Provide otos, checklists, maps, resource specialist concurrence, data sources, references, etc). ic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) d) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) or slope wetland (4); headwater wetland [1st order perennial or above] (3) in reservoir, river, or perennial water >6 ft (2 m) deep (5) ce depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) oin. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) ank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] reatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) hk or qualifier] [exclude records which are only "historic"] gratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) 0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)					
1	Metric 6. Plant Co	mmunities, Inters	persion, Mici	otopography				
max 20 pts. subtotal	6a. Wetland vegetation communit Score all present using 0 to 3 sca Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 h Moss/lichen. Other 6b. Horizontal (plan view) interspe Select only one. High (5) Moderately high (4) [BR/CM Moderately low (2) [BR/CM Low (1) [BR/CM (2)] None (0) 6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5) X Moderate 25-75% cover (-5) X Moderate 25-75% cover (-1) Nearly absent <5% cover (-1)	Dec Dec	uality, or comprises a sign deither comprises a sign ate quality, or comprises a sign ate quality, or comprises decomprises a significant of quality iption of Vegetation Quality iption of Vegetation Quality iption of Vegetation Quality ies diversity &/or dominated of a secies are dominant compared in the compared of the compared	all part of wetland's vegetation inficant part but is of low qualificant part of wetland's vegeta a small part and is of high qualificant part or more of wetland's vegetation in the vegetation	lity tation and lality getation nce tolerant ough present, ly bance ity and often d species			
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	None Microtopograph 0 = Absent 1 = Present in v 2 = Present in v amounts of	very small amounts or if remoderate amounts, but not highest quality	Moderate Moderate more common of marginal quality or in small				
49	GRAND T (max 100	30- 59 = Cate		ion, condition, quality** etland function, condition, qua function, condition, quality**	ality**			

Site: W-041		Rater(s): OL; jb		Date: 03/2020
max 6 pts. subtotal	Metric 1. Wetland	Area (SIZe) ope	n water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 X 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
2	Metric 2. Upland I	Buffers and Sur	rounding Land	Use
max 14 pts. subtotal	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years MODERATELY HIGH. Re	0 m (164 ft) or more around w e 25 m to <50 m (82 to <164 l ge 10 m to <25 m (32 ft to <8% average <10 m (<32 ft) arou	retland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) vth forest (5) rk, conservation tillage, new	(4) er (1)
19	Metric 3. Hydrolog	gy		
max 30 pts. subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless E Seasonal/intermittent surform in Seasonal i	R/CM (5)] R/CM primary source (5)] face water (3) lake or stream) (5) It only one and assign score. I.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) lologic regime. Score one or d Check all disturbances ditch	Part of wetland/up X Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) aturation. Score one or dbl. check & avg. intly inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
15	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts. subtotal	4a. Substrate disturbance. Score X None or none apparent (4 Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) X Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one X None or none apparent (9 Recovered (6) Recovering (3) Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances o ☑ mowing ☐ grazing	observed Shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-041		Rater(s): OH:jb	Date: 03/2020			
38 subtotal previous page						
max 10 pts. subtotal	Metric 5. Special V	Vetlands				
·	*If the documented raw score for N	Metric 5 is 30 points or higher, the site i	s automatically considered a Category 3 wetland.			
raw score*	documentation for each selection Bog, fen, wet prairie (10); acide Assoc. forest (wetl. &/or adj. up Sensitive geologic feature such Vernal pool (5); isolated, perch Island wetland >0.1 acre (0.04 Braided channel or floodplain/t Gross morph. adapt. in >5 tree Ecological community with glot Known occurrence state/federe [*use higher rank where mixed Superior/enhanced habitat/use	Itiple values apply in row, score row as single feature with highest point value. Provide on (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). Scidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) and upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] uch as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) roched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) (3) (4 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) (3) (4 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) (4 ha) in (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] leral threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) (3) (3) (3) (3) (3) (3) (4) (4) (4) (5) (4) (4) (5) (5) (5) (6) (6) (6) (6) (6) (6) (6) (6) (6) (6				
3	Metric 6. Plant Cor	nmunities, Intersper	sion, Microtopography			
max 20 pts. subtotal	6a. Wetland vegetation communiti Score all present using 0 to 3 scal Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 h	e. 0 = Absent or <0.1 ha For BR/CM <0.04 1 = Present and either moderate quality, or 2 = Present and either is of moderate quality	(0.25 acre) contiguous acre ha (0.1 acre)] comprises a small part of wetland's vegetation and is of or comprises a significant part but is of low quality comprises a significant part of wetland's vegetation and lity, or comprises a small part and is of high quality rises a significant part or more of wetland's vegetation			
	6b. Horizontal (plan view) interspe Select only one.	nterspersion. Narrative Description of Vegetation Quality				
	High (5) High (5) Moderately high (4) [BR/CM Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM Low (1) [BR/CM (2)] X None (0)	low = Low species diversity &/or dominance of nonnative or native species Variable Indicate Indicate				
	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 (1) Absent (1)	Mudflat and Open Wat 0 = Absent < 0.1 ha (0.3) 1 = Low 0.1 to <1 ha (0.1 to 0.5 acre)] 2 = Moderate 1 to <4 h	er Class Quality 25 acres) [For BR/CM <0.04 ha (0.1 acre)] 0.25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha a (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] s) or more [BR/CM 2 ha (5 acres) or more]			
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 of the standing dead >25 cm (10) Amphibian breeding pools	de. pocks cm (6 in.) in.) dbh	for Estimating Degree of Interspersion			
		2 = Present in modera amounts of highes	all amounts or if more common of marginal quality e amounts, but not of highest quality or in small			
41	GRAND T (max 100	OTAL 0- 29 = Category 1, 30- 59 = Category 2,	low wetland function, condition, quality** good/moderate wetland function, condition, quality** superior wetland function, condition, quality**			

Site: W-0	Site: W-042		Rater(s): OL; jb		Date: 03/2020
max 6 pts. s	4 subtotal	Metric 1. Wetland	Area (Size) or	oen water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < X	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] na) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
max 14 pts. s	14 subtotal	NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of	th. Select only one and assi 0 m (164 ft) or more around e 25 m to <50 m (82 to <16- ge 10 m to <25 m (32 ft to < average <10 m (<32 ft) aro use. Select one or double or or older forest, prairie, sava	gn score. Do not double check wetland perimeter (7) 4 ft) around wetland perimeter 82 ft) around wetland perimeter aund wetland perimeter (0) check and average. nnah, wildlife area, etc. (7)	<. (4)
		MODERATELY HIGH. Re	pen pasture, row cropping, i	eark, conservation tillage, new	fallow field (3)
	subtotal	Metric 3. Hydrolog 3a. Sources of water. Score all the High pH groundwater (5) \overline{\text{X}}\ Other groundwater (3) [BF \overline{\text{X}}\ Precipitation (1) [unless B \overline{\text{S}}\ Seasonal/intermittent surfix Perennial surface water (I Sc. Maximum water depth. Selection Selection (2) 0.4 to 0.7 m (16 to 27.6 in \overline{\text{X}}\ <0.4 m (<16 in.) (1) [BR/C] 3e. Modifications to natural hydromoles (1) Recovered (7) X Recovering (3) Recent or no recovery (1)	nat apply. R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score .) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in lologic regime. Score one or 2) Check all disturbance in the control of the control	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat a.) (2)] Seasonally satura double check and average. s observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)
	17	Metric 4. Habitat	Alteration and I	Development	
max 20 pts. s	subtotal	4a. Substrate disturbance. Score X None or none apparent (4 Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5))	verage.	
		Moderately good (4) Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1)))	Check all disturbances of mowing grazing clearcutting selective cutting farming toxic pollutants	bbserved shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-042 R		Rater(s): OH:jb	Date: 03/2020			
54 subtotal previous page						
max 10 pts. subtotal	Metric 5. Special W	etlands				
·	*If the documented raw score for Me	etric 5 is 30 points or higher, the site is auto	matically considered a Category 3 wetland.			
raw score*	documentation for each selection (p Bog, fen, wet prairie (10); acidop Assoc. forest (wetl. &/or adj. upla Sensitive geologic feature such a Vernal pool (5); isolated, perched Island wetland >0.1 acre (0.04 ha Braided channel or floodplain/ter Gross morph. adapt. in >5 trees Ecological community with globa Known occurrence state/federal [*use higher rank where mixed Superior/enhanced habitat/use: r	re multiple values apply in row, score row as single feature with highest point value. Provide election (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) //or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] ature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) ted, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) (20 core (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) (20 core) (3) (3) (40 core) (3) (40 core) (40				
4	Metric 6. Plant Com	nmunities, Interspersior	n, Microtopography			
max 20 pts. subtotal	6a. Wetland vegetation communities Score all present using 0 to 3 scale. Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	0 = Absent or <0.1 ha (0.25 a [For BR/CM <0.04 ha (0.30 moderate quality, or composition of moderate quality.	acre) contiguous acre			
	6b. Horizontal (plan view) interspers	sion. Narrative Description of Veg				
	Select only one. High (5) Moderately high (4) [BR/CM Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (Low (1) [BR/CM (2)] None (0)	(5)] mative species mod = Native species are dom nonnative &/or disturba 3)] and species diversity m w/o presence of rare, th high = A predominance of nati tolerant native sp abset	A/or dominance of nonnative or disturbance tolerant ninant component of the vegetation, although ance tolerant native species can also be present, noderate to moderately high, but generally nreatened or endangered species ive species with nonnative sp &/or disturbance nt or virtually absent, and high sp diversity and often			
	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)	Mudflat and Open Water Cla 0 = Absent <0.1 ha (0.25 acro 1 = Low 0.1 to <1 ha (0.25 to (0.1 to 0.5 acro)) 2 = Moderate 1 to <4 ha (2.5	sence of rate, threatened, or endangered species ss Quality es) [For BR/CM <0.04 ha (0.1 acre)] 2.5 acres) [BR/CM 0.04 to <0.2 ha to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] more [BR/CM 2 ha (5 acres) or more]			
	6d. Microtopography. Score all present using 0 to 3 scale Vegetated hummocks/tussod Coarse woody debris >15 cn Standing dead >25 cm (10 ir Amphibian breeding pools	Hypothetical Wetland for Eschs n (6 in.) n.) dbh	timating Degree of Interspersion			
		2 = Present in moderate amounts of highest qualit	ounts or if more common of marginal quality punts, but not of highest quality or in small			
58	GRAND TO (max 100 p	0- 29 = Category 1, low we 30- 59 = Category 2, good/n	etland function, condition, quality** noderate wetland function, condition, quality** or wetland function, condition, quality**			

Site: W-044		Rater(s): OL; jb		Date: 03/2020	
max 6 pts. si	2 ubtotal	Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 X 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 <p><0.1 acre (0.04 ha) (0)</p>	ts) 20.2 ha) (5) [BR/CM (6)] 1 ha) (4) [BR/CM (6)] na) (3) [BR/CM (5)] 2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	2	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts. si	ubtotal	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years	o m (164 ft) or more around version to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arounds. Select one or double charrolder forest, prairie, savants, shrubland, young 2nd growstidential, fenced pasture, pa	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
	16	Metric 3. Hydrolog	ЭУ		
max 30 pts. si	ubtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless B Seasonal/intermittent surf X Perennial surface water (I Sc. Maximum water depth. Select >0.7 m (27.6 in.) (3) 0.4 to 0.7 m (16 to 27.6 in.) X<0.4 m (<16 in.) (1) [BR/C 3e. Modifications to natural hydromaphology in the None or none apparent (1) Recovered (7) Recovering (3) X Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. .) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or defining the store of the store of the store one or defining the store of the store one or defining the store of th	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura louble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
	3	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts. si	ubtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recovering (2) X Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) X Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) Recovering (3) X Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances o	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-044		Rater(s): OH:jb	Date: 03/2020			
24 subtotal previous page						
max 10 pts. subtotal	Metric 5. Special V	Vetlands				
	*If the documented raw score for I	Metric 5 is 30 points or higher, the site is a	utomatically considered a Category 3 wetland.			
raw score*	documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature sucl Vernal pool (5); isolated, perch Island wetland >0.1 acre (0.04 Braided channel or floodplain/M Gross morph. adapt. in >5 tree Ecological community with glo Known occurrence state/feder: [*use higher rank where mixe Superior/enhanced habitat/use	Itiple values apply in row, score row as single feature with highest point value. Provide on (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). cidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3). upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] uch as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) roched, or slope wetland (4); headwater wetland [1st order perennial or above] (3). 0.4 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) in/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) rees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] deral threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) ixed rank or qualifier] [exclude records which are only "historic"] use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) lacre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)				
max 20 pts. subtotal	Metric 6. Plant Co	mmunities, Interspersi	on, Microtopography			
max 20 pts. Subtotal	6a. Wetland vegetation communit Score all present using 0 to 3 scal Aquatic bed X Emergent Shrub Forest Mudflats Open water <20 acres (8 h	le. 0 = Absent or <0.1 ha (0. For BR/CM <0.04 ha 1 = Present and either comoderate quality, or comoderate quality	25 acre) contiguous acre			
	6b. Horizontal (plan view) interspe Select only one.		Vegetation Quality ity &/or dominance of nonnative or disturbance tolerant			
	High (5) Moderately high (4) [BR/Cl Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM Low (1) [BR/CM (2)] None (0)	mative species M (5)] mod = Native species are nonnative &/or distuant species diversing w/o presence of rare high = A predominance of tolerant native sp a	dominant component of the vegetation, although urbance tolerant native species can also be present, ty moderate to moderately high, but generally e, threatened or endangered species native species with nonnative sp &/or disturbance osent or virtually absent, and high sp diversity and often			
	6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) Nearly absent <5% cover (Absent (1)	Mudflat and Open Water 0 = Absent < 0.1 ha (0.25 3) 1 = Low 0.1 to <1 ha (0.2 (0.1 to 0.5 acre)] (0) 2 = Moderate 1 to <4 ha	Class Quality acres) [For BR/CM <0.04 ha (0.1 acre)] 5 to 2.5 acres) [BR/CM 0.04 to <0.2 ha 2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] or more [BR/CM 2 ha (5 acres) or more]			
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Hypothetical Wetland for sile. socks cm (6 in.) vin.) dbh None Low Microtopography Cover of the sile of the si	Estimating Degree of Interspersion Low Moderate Moderate High Scale amounts or if more common of marginal quality amounts, but not of highest quality or in small			
25	GRAND T (max 100	0- 29 = Category 1, lov 30- 59 = Category 2, gor	w wetland function, condition, quality** od/moderate wetland function, condition, quality** oerior wetland function, condition, quality**			

Page 2 of 2

Site: W-045		Rater(s): OL; jb		Date: 03/2020
max 6 pts. subtotal	Metric 1. Wetland	Area (SIZE) ope	n water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] na) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
4	Metric 2. Upland E	Buffers and Sur	rounding Land	Use
max 14 pts. subtotal	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years MODERATELY HIGH. Re	0 m (164 ft) or more around we 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8; average <10 m (<32 ft) arou use. Select one or double chor older forest, prairie, savants), shrubland, young 2nd grov	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) vth forest (5) rk, conservation tillage, new	(4) er (1)
16	Metric 3. Hydrolog	ду		
max 30 pts. subtotal	3a. Sources of water. Score all the High pH groundwater (5)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. .) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) ologic regime. Score one or d 2) Check all disturbances	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) aturation. Score one or dbl. check & avg. ntly inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
15	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts. subtotal	4a. Substrate disturbance. Score X None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) X Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one	only one and assign score.	Check all disturbances o	☐ shrub/sapling removal ☐ herbaceous/aquatic bed removal
	4c. Habitat alteration. Score one X None or none apparent (9 Recovered (6) Recovering (3) Recent or no recovery (1)))	e. clearcutting selective cutting farming toxic pollutants	woody debris removal sedimentation dredging nutrient enrichment

Site: W-045 Rater		Rater(s): OH:jb	Date: 03/2020			
35 subtotal previous page						
max 10 pts. subtotal	Metric 5. Special W	/etlands				
	*If the documented raw score for Me	etric 5 is 30 points or higher, the site is au	utomatically considered a Category 3 wetland.			
raw score*	documentation for each selection (p Bog, fen, wet prairie (10); acidop Assoc. forest (wetl. &/or adj. upla Sensitive geologic feature such a Vernal pool (5); isolated, perchee Island wetland >0.1 acre (0.04 h Braided channel or floodplain/ter Gross morph. adapt. in >5 trees Ecological community with globa Known occurrence state/federal [*use higher rank where mixed Superior/enhanced habitat/use: I	multiple values apply in row, score row as single feature with highest point value. Provide ction (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). (c); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] re such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) plain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) (3) trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) (3) (4) (4) (5) (5) (6) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7				
3	Metric 6. Plant Com	nmunities, Interspersio	on, Microtopography			
max 20 pts. subtotal	6a. Wetland vegetation communities Score all present using 0 to 3 scale. Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	. 0 = Absent or <0.1 ha (0.2 For BR/CM <0.04 ha 1 = Present and either cormoderate quality, or compared in the cormoderate quality is of moderate quality.	5 acre) contiguous acre			
	6b. Horizontal (plan view) interspers		egetation Quality y &/or dominance of nonnative or disturbance tolerant			
	High (5) Moderately high (4) [BR/CM Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (Low (1) [BR/CM (2)] None (0)	(5)] mod = Native species are dononnative &/or disturtion and species diversity w/o presence of rare high = A predominance of rollerant native splab	ominant component of the vegetation, although bance tolerant native species can also be present, moderate to moderately high, but generally threatened or endangered species lative species with nonnative sp &/or disturbance sent or virtually absent, and high sp diversity and often			
	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)	Mudflat and Open Water (0 = Absent <0.1 ha (0.25 at 1 = Low 0.1 to <1 ha (0.25 at 1)	Class Quality acres) [For BR/CM <0.04 ha (0.1 acre)] to 2.5 acres) [BR/CM 0.04 to <0.2 ha 2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] or more [BR/CM 2 ha (5 acres) or more]			
	6d. Microtopography. Score all present using 0 to 3 scale Vegetated hummocks/tussor Coarse woody debris >15 cn Standing dead >25 cm (10 ir Amphibian breeding pools	Hypothetical Wetland for cks (6 in.)	Estimating Degree of Interspersion			
	Milipinbian breeding pools	None Low Microtopography Cover S 0 = Absent 1 = Present in years small s				
		2 = Present in moderate a amounts of highest qu	mounts or if more common of marginal quality mounts, but not of highest quality or in small ality r greater amounts and of highest quality			
38	GRAND TO (max 100 p	30- 59 = Category 2, goo	wetland function, condition, quality** d/moderate wetland function, condition, quality** erior wetland function, condition, quality**			

Page 2 of 2

Site: W-046		Rater(s): OL; jb		Date: 03/2020
max 6 pts. subtotal	Metric 1. Wetland	Area (SIZe) ope	n water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 X 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
4	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts. subtotal	MEDIUM. Buffers average NARROW. Buffers average X VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years X MODERATELY HIGH. Re	0 m (164 ft) or more around we 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8. average <10 m (<32 ft) arou	retland perimeter (7) ft) around wetland perimeter ft) around wetland perimeter ft) around wetland perimeter ft) wetland perimeter (0) eck and average. ft) ft) ft) ft, conservation tillage, new	(4) er (1)
18	Metric 3. Hydrolog	gy		
max 30 pts. subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless E Seasonal/intermittent surf X Perennial surface water (1) [Independent of the Independent of Independent	R/CM (5)] R/CM primary source (5)] face water (3) ake or stream) (5) at only one and assign score. a.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) aturation. Score one or dbl. check & avg. intly inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
15	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts. subtotal	4a. Substrate disturbance. Score X None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) X Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one X None or none apparent (5) Recovered (6) Recovering (3) Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances o ☑ mowing ☐ grazing	bserved shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-046	Ra	ter(s): OH:jb	Date: 03/2020
39 subtotal previous page			
	etric 5. Special We	tlands	
raw score* Se	lect all that apply. Where multiple vicumentation for each selection (photomorphic programments) and programments are commented by the commentation for each selection (photomorphic programments) and programments are commented by the comments of the comme	ic 5 is 30 points or higher, the site is automatically collables apply in row, score row as single feature with hotos, checklists, maps, resource specialist concurrence veg., mossy substrate >10 sq.m, sphagnum or other most) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (4 spring/seep, sink, losing/underground stream, cave, waterfator slope wetland (4); headwater wetland [1st order perennial in reservoir, river, or perennial water >6 ft (2 m) deep (5) et depressions (floodplain pool, slough, oxbow, meander scottine, (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow that (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher ran eatened/endangered species (10); other rare species with gardory songbird/waterfowl (5); in-reservoir buttonbush (4); o (0.4 ha) AND EITHER >80% cover of invasives OR nonveget	nighest point value. Provide ce, data sources, references, etc). s (5); muck, organic soil layer (3) 45 cm) dbh (5) [exclude pine plantation] ill, rock outcrop/cliff (5) l or above] (3) ar, etc.) (3) roots/tip-up, or pneumatophores (3) k where mixed rank or qualifier] llobal rank G1*(10), G2*(5), G3*(3) ther fish/wildlife management/designation (3)
max 20 pts. subtotal		nunities, Interspersion, Micr	rotopography
	Wetland vegetation communities. ore all present using 0 to 3 scale. Aquatic bed X Emergent 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) contig [For BR/CM <0.04 ha (0.1 acre)] 1 = Present and either comprises a sma moderate quality, or comprises a sign is of moderate quality, or comprises 3 = Present and comprises a significant and is of high quality	all part of wetland's vegetation and is of an antificant part but is of low quality ificant part of wetland's vegetation and a small part and is of high quality
	Horizontal (plan view) interspersio lect 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)	low = Low species diversity &/or domina native species mod = Native species are dominant comp nonnative &/or disturbance tolerar and species diversity moderate to w/o presence of rare, threatened chigh = A predominance of native species	connect of the vegetation, although native species can also be present, moderately high, but generally or endangered species
	Coverage of invasive plants. d 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)		(c) te, threatened, or endangered species (c) (c) (c) (d) (d) (d) (e) (e) (e) (e) (e) (e) (e) (e) (e) (e
	I. Microtopography. core all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (Standing dead >25 cm (10 in.) Amphibian breeding pools	6 in.) dbh None Low Low Microtopography Cover Scale 0 = Absent 1 = Present in very small amounts or if recognitions are in the content of the content	Moderate Moderate High
42	GRAND TO	30-39 = Category 2, good/moderate w	unts and of highest quality ion, condition, quality** etland function, condition, quality**

3c. Maximum water depth. Select only one and assign score. Semi- to permanently inundated/saturated (4) Regularly inundated/saturated (3) [BR/CM (4)] O.4 to 0.7 m (16 to 27.6 in.) (2) [BR/CM (3)] Seasonally inundated (2) [BR/CM (4)] Seasonally inundated (2) [BR/CM (4)] Seasonally saturated in upper 30 cm (12 in.) (1) [BR/CM (3)] Seasonally saturated in upper 30 cm (12 in.) (1) [BR/CM (4)] Seasonally saturated in upper 30 cm (12 in.) (12 in.) (12 in.)	Site : W-049	Rater(s): OL; jb	Date: 03/2020
Select one size class and assign score. So acrees (20.2 ha) (6) (pis) So to -60 acrees (20.1 ha) (6) [BR/CM (6)] 10 to -50 acrees (10.1 ha) (4) [BR/CM (6)] 3 to -10 acrees (12.1 to -4 ha) (3) [BR/CM (6)] 3 to -10 acrees (12.1 to -4 ha) (3) [BR/CM (6)] 0.1 to -0.3 acree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (2)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (2)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (2)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (2)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (2)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (2)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (2)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (2)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (2) [BR/CM (3)] -10 to -0.3 caree (0.0 4 ha) (-1.2 ha) (-1		I nd Area (SIZe) open wat	ter body (excluding aquatic beds and seasonal mudflats) is >20 acres
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 50 m to <50 m (82 to <46 ft) around wetland perimeter (1) VERY NARROW. Buffers average 25 m to <50 m (32 to <82 ft) around wetland perimeter (1) VERY NARROW. Buffers average 30 m to <25 m (32 ft to <82 ft) around wetland perimeter (1) VERY NARROW. Buffers average 10 m to <25 m (32 ft to <82 ft) around wetland perimeter (1) VERY LOW. Old field (>10 years), shrubland, young 2nd growth ordest (5) MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field (3) High. Urban, industrial, open pasture, row cropping, mining, construction (1) **Netrical Structure of the first provided for the first park (1) of the groundwater (5) Wether Good water. Score all that apply. High pH groundwater (3) [BR/CM (5)] Personial surface water (1ake or stream) (5) 3c. Maximum water depth. Select only one and assign score. Solon maximum water depth. Select only one and assign score. Note or more apparent (12) Recovered (7) Recovered (7) Recovered (7) Recovered (7) Recovered (8) Recovered (9) Recovered (9) Recovered (9) Recovered (9) Recovered (1) Recovered (2) Recovered (3) Recovered (3) Recovered (1) Recovered (1) Recovered (1) Recovered (3) Recovered (3) Recovered (1) Recovered (3) Recovered (3) Recovered (6) Recovered (7) Very good (6) Good (5) Moderately good (4)	Select one size class and a >50 acres (>20.2 ha 25 to <50 acres (10 10 to <25 acres (4 to 3 to <10 acres (1.2 X 0.3 to <3 acres (0.1 0.1 to <0.3 acre (0.1) (6 pts) 1 to <20.2 ha) (5) [BR/CM (6)] 0 <10.1 ha) (4) [BR/CM (6)] 0 <4 ha) (3) [BR/CM (5)] to <1.2 ha) (2) [BR/CM (3)] 04 to <0.1 ha) (1) [BR/CM (2)]	
2a. Calculate average buffer width. Select only one and assign score. Do not double check. WIDED. Buffers average 50 m to <50 m (82 to <164 ft) around wetland perimeter (1) MARROW. Buffers average 40 m to <25 m (82 to <164 ft) around wetland perimeter (1) VERY NARROW. Buffers average 40 m to <25 m (32 th o set) tal anound wetland perimeter (1) VERY LOW. 2nd growth or older forest, praine, 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) Wetric 3. Hydrology 3a. Sources of water. Score all that apply. High pH groundwater (3) [SRCM (5)] Sessonal/intermittent surface water (3) Seven stream/lake and other human use (1) Part of wetland/upland (e.g., forest), complex (d Buffers and Surrou	unding Land Use
3a. Sources of water. Score all that apply. High pH groundwater (3) BR/CM (5) Other groundwater (3) BR/CM (5) Precipitation (1) [unless BR/CM primary source (5)] Seasonal/intermittent surface water (3) Seasonal/intermittent surface water (4) Regularly inundated/saturated (3) Seasonally saturated in upper 30 cm (12 in.) (1) Geavenal water (4) Recovered (7) Recovering (3) Recovering (4) Recovering (5) Recovering (6) Recovering (7) Recovering (8) Recovering (9) Recovering (1) Recovering (1) Recovering (1) Recovering (2) Recovering (2) Recovering (3) Recovering (4) Recovering (5) Recovering (6) Recovering (7) Recovering (8) Recovering (9) Recovering (1) Recovering (1) Recovering (1) Reverse (1)	2a. Calculate average buffing WIDE. Buffers average buffing MEDIUM. Buffers a NARROW. Buffers a X VERY NARROW. Buffers a Yerry LOW. 2nd graph LOW. Old field (>10 X MODERATELY HIGH	age 50 m (164 ft) or more around wetlar rerage 25 m to <50 m (82 to <164 ft) are exerage 10 m to <25 m (32 ft to <82 ft) are uffers average <10 m (<32 ft) around we land use. Select one or double check a powth or older forest, prairie, savannah, years), shrubland, young 2nd growth for H. Residential, fenced pasture, park, co	nd perimeter (7) round wetland perimeter (4) around wetland perimeter (1) retland perimeter (0) and average. wildlife area, etc. (7) prest (5) ponservation tillage, new fallow field (3)
3a. Sources of water. Score all that apply. High pH groundwater (5)	18 Metric 3. Hydro	ology	
### 4a. Substrate disturbance. Score one or double check and average. X None or none apparent (4)	3a. Sources of water. Scor High pH groundwater Other groundwater Precipitation (1) [un Seasonal/intermitte Perennial surface w 3c. Maximum water depth. >0.7 m (27.6 in.) (3) 0.4 to 0.7 m (16 to 2)		

Site: W-046	Ra	ter(s): OH:jb	Date: 03/2020
39 subtotal previous page			
	etric 5. Special We	tlands	
raw score* Se	lect all that apply. Where multiple vicumentation for each selection (photomorphic programments) and programments are commented by the commentation for each selection (photomorphic programments) and programments are commented by the comments of the comme	ic 5 is 30 points or higher, the site is automatically collables apply in row, score row as single feature with hotos, checklists, maps, resource specialist concurrence veg., mossy substrate >10 sq.m, sphagnum or other most) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (4 spring/seep, sink, losing/underground stream, cave, waterfator slope wetland (4); headwater wetland [1st order perennial in reservoir, river, or perennial water >6 ft (2 m) deep (5) et depressions (floodplain pool, slough, oxbow, meander scottine, (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow that (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher ran eatened/endangered species (10); other rare species with gardory songbird/waterfowl (5); in-reservoir buttonbush (4); o (0.4 ha) AND EITHER >80% cover of invasives OR nonveget	nighest point value. Provide ce, data sources, references, etc). s (5); muck, organic soil layer (3) 45 cm) dbh (5) [exclude pine plantation] ill, rock outcrop/cliff (5) l or above] (3) ar, etc.) (3) roots/tip-up, or pneumatophores (3) k where mixed rank or qualifier] llobal rank G1*(10), G2*(5), G3*(3) ther fish/wildlife management/designation (3)
max 20 pts. subtotal		nunities, Interspersion, Micr	rotopography
	Wetland vegetation communities. ore all present using 0 to 3 scale. Aquatic bed X Emergent 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) contig [For BR/CM <0.04 ha (0.1 acre)] 1 = Present and either comprises a sma moderate quality, or comprises a sign is of moderate quality, or comprises 3 = Present and comprises a significant and is of high quality	all part of wetland's vegetation and is of an antificant part but is of low quality ificant part of wetland's vegetation and a small part and is of high quality
	Horizontal (plan view) interspersio lect 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)	low = Low species diversity &/or domina native species mod = Native species are dominant comp nonnative &/or disturbance tolerar and species diversity moderate to w/o presence of rare, threatened chigh = A predominance of native species	connect of the vegetation, although native species can also be present, moderately high, but generally or endangered species
	Coverage of invasive plants. d 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)		(c) te, threatened, or endangered species (c) (c) (c) (d) (d) (d) (e) (e) (e) (e) (e) (e) (e) (e) (e) (e
	I. Microtopography. core all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (Standing dead >25 cm (10 in.) Amphibian breeding pools	6 in.) dbh None Low Low Microtopography Cover Scale 0 = Absent 1 = Present in very small amounts or if recognitions are in the content of the content	Moderate Moderate High
42	GRAND TO	30-39 = Category 2, good/moderate w	unts and of highest quality ion, condition, quality** etland function, condition, quality**

Site: W-(Site: W-049		Rater(s): OL; jb		Date: 03/2020
max 6 pts.	2 subtotal	Metric 1. Wetland	Area (Size) op	en water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 X 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 <p><0.1 acre (0.04 ha) (0)</p>	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] na) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
max 14 pts.	5 subtotal	X MEDIUM. Buffers average	th. Select only one and assi 0 m (164 ft) or more around e 25 m to <50 m (82 to <164	gn score. Do not double check wetland perimeter (7) Ift) around wetland perimeter	k. (4)
		VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of X LOW. Old field (>10 years MODERATELY HIGH. Re	average <10 m (<32 ft) aro use. Select one or double c or older forest, prairie, savar s), shrubland, young 2nd gro	heck and average. nah, wildlife area, etc. (7) bwth forest (5) ark, conservation tillage, new	
	28	Metric 3. Hydrolog	ду		
max 30 pts.	subtotal	3a. Sources of water. Score all the light physical states of the light phy	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score .) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in ologic regime. Score one or 2) Check all disturbance	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura double check and average. s observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) saturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] sted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
	15	Metric 4. Habitat	Alteration and I	Development	
max 20 pts.	subtotal	4a. Substrate disturbance. Score X None or none apparent (4 Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5))	verage.	
		Moderately good (4) X Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one X None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1)))	Check all disturbances of mowing grazing clearcutting selective cutting farming toxic pollutants	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-049		Rater(s): ○⊦	l:jb			Date: 03/2	2020	
50 subtotal previous page								
max 10 pts. subtotal	Metric 5. Special V	Vetlands						
	If the documented raw score for N	Metric 5 is 30 poi	nts or highe	the site is a	automatically co	nsidered a Cat	egory 3 wetlan	nd.
	Bog, fen, wet prairie (10); acido Assoc. forest (wetl. &/or adj. up Sensitive geologic feature such Vernal pool (5); isolated, perch Island wetland >0.1 acre (0.04 Braided channel or floodplain/te Gross morph. adapt. in >5 tree Ecological community with glob Known occurrence state/federa [*use higher rank where mixed Superior/enhanced habitat/use	ultiple values apply in row, score row as single feature with highest point value. Provide ion (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) dj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) erched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) 0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) ain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] ederal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) mixed rank or qualifier] [exclude records which are only "historic"] //use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) 11 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)						
4 N	Metric 6. Plant Cor	nmunitie	s, Inte	rspersi	ion, Micr	otopogr	aphy	
	Sa. Wetland vegetation communities Core all present using 0 to 3 scales Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 h.m.)	e. 0 1 2	= Absent of [For BR/] = Present moderate = Present is of moderate = Present is of moderate	CM <0.04 has and either consistency or consistency	25 acre) contig	ll part of wetlan nificant part bu ificant part of w a small part an	t is of low quali etland's vegeta d is of high qua	ity ation and ality
	6b. Horizontal (plan view) interspe Select only one.		w = Low sp	ecies divers	Vegetation Quity &/or domina		ve or disturband	ce tolerant
	High (5) Moderately high (4) [BR/CN Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM Low (1) [BR/CM (2)] None (0)	(3)[BR/CM (5)] nonnative &/or disturbance tolerant native species can also be prese y low (2) [BR/CM (3)] and species diversity moderate to moderately high, but generally				oresent, y cance by and often		
	Co. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-3 X Sparse 5-25% cover (-1) Nearly absent <5% cover (1) Absent (1)	0 3) 1 	= Absent < = Low 0.1 (0.1 to 0.1 = Moderate	Open Water :0.1 ha (0.25 to <1 ha (0.2 5 acre)] e 1 to <4 ha	Class Quality acres) [For BR 5 to 2.5 acres) (2.5 to 9.9 acre or more [BR/C	/CM <0.04 ha ([BR/CM 0.04 to s) [BR/CM 0.2	0.1 acre)] 0 <0.2 ha to <02 ha (0.5	·
	6d. Microtopography. Score all present using 0 to 3 scal Vegetated hummocks/tusso Coarse woody debris >15 o Standing dead >25 cm (10	He. cocks cm (6 in.)			r Estimating Do	•		6 8
	Amphibian breeding pools	<u>M</u> 0 1	AbsentPresent		Scale amounts or if namounts, but no			
		3		of highest q in moderate	uality or greater amou	unts and of high	nest quality	
54	GRAND T (max 100		30- 59 = Ca	tegory 2, go	w wetland functi od/moderate we perior wetland f	etland function,	condition, qua	ılity**

Metric 1. Wetland Area (size) max 6 pts. Select one size class and assign score. >50 acres (>20.2 ha) (6 pts) X 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)] Notes: BR/CM = adjusted points for Blue Ridge and Cumberland M open water body (excluding aquatic beds and seasonal mudflats (8 ha), then add only 0.5 acre (0.2 ha) of it to the wetland size for M (8) and the model of the	is >20 acres
>50 acres (>20.2 ha) (6 pts) X 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)]	
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)	
2 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)	
25 Metric 3. Hydrology	
3a. Sources of water. Score all that apply. High pH groundwater (5) X 100-year floodplain (1) Between stream/lake and other human use (1) Percipitation (1) [unless BR/CM primary source (5)] Seasonal/intermittent surface water (3) Part of wetland/upland (e.g., forest), complex Part of riparian or upland corridor (1) Part of riparian or upland corridor (1) N Perennial surface water (lake or stream) (5) Seasonally inundated/saturation. Score one or dbl. Score in to permanently inundated/saturated (4) X Regularly inundated/saturated (3) BR/CM (4) Seasonally inundated (2) BR/CM (4) Seasonally inundated (2) BR/CM (4) Seasonally saturated in upper 30 cm (12 in.) Recovering (3) Recovering (4) Recovering (4) Recovering (5) Recovering (5) Recovering (6) Recovering (7) Recovering	(1) check & avg.
15 Metric 4. Habitat Alteration and Development	
4a. Substrate disturbance. Score one or double check and average. None or none apparent (4)	ed removal

Site: W-053		Rater(s): OH:jb	Date: 03/2020			
47 subtotal previous page						
max 10 pts. subtotal	Metric 5. Special V	Vetlands				
	*If the documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.					
raw score*	documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature suc Vernal pool (5); isolated, percl Island wetland >0.1 acre (0.04 Braided channel or floodplain/ Gross morph. adapt. in >5 tree Ecological community with glo Known occurrence state/feder [*use higher rank where mixe Superior/enhanced habitat/use	(photos, checklists, maps, resource specophilic veg., mossy substrate >10 sq.m, sphagpland) incl. >0.25 acre (0.1 ha); old growth (10 h as spring/seep, sink, losing/underground strened, or slope wetland (4); headwater wetland [1 ha) in reservoir, river, or perennial water >6 terrace depressions (floodplain pool, slough, oss >10 in. (25 cm) dbh: buttress, multitrunk/stobal rank (NatureServe): G1*(10), G2*(5), G3*(5) al threatened/endangered species (10); other at drank or qualifier] [exclude records which are exemigratory songbird/waterfowl (5); in-reservoir	Ist order perennial or above] (3) (2 m) deep (5) xbow, meander scar, etc.) (3) bl, stilted, shallow roots/tip-up, or pneumatophores (3) 3) [*use higher rank where mixed rank or qualifier] rare species with global rank G1*(10), G2*(5), G3*(3)			
2	Metric 6. Plant Co	mmunities, Interspers	ion, Microtopography			
max 20 pts. subtotal	6a. Wetland vegetation communit Score all present using 0 to 3 sca Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 h	le. 0 = Absent or <0.1 ha (0 For BR/CM <0.04 h 1 = Present and either of moderate quality, or 2 = Present and either of is of moderate quality.	2.25 acre) contiguous acre a (0.1 acre)] comprises a small part of wetland's vegetation and is of comprises a significant part but is of low quality comprises a significant part of wetland's vegetation and ty, or comprises a small part and is of high quality ses a significant part or more of wetland's vegetation			
	6b. Horizontal (plan view) interspersolutions one. High (5) Moderately high (4) [BR/C Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CN Low (1) [BR/CM (2)]	Marrative Description o low = Low species divernative species M (5)] mod = Native species are nonnative &/or dis and species diverw/o presence of ra	f Vegetation Quality sity &/or dominance of nonnative or disturbance tolerant e dominant component of the vegetation, although turbance tolerant native species can also be present, sity moderate to moderately high, but generally are, threatened or endangered species			
	None (0) 6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) X Nearly absent <5% cover Absent (1)	tolerant native sp but not always, the but not always, the c. Mudflat and Open Wate 0 = Absent <0.1 ha (0.2 1 = Low 0.1 to <1 ha (0.2 (0.1 to 0.5 acre)) 2 = Moderate 1 to <4 ha	of native species with nonnative sp &/or disturbance absent or virtually absent, and high sp diversity and often be presence of rate, threatened, or endangered species The Class Quality Control Con			
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuse Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Me. socks cm (6 in.) None Low Microtopography Cover 0 = Absent 1 = Present in very sma 2 = Present in moderate amounts of highest	Il amounts or if more common of marginal quality amounts, but not of highest quality or in small			
49	GRAND T	30-59 = Category 2, g	ow wetland function, condition, quality** cod/moderate wetland function, condition, quality** uperior wetland function, condition, quality**			

Site: W-054		Rater(s): OL; jb		Date: 03/2020	
max 6 pts.	3 subtotal	Metric 1. Wetland	Area (SIZE) ope	en water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
·		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 X 3 to <10 acres (1.2 to <4 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	5	Metric 2. Upland I	Buffers and Sur	rounding Land	Use
max 14 pts.	subtotal	MEDIUM. Buffers average NARROW. Buffers average X VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of X LOW. Old field (>10 years MODERATELY HIGH. Re	O m (164 ft) or more around ve 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arou use. Select one or double chor older forest, prairie, savani	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
	18	Metric 3. Hydrolog	gy		
max 30 pts.	subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless B Seasonal/intermittent surf X Perennial surface water (1) 3c. Maximum water depth. Select >0.7 m (27.6 in.) (3) 0.4 to 0.7 m (16 to 27.6 in.) (3) 4.0.4 m (<16 in.) (1) [BR/C] 3e. Modifications to natural hydromaphology (1) Recovered (7) X Recovering (3) Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] face water (3) ake or stream) (5) at only one and assign score. a.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat (2)] Seasonally satural ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) upland corridor (1) auturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] tted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
	7	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) X Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) X Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (5) Recovered (6) X Recovering (3) Recent or no recovery (1)	one or double check and average	check all disturbances of mowing □ grazing	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-054	Rater(s): OH:jb	Date: 03/2020
32 subtotal previous page		
-	ecial Wetlands	
raw score* Select all that apply. documentation for ea documentation for ea Bog, fen, wet properties and soc. forest (w. Sensitive geology Vernal pool (5); Island wetland > Braided channe Gross morph. at Ecological commo	Where multiple values apply in row, score row ch selection (photos, checklists, maps, resourd airie (10); acidophilic veg., mossy substrate >10 sq.m etl. &/or adj. upland) incl. >0.25 acre (0.1 ha); old grogic feature such as spring/seep, sink, losing/undergrogic following features are such as spring/seep, sink, losing/undergrogic floodplain/terrace depressions (floodplain pool, sledapt. in >5 trees >10 in. (25 cm) dbh: buttress, multitrunuity with global rank (NatureServe): G1*(10), G2*(5 cc state/federal threatened/endangered species (10) ink where mixed rank or qualifier] [exclude records whose dhabitat/use: migratory songbird/waterfowl (5); in-records whose distributions are such as seen as a second such as seen as a second such as a secon	etland [1st order perennial or above] (3) er >6 ft (2 m) deep (5) ough, oxbow, meander scar, etc.) (3) unk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) i), G3*(3) [*use higher rank where mixed rank or qualifier] c) other rare species with global rank G1*(10), G2*(5), G3*(3)
3 Metric 6. Pl	ant Communities, Intersp	ersion, Microtopography
6a. Wetland vegetatic Score all present usir Aquatic bed Emergent X Shrub Forest Mudflats Open water <: Moss/lichen. C	0 = Absent or <0. For BR/CM <	nunity Cover Scale 1 ha (0.25 acre) contiguous acre 2.0.04 ha (0.1 acre)] wither comprises a small part of wetland's vegetation and is of a significant part but is of low quality wither comprises a significant part of wetland's vegetation and a quality, or comprises a small part and is of high quality comprises a significant part or more of wetland's vegetation quality
Moderate (3)[i	low = Low specie	tion of Vegetation Quality s diversity &/or dominance of nonnative or disturbance tolerant ies cies are dominant component of the vegetation, although c/or disturbance tolerant native species can also be present, s diversity moderate to moderately high, but generally ce of rare, threatened or endangered species ance of native species with nonnative sp &/or disturbance tive sp absent or virtually absent, and high sp diversity and often
X Sparse 5-25%	but not always sive plants. for coverage. % cover (-5) 75% cover (-3) cover (-1) <5% cover (0) but not always Mudflat and Oper 0 = Absent <0.1 to <1 (0.1 to 0.5 ac) 2 = Moderate 1 to	wys, the presence of rate, threatened, or endangered species Water Class Quality a (0.25 acres) [For BR/CM < 0.04 ha (0.1 acre)] ha (0.25 to 2.5 acres) [BR/CM 0.04 to < 0.2 ha
Coarse woody	ng 0 to 3 scale. mmocks/tussocks / debris >15 cm (6 in.) d >25 cm (10 in.) dbh eeding pools None Lo Microtopography 0 = Absent 1 = Present in ve 2 = Present in mo amounts of hi	Cover Scale ry small amounts or if more common of marginal quality derate amounts, but not of highest quality or in small
25 II	30- 59 = Catego	ry 1, low wetland function, condition, quality** ry 2, good/moderate wetland function, condition, quality** ry 3, superior wetland function, condition, quality**

Site: W-056		Rater(s): OL; jb		Date: 03/2020
5 max 6 pts. subtotal	Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p X 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 0.3 to <3 acres (0.1 to <1) 0.1 to <0.3 acre (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
max 14 pts. subtotal			n score. Do not double check vetland perimeter (7)	ζ.
	VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years	use. Select one or double ch or older forest, prairie, savani s), shrubland, young 2nd grovesidential, fenced pasture, pa	nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	
28	Metric 3. Hydrolog	ду		
max 30 pts. subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless B Seasonal/intermittent surf X Perennial surface water (1) 3c. Maximum water depth. Select >0.7 m (27.6 in.) (3) X 0.4 to 0.7 m (16 to 27.6 in.) <0.4 m (<16 in.) (1) [BR/C] 3e. Modifications to natural hydromath X None or none apparent (1) Recovered (7) Recovering (3) Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) lologic regime. Score one or d 2) Check all disturbances ditch	Part of wetland/up X Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat [in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
		weir stormwater input	dredging other	
7	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts. subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) X Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) X Recovering (3) Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances o ☐ mowing ☑ grazing	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-056		Rater(s): OH:jb	Date: 03/2020
45 subtotal previous page			
max 10 pts. subtotal	Metric 5. Special V	Vetlands	
	*If the documented raw score for	Metric 5 is 30 points or higher, the site is	s automatically considered a Category 3 wetland.
raw score*	documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature suc Vernal pool (5); isolated, percl Island wetland >0.1 acre (0.04 Braided channel or floodplain/ Gross morph. adapt. in >5 tree Ecological community with glo Known occurrence state/feder [*use higher rank where mixe Superior/enhanced habitat/use	(photos, checklists, maps, resource speophilic veg., mossy substrate >10 sq.m, sphapland) incl. >0.25 acre (0.1 ha); old growth (1 h as spring/seep, sink, losing/underground sthed, or slope wetland (4); headwater wetland ha) in reservoir, river, or perennial water >6 terrace depressions (floodplain pool, slough, se >10 in. (25 cm) dbh: buttress, multitrunk/stebal rank (NatureServe): G1*(10), G2*(5), G3* all threatened/endangered species (10); other drank or qualifier] [exclude records which are: migratory songbird/waterfowl (5); in-reserved	[1st order perennial or above] (3) it (2 m) deep (5) oxbow, meander scar, etc.) (3) ool, stilted, shallow roots/tip-up, or pneumatophores (3) (3) [*use higher rank where mixed rank or qualifier] rare species with global rank G1*(10), G2*(5), G3*(3)
3	Metric 6. Plant Co	mmunities, Interspers	sion, Microtopography
max 20 pts. subtotal	6a. Wetland vegetation communit Score all present using 0 to 3 sca Aquatic bed Emergent Shrub Forest Mudflats Open water <20 acres (8 h	le. 0 = Absent or <0.1 ha For BR/CM <0.04 1 = Present and either moderate quality, conduction 2 = Present and either is of moderate quality.	0.25 acre) contiguous acre ha (0.1 acre)] comprises a small part of wetland's vegetation and is of r comprises a significant part but is of low quality comprises a significant part of wetland's vegetation and ity, or comprises a small part and is of high quality ises a significant part or more of wetland's vegetation
	6b. Horizontal (plan view) interspectionly one. High (5) Moderately high (4) [BR/C Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM Low (1) [BR/CM (2)]	low = Low species divenative species M (5)] mod = Native species and nonnative &/or divenative and species dive	of Vegetation Quality risity &/or dominance of nonnative or disturbance tolerant re dominant component of the vegetation, although sturbance tolerant native species can also be present, risity moderate to moderately high, but generally rare, threatened or endangered species
	None (0)	tolerant native sp	of native species with nonnative sp &/or disturbance absent or virtually absent, and high sp diversity and often be presence of rate, threatened, or endangered species
	6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) Nearly absent <5% cover (-1) Absent (1)	Mudflat and Open Wat 0 = Absent <0.1 ha (0.3 3)	- · · · · · · · · · · · · · · · · · · ·
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	ale. socks cm (6 in.)	For Estimating Degree of Interspersion Low Moderate Moderate High
		2 = Present in moderat amounts of highest	er Scale all amounts or if more common of marginal quality e amounts, but not of highest quality or in small
48	GRAND T (max 100	0- 29 = Category 1, 30- 59 = Category 2, g	ow wetland function, condition, quality** good/moderate wetland function, condition, quality** superior wetland function, condition, quality**

Site: W-057		Rater(s): OL; jb		Date: 03/2020	
	4 ototal	Metric 1. Wetland	Area (SIZe) ope	en water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
		Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10. 3 to <10 acres (1.2 to <4 l 0.3 to <3 acres (0.1 to <1. 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) 20.2 ha) (5) [BR/CM (6)] 1 ha) (4) [BR/CM (6)] na) (3) [BR/CM (5)] 2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	5	Metric 2. Upland E	Buffers and Sur	rounding Land	Use
max 14 pts. sub	ototal	MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years	o m (164 ft) or more around version to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arounds. Select one or double char older forest, prairie, savants), shrubland, young 2nd grossidential, fenced pasture, pastidential, fenced pastidenti	wetland perimeter (7) ft) around wetland perimeter (2 ft) around wetland perimeter (3 ft) around wetland perimeter (4 wetland perimeter (0) (5 eck and average. (7) (6 math, wildlife area, etc. (7) (7) (8 wth forest (5) (8 conservation tillage, new	(4) er (1)
2	27	Metric 3. Hydrolog	ЭУ		
max 30 pts. sub	ototal	3a. Sources of water. Score all the High pH groundwater (5)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or contents	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat (2)] Seasonally saturationally satu	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
-	7	Metric 4. Habitat	Alteration and D)evelopment	
max 20 pts. sub	ototal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances o	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-057		Rater(s): OH:jb	Date: 03/2020				
43 subtotal previous page							
	Metric 5. Special Wetlands						
raw score*	Select all that apply. Where multip documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature suc Vernal pool (5); isolated, percl Island wetland >0.1 acre (0.04 Braided channel or floodplain/ Gross morph. adapt. in >5 tree Ecological community with glo Known occurrence state/feder [*use higher rank where mixe Superior/enhanced habitat/use	ne documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland. Lect all that apply. Where multiple values apply in row, score row as single feature with highest point value. Provide umentation 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)					
3		cre (0.4 ha) AND EITHER >80% cover of invas mmunities, Interspers	ives OR nonvegetated on mined/excavated land (-10)				
max 20 pts. subtotal	6a. Wetland vegetation communit Score all present using 0 to 3 sca Aquatic bed Emergent Shrub Forest Mudflats X Open water <20 acres (8 h	ies. Vegetation Community le. 0 = Absent or <0.1 ha (0 For BR/CM <0.04 h 1 = Present and either of moderate quality, or 2 = Present and either of is of moderate quality.	Cover Scale .25 acre) contiguous acre a (0.1 acre)] comprises a small part of wetland's vegetation and is of comprises a significant part but is of low quality comprises a significant part of wetland's vegetation and y, or comprises a small part and is of high quality es a significant part or more of wetland's vegetation				
	6b. Horizontal (plan view) intersperselect only one. High (5) Moderately high (4) [BR/C Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM Low (1) [BR/CM (2)] None (0)	M (5)] Marrative Description of low = Low species divernative species M (5)] M (3)] M (3)] M (3)] Marrative Description of low = Low species divernative species are nonnative &/or dis and species divers w/o presence of rahigh = A predominance of low species are nonnative w/o presence of rahigh = A predominance of low species diversed.					
	6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) Nearly absent <5% cover Absent (1)	but not always, the Mudflat and Open Wate 0 = Absent <0.1 ha (0.2) 1 = Low 0.1 to <1 ha (0. (0.1 to 0.5 acre)) 2 = Moderate 1 to <4 ha	presence of rate, threatened, or endangered species				
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Me. socks cm (6 in.) None Low Microtopography Cover 0 = Absent 1 = Present in very sma 2 = Present in moderate amounts of highest of	l amounts or if more common of marginal quality amounts, but not of highest quality or in small				
46	GRAND T	O- 29 = Category 1, lo 30- 59 = Category 2, gr	w wetland function, condition, quality** od/moderate wetland function, condition, quality** perior wetland function, condition, quality**				

Site: W-058		Rater(s): OL; jb		Date: 03/2020
max 6 pts. subtotal	Metric 1. Wetland	Area (SIZe) ope	n water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10 X 3 to <10 acres (1.2 to <4 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
5	Metric 2. Upland I	Buffers and Sur	rounding Land	Use
max 14 pts. subtotal	MEDIUM. Buffers averag NARROW. Buffers averag VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of the surrounding land X LOW. Old field (>10 years MODERATELY HIGH. Re	0 m (164 ft) or more around we 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8. average <10 m (<32 ft) arou	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) vth forest (5) rk, conservation tillage, new	(4) er (1)
18	Metric 3. Hydrolog	gy		
max 30 pts. subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless E Seasonal/intermittent surf X Perennial surface water (3c. Maximum water depth. Select >0.7 m (27.6 in.) (3) 0.4 to 0.7 m (16 to 27.6 in X <0.4 m (<16 in.) (1) [BR/C] 3e. Modifications to natural hydromaphology (7) Recovered (7) X Recovering (3) Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] face water (3) ake or stream) (5) at only one and assign score. a.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) blogic regime. Score one or d Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat (2)] Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) aturation. Score one or dbl. check & avg. intly inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
7	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts. subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) X Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) X Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (S) Recovered (6) X Recovering (3) Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances o ☐ mowing ☑ grazing	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-058		Rater(s): OH:jb	Date: 03/2020				
33 subtotal previous page							
max 10 pts. subtotal	Metric 5. Special Wetlands						
·	*If the documented raw score for M	*If the documented raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland.					
raw score*	documentation for each selection (p Bog, fen, wet prairie (10); acidop Assoc. forest (wetl. &/or adj. upl. Sensitive geologic feature such Vernal pool (5); isolated, perche Island wetland >0.1 acre (0.04 h Braided channel or floodplain/te Gross morph. adapt. in >5 trees Ecological community with globa Known occurrence state/federal [*use higher rank where mixed Superior/enhanced habitat/use:	pply. Where multiple values apply in row, score row as single feature with highest point value. Provide or each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). wet prairie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) set (wetl. &/or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] geologic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) old (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) and >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) annel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) ph. adapt. in >5 trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) community with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] currence state/federal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) her rank where mixed rank or qualifier] [exclude records which are only "historic"] nhanced habitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) y low quality): <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)					
3	Metric 6. Plant Con	nmunities, Interspersio	n, Microtopography				
max 20 pts. subtotal	6a. Wetland vegetation communities Score all present using 0 to 3 scale Aquatic bed Emergent Shrub Forest Mudflats Open water <20 acres (8 ha	9. O = Absent or <0.1 ha (0.25) [For BR/CM <0.04 ha (0.25) 1 = Present and either commoderate quality, or commoderate qualit	acre) contiguous acre				
	6b. Horizontal (plan view) interspers	low = Low species diversity &/or dominance of nonnative or disturbance tole					
	High (5) Moderately high (4) [BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] None (0) Moderately high (4) [BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] None (0) Moderately low (2) [BR/CM (3)] 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 but not always, the presence of rate, threatened, or endangered species						
	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)	Mudflat and Open Water Class Quality >75% cover (-5) 25-75% cover (-3) 25% cover (-1) sent <5% cover (0) This is the cover (0) This is					
	6d. Microtopography. Score all present using 0 to 3 scale Vegetated hummocks/tusso Coarse woody debris >15 cr Standing dead >25 cm (10 iii Amphibian breeding pools						
	Amphibian breeding pools	Microtopography Cover Sc 0 = Absent					
		2 = Present in moderate an amounts of highest qua	nounts or if more common of marginal quality nounts, but not of highest quality or in small lity greater amounts and of highest quality				
36	GRAND TO	30- 59 = Category 2, good	vetland function, condition, quality** /moderate wetland function, condition, quality** rior wetland function, condition, quality**				

Site : ₩-59		Rater(s): OL; jb		Date: 03/2020
max 6 pts. subtotal	Metric 1. Wetland	Area (SIZe) ope	n water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < X 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 0.3 to <3 acres (0.1 to <1) 0.1 to <0.3 acre (0.04 to <0.1 acres (0.04 to <0.1 acres (0.04 to))	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] na) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
5	Metric 2. Upland B	Buffers and Sur	rounding Land	Use
max 14 pts. subtotal	MEDIUM. Buffers average NARROW. Buffers average X VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years X MODERATELY HIGH. Re	0 m (164 ft) or more around we 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8. average <10 m (<32 ft) arou	retland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) vth forest (5) rk, conservation tillage, new	(4) er (1)
27	Metric 3. Hydrolog	ду		
max 30 pts. subtotal	3a. Sources of water. Score all the High pH groundwater (5) X Other groundwater (3) [BI X Precipitation (1) [unless B Seasonal/intermittent surf X Perennial surface water (I X Perennial surface water (I Sc. Maximum water depth. Select >0.7 m (27.6 in.) (3) 0.4 to 0.7 m (16 to 27.6 in.) X <0.4 m (<16 in.) (1) [BR/C Se. Modifications to natural hydrox X None or none apparent (1 Recovered (7) Recent or no recovery (1)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) logic regime. Score one or d Check all disturbances ditch	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura ouble check and average. observed point source (non	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
7	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts. subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) X Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (9) Recovered (6) X Recovering (3)	only one and assign score. or double check and average	Check all disturbances o ☐ mowing ☑ grazing	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-059	-	Rater(s): OH:jb	Date: 03/2020				
subtotal previous page							
max 10 pts. subtotal	Metric 5. Special Wetlands						
	*If the documented raw score for M	letric 5 is 30 points or higher, the site is aut	comatically considered a Category 3 wetland.				
raw score*	documentation for each selection (p Bog, fen, wet prairie (10); acidop Assoc. forest (wetl. &/or adj. upla Sensitive geologic feature such Vernal pool (5); isolated, perche Island wetland >0.1 acre (0.04 h Braided channel or floodplain/tet Gross morph. adapt. in >5 trees Ecological community with globa Known occurrence state/federal [*use higher rank where mixed Superior/enhanced habitat/use:	apply. Where multiple values apply in row, score row as single feature with highest point value. Provide n for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). n, wet prairie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) 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] we geologic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) pool (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) wetland >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) d channel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) morph. adapt. in >5 trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) ical community with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] occurrence state/federal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) higher rank where mixed rank or qualifier] [exclude records which are only "historic"] or/enhanced habitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) very low quality) : <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)					
3	Metric 6. Plant Con	nmunities, Interspersio	n, Microtopography				
max 20 pts. subtotal	6a. Wetland vegetation communitie Score all present using 0 to 3 scale Aquatic bed Emergent Shrub Forest Mudflats Open water <20 acres (8 ha Moss/lichen. Other	9. 0 = Absent or <0.1 ha (0.25 [For BR/CM <0.04 ha (0.25) 1 = Present and either commoderate quality, or coming of moderate quality, or coming of the common of the	acre) contiguous acre				
	6b. Horizontal (plan view) interspers	low = Low species diversity &/or dominance of nonnative or disturbance tole					
	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) native species mod = Native species are dominant component of the vegetation, althout nonnative &/or disturbance tolerant native species can also be presented 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 species of rare, threatened or endangered species with nonnative sp &/or disturbance of native species of rare, threatened or endangered species with nonnative sp &/or disturbance of native species of rare, threatened or endangered species with nonnative sp &/or disturbance of native species of rare, threatened or endangered species with nonnative sp &/or disturbance of native species of rare, threatened or endangered species with nonnative sp &/or disturbance of native species of rare, threatened or endangered species of native species of n						
	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)	plants. overage. over (-5) cover (-3) er (-1) 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)]					
	6d. Microtopography. Score all present using 0 to 3 scale Vegetated hummocks/tusso Coarse woody debris >15 cr Standing dead >25 cm (10 ii	esent using 0 to 3 scale. tated hummocks/tussocks se woody debris >15 cm (6 in.) ding dead >25 cm (10 in.) dbh nibian breeding pools					
		None Low Microtopography Cover Sc 0 = Absent 1 = Proceet in york small or					
		2 = Present in moderate an amounts of highest qua	mounts or if more common of marginal quality nounts, but not of highest quality or in small lity greater amounts and of highest quality				
46	GRAND TO (max 100 p	30- 59 = Category 2, good	vetland function, condition, quality** /moderate wetland function, condition, quality** rior wetland function, condition, quality**				

Page 2 of 2

Metric 1. Wetland Area (size) Select one size class and assign score. Select one size class and score size class score. Select one size class and score size class score. Select one size class and score size class score. Select one size class and select size size size size size size size size	Site: W-060
Select one size class and assign score. Sources/36 cares (>20.2 ha) (6 pts) 25 to -550 acres (>10.2 to -20.2 ha) (6) [BR/CM (6)] 3 to -10 acres (1.0.1 to -20.2 ha) (6) [BR/CM (6)] 3 to -10 acres (1.0.2 to -4 ha) (3) [BR/CM (6)] 3 to -10 acres (1.0.1 to -12 ha) (2) [BR/CM (3)] 0.1 to -0.3 acre (0.04 to -0.1 ha) (1) [BR/CM (3)] 0.1 to -0.3 acre (0.04 to -0.1 ha) (1) [BR/CM (3)] 0.1 to -0.3 acre (0.04 to -0.1 ha) (1) [BR/CM (3)] 0.1 to -0.3 acre (0.04 to -0.1 ha) (1) [BR/CM (3)] 0.1 to -0.3 acre (0.04 to -0.1 ha) (1) [BR/CM (3)] 0.1 to -0.3 acre (0.04 to -0.1 ha) (1) [BR/CM (3)] 0.1 to -0.3 acre (0.04 to -0.1 ha) (1) [BR/CM (3)] 0.1 to -0.3 acre (0.04 to -0.1 ha) (1) [BR/CM (3)] 0.1 to -0.3 acre (0.04 to -0.1 ha) (1) [BR/CM (3)] 0.1 to -0.3 acre (0.04 to -0.1 ha) (1) [BR/CM (3)] 0.1 to -0.3 acre (0.04 to -0.1 ha) (1) [BR/CM (3)] 0.1 to -0.3 acre (0.04 to -0.1 ha) (1) [BR/CM (3)] 0.2 Calculate average buffer width. Select only one and assign score. Do not double check. WIDE. Buffers average 50 m (164 th) or more around wetland perimeter (7) 0.2 Every law (1.0 to -0.1 ha)	
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) McDIUM. 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 to <25 m (32 ft to <82 ft) around wetland perimeter (1) 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) The groundwater (5) Between stream/lake and other human use (1) Precipitation (1) [unless BR/CM primary source (5)] Seasonal/intermittent surface water (3) Perennial surface water (4) Part of riparian or upland corridor (1) Regularly inundated/saturated (4) Regularly inundated/saturated (3) [BR/CM (4)] Seasonally inundated (2) [BR/CM (4)] Seasonally inundated (2) [BR/CM (4)] Recovered (7) Recovered (8) Metric 4. Habitat Alteration and Development 4a. Substrate disturbance. Score one or double check and average. None or none apparent (4) Recovered (3)	
2a. Calculate average buffer width. Select only one and assign score. Do not double check. WIDE. Buffers average 50 m (194 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 26 m to <25 m (32 ft to <82 ft) around wetland perimeter (9) VERY NARROW. Buffers average 40 m to <225 m (32 ft to <82 ft) around wetland perimeter (9) 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) Metric 3. Hydrology 3a. Sources of water. Score all that apply. High pH groundwater (5) Other groundwater (3) [BR/CM (5)] Pereinial isourface water (3) [BR/CM (5)] Seasonal/intermittent surface water (3) Pereinial 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)] Seavered (7) Recovered (3) Metric 4. Habitat Alteration and Development 4a. Substrate disturbance. Score one or double check and average. None or none apparent (4) Recovered (3)	
max 30 pts. subtotal 3a. Sources of water. Score all that apply. High pH groundwater (5) 100-year floodplain (1) Between stream/lake and other human use (1) Part of riparian or upland corridor (1) Part of riparian or upland corridor (1) Seasonal/intermittent surface water (3) Semi-to permanently inundated/saturated (4) Regularly inundated/saturated (3) [BR/CM (4)] Seasonally intermited/saturated (4) Regularly inundated/saturated (3) [BR/CM (4)] Seasonally inundated/saturated (2) [BR/CM (4)] Seasonally inundated/saturated (2) [BR/CM (4)] Seasonally inundated (2) [BR/CM	max 14 pts. subtotal
3a. Sources of water. Score all that apply. High pH groundwater (5) BR/CM (5)] Between stream/lake and other human use (1) Part of riparian or upland corridor (1) Part of riparian or upla	18
max 20 pts. subtotal 4a. Substrate disturbance. Score one or double check and average. None or none apparent (4) Recovered (3)	max 30 pts. subtotal
4a. Substrate disturbance. Score one or double check and average. None or none apparent (4) Recovered (3)	6
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) Check all disturbances observed mowing shrub/sapling removal grazing herbaceous/aquatic bed removal grazing woody debris removal clearcutting woody debris removal selective cutting sedimentation farming dredging nutrient enrichment	max 20 pts. subtotal

Site: W-060		Rater(s): OH:jb	Date: 03/2020				
31 subtotal previous page							
max 10 pts. subtotal	Metric 5. Special Wetlands						
max 10 pto.	*If the documented raw score for M	Metric 5 is 30 points or higher, the site	is automatically considered a Category 3 wetland.				
raw score*	documentation for each selection Bog, fen, wet prairie (10); acide Assoc. forest (wetl. &/or adj. up Sensitive geologic feature such Vernal pool (5); isolated, perch Island wetland >0.1 acre (0.04 Braided channel or floodplain/t Gross morph. adapt. in >5 tree Ecological community with glot Known occurrence state/federe [*use higher rank where mixed Superior/enhanced habitat/use	Where multiple values apply in row, score row as single feature with highest point value. Provide ach selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). rairie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) wetl. &/or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] orgic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) el or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) adapt. in >5 trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) imunity with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] ince state/federal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) ank where mixed rank or qualifier] [exclude records which are only "historic"] need habitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) or qualify): <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)					
1	Metric 6. Plant Cor	mmunities, Interspe	rsion, Microtopography				
max 20 pts. subtotal	6a. Wetland vegetation communiti Score all present using 0 to 3 scal Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 h Moss/lichen. Other	e. 0 = Absent or <0.1 ha [For BR/CM <0.0] 1 = Present and eithe moderate quality. 2 = Present and eithe is of moderate qu	a (0.25 acre) contiguous acre 4 ha (0.1 acre)] Fr comprises a small part of wetland's vegetation and is of or comprises a significant part but is of low quality Fr comprises a significant part of wetland's vegetation and ality, or comprises a small part and is of high quality prises a significant part or more of wetland's vegetation				
	6b. Horizontal (plan view) intersperselect only one. High (5) Moderately high (4) [BR/CM Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM Low (1) [BR/CM (2)] None (0)	low = Low species diversity &/or dominance of nonnative or disturbance to native species mod = Native species are dominant component of the vegetation, although nonnative &/or disturbance tolerant native species can also be prese 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					
	6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) Nearly absent <5% cover (Absent (1)	but not always, Mudflat and Open W 0 = Absent <0.1 ha (0.1 to <1 ha (0.1 to 0.5 acre)) 2 = Moderate 1 to <4	sp absent or virtually absent, and high sp diversity and often the presence of rate, threatened, or endangered species ater Class Quality 0.25 acres) [For BR/CM <0.04 ha (0.1 acre)] (0.25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha ha (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] res) or more [BR/CM 2 ha (5 acres) or more]				
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 o Standing dead >25 cm (10 Amphibian breeding pools	Hypothetical Wetland ocks cm (6 in.) in.) dbh None Low Microtopography Co 0 = Absent 1 = Present in very s 2 = Present in moder amounts of higher	I for Estimating Degree of Interspersion Low Moderate Moderate High wer Scale mall amounts or if more common of marginal quality ate amounts, but not of highest quality or in small				
32	GRAND T (max 100	30- 59 = Category 2	, low wetland function, condition, quality** good/moderate wetland function, condition, quality** superior wetland function, condition, quality**				

Metric 1. Wetland Area (size) Metric 2. Wetland Area (size)	Site: W-061		Rater(s): OL; jb		Date: 03/2020
Select one size class and assign score. So acres (20.2 ho 6) acres (20.2 ho 6) acres (20.2 ho 6) acres (20.1 ho (6) [BR/CM (6)] 10 to 2.5 acres (40.1 to 2.02 ho (10.1 ho) (4) [BR/CM (6)] 3 to -10 acres (10.2 ho -2 ho) (3) [BR/CM (6)] 0.5 to -50 acres (10.2 ho -2 ho) (2) [BR/CM (6)] 0.5 to -50 acres (10.2 ho -2 ho) (2) [BR/CM (6)] 0.5 to -50 acres (10.2 ho -2 ho) (2) [BR/CM (6)] 0.5 to -50 acres (10.2 ho -2 ho) (2) [BR/CM (6)] 0.5 to -50 acres (10.2 ho -2 ho) (2) [BR/CM (2)] 0.5 to -50 acres (10.2 ho -2 ho) (2) [BR/CM (2)] 0.5 to -50 acres (10.2 ho -2 ho) (2) [BR/CM (2)] 0.5 to -50 acres (10.2 ho) (2) [BR/CM (2)] 0.5 to -50 acres (10.2 ho) (2) [BR/CM (2)] 0.5 to -50 acres (10.2 ho) (2.2 ho) (2) [BR/CM (2)] 0.5 to -50 acres (10.2 ho) (2.2 ho) (2) [BR/CM (2)] 0.5 to -50 acres (10.2 ho) (2.2 ho) (2) [BR/CM (2)] 0.5 to -50 acres (10.2 ho) (2.2 ho) (2) [BR/CM (2)] 0.5 to -50 acres (10.2 ho) (2.2 ho) (Metric 1. Wetland	Area (SIZe) ope	n water body (excluding aquati	beds and seasonal mudflats) is >20 acres
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) MIDE. Multiple serverage 50 m (164 ft) or more around wetland perimeter (1) NARROW. Buffers average 50 m to <50 m (82 to <164 ft) around wetland perimeter (4) NARROW. Buffers average 10 m to <25 m (32 ft to <82 tt) around wetland perimeter (1) VERY NARROW. Buffers average 51 m to <50 m (82 tt) around wetland perimeter (1) VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7) VOW. 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) Netric 3. Hydrology 3a. Sources of water. Score all that apply. Good fore groundwater (5) High phy groundwater (5) High phy groundwater (5) High phy groundwater (5) High phy groundwater (5) Seasonal/instruction (1) Unless BR/CM primary source (5) Between stream/lake and other human use (1) Part of wetland/upland (e.g., forest), complex (1) Part		>50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < 10 to <25 acres (4 to <10. 3 to <10 acres (1.2 to <4 l 0.3 to <3 acres (0.1 to <1. 0.1 to <0.3 acre (0.04 to <1.	ts) 20.2 ha) (5) [BR/CM (6)] 1 ha) (4) [BR/CM (6)] na) (3) [BR/CM (5)] 2 ha) (2) [BR/CM (3)]	·	size estimate (list):
2a. Calculate average buffer width. Select only one and assign score. Do not double check. WEDR Buffers average 5 m to <50 m (82 to <164 ft) arround wetland perimeter (1)		Metric 2. Upland E	Buffers and Sur	rounding Land	Use
a. Sources of water. Score all that apply. High pH groundwater (3) [BRCM (5)] Debter groundwater (3) [BRCM (5)] Seasonal/intermittent surface water (3) Seasonal/intermittent surface water (4) Seasonal/intermittent surface water (3) Seasonal/intermittent surface water (4) Seasonal/intermittent surface water	max 14 pts. subtotal	WIDE. Buffers average 50 MEDIUM. Buffers average NARROW. Buffers average VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years MODERATELY HIGH. Re	o m (164 ft) or more around ve 25 m to <50 m (82 to <164 ge 10 m to <25 m (32 ft to <8 average <10 m (<32 ft) arou use. Select one or double chor older forest, prairie, savants), shrubland, young 2nd grovesidential, fenced pasture, pa	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) wth forest (5) rk, conservation tillage, new	(4) er (1)
3a. Sources of water. Score all that apply. High pH groundwater (5) Other groundwater (3) [BR/CM (5)] Zerocal/intermittent surface water (3) Seasonal/intermittent surface water (3) Seasonally inundated/saturated (4) Seasonally inundated/saturated (4) Seasonally inundated/saturated (3) [BR/CM (4)] Seasonally inundated (2) [BR/CM (4)]	18	Metric 3. Hydrolog	ЭУ		
### Ada. Substrate disturbance. Score one or double check and average. None or none apparent (4)	max 30 pts. subtotal	High pH groundwater (5) X Other groundwater (3) [Bf X Precipitation (1) [unless B Seasonal/intermittent surf X Perennial surface water (I 3c. Maximum water depth. Select >0.7 m (27.6 in.) (3) 0.4 to 0.7 m (16 to 27.6 in X < 0.4 m (<16 in.) (1) [BR/C] 3e. Modifications to natural hydro None or none apparent (1 Recovered (7) X Recovering (3)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. .) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) plogic regime. Score one or d 2) Check all disturbances ditch tile (including culver) dike weir	100-year floodpla Between stream/l Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane X Regularly inundat Seasonally inundat Seasonally satura ouble check and average.	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) iaturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ted in upper 30 cm (12 in.) (1) [BR/CM (2)] stormwater)
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)	6	Metric 4. Habitat	Alteration and D	evelopment	
Poor to fair (2)	max 20 pts. subtotal	None or none apparent (4) Recovered (3) X Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) X Poor (1) 4c. Habitat alteration. Score one None or none apparent (9)	only one and assign score. or double check and average	Check all disturbances of mowing grazing clearcutting selective cutting	☐ shrub/sapling removal ☐ herbaceous/aquatic bed removal ☐ woody debris removal ☐ sedimentation

Site: W-061		Rater(s): OH:jb	Date: 03/2020				
32 subtotal previous page							
max 10 pts. subtotal	Metric 5. Special Wetlands						
	*If the documented raw score for	Metric 5 is 30 points or higher, the site i	s automatically considered a Category 3 wetland.				
raw score*	documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature suc Vernal pool (5); isolated, perc Island wetland >0.1 acre (0.04 Braided channel or floodplain/ Gross morph. adapt. in >5 tree Ecological community with glo Known occurrence state/fedet [*use higher rank where mixe Superior/enhanced habitat/us	e multiple values apply in row, score row as single feature with highest point value. Provide lection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). 0); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) or adi, upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] ture such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) and, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) and perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) and perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) and perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) and perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) and perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) and perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) and perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) and perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) and perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) and perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) and perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) and perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) and perched, or slope wetland [1st order perennial or above] (3) and perched, or slope wetland [1st order perennial or above] (3) and perched, or slope wetland [1st order perennial or above] (3) and perched, or slope wetland [1st order perennial or above] (3) and perched, or slope wetland [1st order perennial or above] (3) and perched, or slope wetland [1st order perennial or above]					
1	Metric 6. Plant Co	mmunities, Intersper	sion, Microtopography				
max 20 pts. subtotal	6a. Wetland vegetation communi Score all present using 0 to 3 sca Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 l	lle. 0 = Absent or <0.1 ha [For BR/CM <0.04] 1 = Present and either moderate quality, c 2 = Present and either is of moderate qua	0.25 acre) contiguous acre ha (0.1 acre)] comprises a small part of wetland's vegetation and is of r comprises a significant part but is of low quality comprises a significant part of wetland's vegetation and ity, or comprises a small part and is of high quality ises a significant part or more of wetland's vegetation				
	6b. Horizontal (plan view) intersp						
	Select only one. High (5) Moderately high (4) [BR/C Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM Low (1) [BR/CM (2)] None (0)	Iow = Low species diventative species and mod = Native species anonnative &/or diventative and species diventative w/o presence of high = A predominance tolerant native species diventative species diventati	rsity &/or dominance of nonnative or disturbance tolerant re dominant component of the vegetation, although sturbance tolerant native species can also be present, rsity moderate to moderately high, but generally rare, threatened or endangered species of native species with nonnative sp &/or disturbance absent or virtually absent, and high sp diversity and often				
	6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) Nearly absent <5% cover Absent (1)	Mudflat and Open Wat 0 = Absent < 0.1 ha (0.3) 1 = Low 0.1 to <1 ha (0.1 to 0.5 acre)] (0) 2 = Moderate 1 to <4 h	er Class Quality 25 acres) [For BR/CM <0.04 ha (0.1 acre)] 2.25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha a (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)] s) or more [BR/CM 2 ha (5 acres) or more]				
	6d. Microtopography. Score all present using 0 to 3 sca Vegetated hummocks/tuss Coarse woody debris >15 Standing dead >25 cm (10 Amphibian breeding pools	Hypothetical Wetland ale. socks cm (6 in.) 0 in.) dbh None Low Microtopography Cove 0 = Absent 1 = Present in very sm 2 = Present in modera amounts of highes	or Estimating Degree of Interspersion Low Moderate Moderate High Ar Scale all amounts or if more common of marginal quality e amounts, but not of highest quality or in small				
33	GRAND 1 (max 100	30- 59 = Category 2,	ow wetland function, condition, quality** good/moderate wetland function, condition, quality** superior wetland function, condition, quality**				

Site: W-	-062		Rater(s): OL; jb		Date: 03/2020
max 6 pts.	4 subtotal	Metric 1. Wetland	Area (SIZE) ope	n water body (excluding aquati	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
	Castolai	Select one size class and assign >50 acres (>20.2 ha) (6 p 25 to <50 acres (10.1 to < X 10 to <25 acres (4 to <10 3 to <10 acres (1.2 to <4 0.3 to <3 acres (0.1 to <1 0.1 to <0.3 acre (0.04 to <0.1 acre (0.04 ha) (0)	ts) :20.2 ha) (5) [BR/CM (6)] .1 ha) (4) [BR/CM (6)] ha) (3) [BR/CM (5)] .2 ha) (2) [BR/CM (3)]	Sources/assumptions for s	size estimate (list):
	5	Metric 2. Upland B	Buffers and Suri	rounding Land	Use
max 14 pts.	subtotal	MEDIUM. Buffers average NARROW. Buffers average X VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of X LOW. Old field (>10 years MODERATELY HIGH. Re	0 m (164 ft) or more around w e 25 m to <50 m (82 to <164 ft) ge 10 m to <25 m (32 ft to <82 average <10 m (<32 ft) around	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) vth forest (5) rk, conservation tillage, new	(4) er (1)
	18	Metric 3. Hydrolog	ду		
max 30 pts.	subtotal	3e. Modifications to natural hydro None or none apparent (1 Recovered (7)	R/CM (5)] R/CM primary source (5)] ace water (3) ake or stream) (5) t only one and assign score. 1.) (2) [BR/CM (3)] M 0.15 to 0.4 m (6 to <16 in.) plogic regime. Score one or d 2) Check all disturbances	Part of wetland/up Part of riparian or 3d. Duration inundation/s Semi- to permane Regularly inundat Seasonally inundat Seasonally satura ouble check and average.	in (1) ake and other human use (1) bland (e.g., forest), complex (1) upland corridor (1) saturation. Score one or dbl. check & avg. ently inundated/saturated (4) ed/saturated (3) [BR/CM (4)] ated (2) [BR/CM (4)] ated in upper 30 cm (12 in.) (1) [BR/CM (2)
		☐ Recovering (3) ☐ Recent or no recovery (1)	☐ ditch ☐ tile (including culver ☐ dike ☐ weir ☐ stormwater input	☐ point source (non t) ☐ filling/grading ☐ road bed/RR trac ☐ dredging ☐ other	´
	6	Metric 4. Habitat	Alteration and D	evelopment	
max 20 pts.	subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) X Recovering (2) Recent or no recovery (1) 4b. Habitat development. Select Excellent (7) Very good (6)))	erage.	
		Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) 4c. Habitat alteration. Score one None or none apparent (S Recovered (6) Recovering (3) Recent or no recovery (1)	9)	Check all disturbances of mowing grazing clearcutting selective cutting farming toxic pollutants	observed shrub/sapling removal herbaceous/aquatic bed removal woody debris removal sedimentation dredging nutrient enrichment

Site: W-062		Rater(s): OH:jb	Date: 03/2020				
33 subtotal previous page							
max 10 pts. subtotal	Metric 5. Special \	Wetlands					
·	*If the documented raw score for	Metric 5 is 30 points or higher, the si	te is automatically considered a Category 3 wetland.				
raw score*	documentation for each selection Bog, fen, wet prairie (10); acid Assoc. forest (wetl. &/or adj. u Sensitive geologic feature suc Vernal pool (5); isolated, perc Island wetland >0.1 acre (0.04 Braided channel or floodplain/ Gross morph. adapt. in >5 tre Ecological community with glo Known occurrence state/fedet [*use higher rank where mixe Superior/enhanced habitat/us	ed raw score for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland. Poly. Where multiple values apply in row, score row as single feature with highest point value. Provide preach selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). Pet prairie (10); acidophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) St (wetl. &/or adj. upland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] Peologic feature such as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) (5); isolated, perched, or slope wetland (4); headwater wetland [1st order perennial or above] (3) and >0.1 acre (0.04 ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) annel or floodplain/terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) Sh. adapt. in >5 trees >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) Community with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] Furrence state/federal threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) For rank where mixed rank or qualifier] [exclude records which are only "historic"] Schanced habitat/use: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) For low quality): <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)					
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	6b. Horizontal (plan view) intersponded	low = Low species of	low = Low species diversity &/or dominance of nonnative or disturbance tolerant				
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	6c. Coverage of invasive plants. Add or deduct points for coverage Extensive >75% cover (-5) Moderate 25-75% cover (-1) Sparse 5-25% cover (-1) Nearly absent <5% cover Absent (1)	e. Mudflat and Open V 0 = Absent < 0.1 ha 3) 1 = Low 0.1 to <1 h (0.1 to 0.5 acre) 2 = Moderate 1 to <	(0.25 acres) [For BR/CM <0.04 ha (0.1 acre)] a (0.25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha				
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35	GRAND 1 (max 100	30-59 = Category	1, low wetland function, condition, quality** 2, good/moderate wetland function, condition, quality** 3, superior wetland function, condition, quality**				

Site: W-063		Rater(s): OL; jb		Date: 03/2020
max 6 pts. subtotal	Metric 1. Wetland	Area (SIZe) ope	n water body (excluding aquation	Blue Ridge and Cumberland Mountains. If an c beds and seasonal mudflats) is >20 acres a) of it to the wetland size for Metric 1.
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Site: W-063	F	Rater(s): OH:jb	Date: 03/2020
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max 10 pts. subtotal	Metric 5. Special W	etlands	
	*If the documented raw score for Me	etric 5 is 30 points or higher, the site is auto	omatically considered a Category 3 wetland.
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Site: W-064			Rater(s): OL; jb		Date: 03/2020	
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	1	Metric 2. Upland E	Buffers and Sur	rounding Land	Use	
max 14 pts.	subtotal	MEDIUM. Buffers average NARROW. Buffers average X VERY NARROW. Buffers 2b. Intensity of surrounding land VERY LOW. 2nd growth of LOW. Old field (>10 years	m (164 ft) or more around we 25 m to <50 m (82 to <164 le 10 m to <25 m (32 ft to <8) average <10 m (<32 ft) arouuse. Select one or double chor older forest, prairie, savanr), shrubland, young 2nd growsidential, fenced pasture, pa	vetland perimeter (7) ft) around wetland perimeter 2 ft) around wetland perimeter nd wetland perimeter (0) eck and average. nah, wildlife area, etc. (7) vth forest (5) rk, conservation tillage, new	(4) er (1)	
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	6	Metric 4. Habitat A	Alteration and D	evelopment		
max 20 pts.	subtotal	4a. Substrate disturbance. Score None or none apparent (4) Recovered (3) Recent or no recovery (1) Recent or no recovery (1) Ab. Habitat development. Select of Excellent (7) Very good (6) Good (5) Moderately good (4) Fair (3) Poor to fair (2) Poor (1) Ac. Habitat alteration. Score one None or none apparent (9) Recovered (6) Recovering (3) Recent or no recovery (1)	only one and assign score. or double check and average	Check all disturbances o ☐ mowing ☑ grazing	observed shrub/sapling removal herbaceous/aquatic bed remov woody debris removal sedimentation dredging nutrient enrichment	al

Site: W-064	Rater(s):	OH:jb	Date: 03/2020
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	. Special Wetland	ls	
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max 20 pts. subtotal 6a. Wetland ve Score all prese Aquatic Emerge Shrub X Forest Mudflats Open w Moss/lic 6b. Horizontal (Select only one High (5) Modera	getation communities. nt using 0 to 3 scale. bed nt s ater <20 acres (8 ha) chen. Other	Vegetation Community Cover Scale 0 = Absent or <0.1 ha (0.25 acre) contige [For BR/CM <0.04 ha (0.1 acre)] 1 = Present and either comprises a sign is of moderate quality, or comprises a sign is of moderate quality, or comprises a sign is of moderate quality, or comprises a present and comprises a significant and is of high quality Narrative Description of Vegetation Quality = Low species diversity &/or dominantive species mod = Native species are dominant comprises a significant and is of high quality	l part of wetland's vegetation and is of nificant part but is of low quality ficant part of wetland's vegetation and a small part and is of high quality part or more of wetland's vegetation
Modera Low (1) None (0) 6c. Coverage of Add or deduct Extension Modera X Sparse	tely low (2) [BR/CM (3)] [BR/CM (2)] of invasive plants. points for coverage. ve >75% cover (-5) te 25-75% cover (-3) 5-25% cover (-1) absent <5% cover (0)	and species diversity moderate to w/o presence of rare, threatened of high = A predominance of native species tolerant native sp absent or virtuall	moderately high, but generally rendangered species with nonnative sp &/or disturbance y absent, and high sp diversity and often e, threatened, or endangered species /CM <0.04 ha (0.1 acre)] [BR/CM 0.04 to <0.2 ha s) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)]
☐ Vegetat☐ Coarse☐ Standin	graphy. ent using 0 to 3 scale. ed hummocks/tussocks woody debris >15 cm (6 in.) g dead >25 cm (10 in.) dbh ian breeding pools	None Low Low Microtopography Cover Scale 0 = Absent 1 = Present in very small amounts or if no amounts of highest quality 3 = Present in moderate or greater amounts.	Moderate Moderate High more common of marginal quality ot of highest quality or in small
32	GRAND TOTAL (max 100 pts)	0- 29 = Category 1, low wetland functi 30- 59 = Category 2, good/moderate we 60-100 = Category 3, superior wetland f	etland function, condition, quality**

APPENDIX D – REPORTING	GOLDEN TRIAI	NGLE PROTECT	ED SPECIES INF	ORMATION AND



Protected Species Habitat Assessment Report



MS Solar 5, LLC

Golden Triangle Solar Project

Revision 0 6/30/2020

Protected Species Habitat Assessment Report

prepared for

MS Solar 5, LLC Golden Triangle Solar Project Lowndes County, Mississippi

Revision 0 6/30/2020

prepared by

Burns & McDonnell Engineering Company, Inc. Alpharetta, Georgia

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TABLE OF CONTENTS

				Page No.
1.0	INTE	RODUCT	ION	1-1
2.0	МЕТ	יוטטטו י	OGY	2.1
2.0	2.1		Existing Information	
	2.1		nmental Field Surveys	
3.0	RES	III TS		3-1
0.0	3.1		Jse Types	
	5.1	3.1.1	Active Agriculture	
		3.1.2	Bottomland Hardwood Forest	
		3.1.3	Upland Forest	
		3.1.4	Utility Corridors and Open Land	
	3.2	Protect	ed Species Information	
		3.2.1	Mississippi State-Listed Species	
		3.2.2	Species Protected Under the Endangered Species Act	
		3.2.3	Bald Eagles and Migratory Birds	
4.0	CON	ICLUSIO	NS	4-1
5.0	REF	ERENCE	≣s	5-1
			OTECTED SPECIES INFORMATION PS AND FIGURES	
			LIST OF TABLES	<u>Page No.</u>
Table 3	3-1·	Protected	d Species Potentially Occurring within the Survey Area	3-3
Table 3			Conservation Concern Potentially Occurring within the Survey	
		Δrea	which contains a contains with the built	3_8

LIST OF ABBREVIATIONS

Abbreviation Term/Phrase/Name

BCC Birds of Conservation Concern

BGEPA Bald and Golden Eagle Protection Act

Burns & McDonnell Engineering Company, Inc.

dbh diameter at breast height

ESA Endangered Species Act of 1973

GIS Geographic Information System

Hwy Highway

HUC Hydrologic Unit Code

IPaC Information for Planning and Conservation

MBTA Migratory Bird Protection Act

MDWFP Mississippi Department of Wildlife, Fisheries, and Parks

MS Mississippi

MW megawatt

NLEB Northern long-eared bat

NRCS Natural Resources Conservation Service

Project Golden Triangle Solar Project

ROW Right-of-way

SR State Route

US United States

USEPA U.S. Environmental Protection Agency

USFWS U.S. Fish and Wildlife Service

USGS U.S. Geological Survey

MS Solar 5, LLC i Burns & McDonnell

1.0 INTRODUCTION

MS Solar 5, LLC is planning the construction and operation of a new utility scale solar facility and associated infrastructure on multiple parcels in Lowndes County, Mississippi. The Project is east of Starkville, MS and west of Columbus, MS in the region referred to as the "Golden Triangle." The Project is bounded by Hwy 82 to the north; Catalpa Creek, Artesia West Point Road/Old Mayhew Road, and Railroad Street to the West; and Gilmer Wilburn Road to the South. The Project extends from approximately 0.25 mile southeast of Mayhew, Mississippi to 0.25 mile east of Artesia, Mississippi.

Burns & McDonnell teamed with Edwards-Pittman Environmental, Inc. to evaluate characteristics of the Project limits to determine presence or absence of suitable habitat for federal and/or state protected species. The habitat assessment survey was conducted throughout all parcels being considered for the proposed Project (Survey Area) as identified by MS Solar 5, LLC. The Survey Area included approximately 3,980 acres, much of which will not be developed or impacted as part of the Project. Based on results of this protected species habitat assessment, in addition to results from other environmental and civil surveys, MS Solar 5, LLC will implement a project design that minimizes environmental impacts to the greatest extent practicable.

2.0 METHODOLOGY

Key methods used for determining the presence or absence of potential and suitable protected species habitats within the Survey Area are: Review of existing publicly available information published by federal and states agencies such as the U.S. Fish and Wildlife Service (USFWS) and Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) and performing pedestrian surveys.

2.1 Review Existing Information

Prior to conducting field work, Burns & McDonnell biologists reviewed U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) result letters (Appendix A) sent to BMCD on May 4, 2020 in regard to special status species that my occur within the Survey Area (Consultation Code: 04EM1000-2020-SLI-0788, Event Code: 04EM1000-2020-E-01753) and assessed whether the proposed Project had potential to affect (Endangered Species Act of 1973) ESA species (i.e., ESA listed, proposed and candidate species), bald eagles (*Haliaeetus leucocephalus*), golden eagles (*Aquila chrysaetos*), and migratory birds (including raptor species), and associated habitat within the Survey Area). Additionally, MDWFP Endangered Species of Mississippi report (Mississippi Museum of Natural Science, 2014) and Mississippi National Heritage Program Protected Species List (2018) data was reviewed to determine potential protected species and associated habitat that may occur within Lowndes County, MS. U.S. Fish and Wildlife's Range Wide Indiana Bat Survey Guidelines (USFWS, 2019) was also reviewed.

Field maps were created using the available Geographic Information System (GIS) data including U.S. Geological Survey (USGS) topographic data and Natural Resources Conservation Service (NRCS) soil survey data. This information was thoroughly reviewed to determine which protected species could occur within the Survey Area. In addition to federal and state agency sources, a literature review was conducted on each species for pertinent information regarding species' distinct physical characteristics, vegetative preferences, diet, motility, home range requirements, reproductive needs, and sensitivity to anthropogenic disturbances.

Based on a review of available information (Appendix A), it was determined suitable habitat may occur within the Survey Area for three federally protected species and four state-listed species.

2.2 Environmental Field Surveys

Field surveys were conducted from March 3-April 8, April 20-23, and May 4-8, 2020. The field surveys took approximately 1,630 man-hours to complete. The Survey Area begins on the south side of US Hwy 82/State Route (SR) 12 and extends south to Gilmer-Wilburn Road (Figure 1, Appendix B). The survey

was conducted within multiple parcels under consideration for the proposed Project. The Survey Area encompassed approximately 3,980 acres (Figure 2A -2N: Survey Area Map, Appendix B).

During the field surveys, data was collected on vegetative cover/land use and protected species habitats. The field investigation consisted of pedestrian surveys within the Survey Area depicted in the Survey Area Map for components of the overall Project. No species-specific field surveys were conducted to determine presence or absence of individuals.

3.0 RESULTS

3.1 Land Use Types

The Project is within the U.S. Environmental Protection Agency (USEPA) Blackland Prairie Ecoregion (Level 4) and is within Middle Tombigbee River [Hydrologic Unit Code (HUC) 03160106] and Tibbee Creek (HUC 03160104) watersheds.

Four dominant vegetative cover/land use communities were observed within the Survey Area, including active agriculture, bottomland hardwood forest, upland forest, and utility rights-of-way (ROW) (Figures 3A-3N: Habitat Maps, Appendix B). Descriptions of these communities are provided below

3.1.1 Active Agriculture

Active agricultural and pasture is the primary land use community found in the Survey Area and composed approximately 76 percent (2,984 acres) of the Survey Area. Areas identified as active agriculture include cattle pasture, hay production, and row crop fields. Vegetation in these communities is maintained in an early successional state due to herbicide application, crop growth/harvesting, and cattle grazing. Soybeans and corn are planted in late spring and cover the row crop fields. Vegetation observed in pastures consists of primarily tall fescue grass (*Schedonorus arundinaceus*), Johnson grass (*Sorghum halepense*), annual bluegrass (*Poa annua*), scutch grass (*Elymus repens*), cheatgrass (*Bromus tectorum*), perennial ryegrass (*Lolium perenne*), rescuegrass (*Bromus catharticus*), butterweed (*Packera glabella*), bulbous bittercress (*Cardamine bulbosa*), soft rush (*Juncus effusus*), Cherokee sedge (*Carex cherokeensis*), Frank's sedge (*Carex frankii*), fox sedge (*Carex vulpinoidea*), path rush (*Juncus tenuis*), poorjoe (*Diodia teres*), red sorrel (*Rumex acetosella*), prairie fleabane (*Erigeron strigosus*), horseweed (*Erigeron canadensis*), dogfennel (*Eupatorium capillifolium*), jimsonweed (*Datura stramonium*), Carolina horsenettle (*Solanum carolinense*), spear thistle (*Cirsum vulgare*), sensitive partridge pea (*Chamaecrista nictitans*), and Palmer's pigweed (*Amaranthus palmeri*).

3.1.2 Bottomland Hardwood Forest

Bottomland hardwood forest community is approximately 14 percent (542.9 acres) of the Survey Area and is composed of a canopy age ranging from approximately 15 to 70 years old. Of the nearly 543 acres of bottomland hardwood forest, approximately 196 acres include a parcel of hardwoods that were planted in 2004 for silviculture production. Dominant vegetation observed consisted of water hickory (*Carya aquatica*), willow oak (*Quercus phellos*), cherrybark oak (*Quercus pagoda*), swamp chestnut oak (*Quercus michauxii*), silky dogwood (*Cornus amomum*), osage orange (*Maclura pomifera*), green ash (*Fraxinus pennsylvanica*), eastern red cedar (*Juniperus virginiana*), water locust (*Gleditsia aquatica*),

southern shagbark hickory (Carya carolinae-septentrionalis), box elder (Acer negundo), red maple (Acer rubrum), American sycamore (Platanus occidentalis), sugarberry (Celtis laevigata), possumhaw (Ilex decidua), blackhaw (Viburnum prunifolium), winterberry (Ilex verticillata), foxglove beardtongue (Penstemon digitalis), sharpscale sedge (Carex oxylepis), Mead's sedge (Carex meadii), Cherokee sedge (Carex cherokeensis), manyhead rush (Juncus polycephalos), grassleaf rush (Juncus marginatus), wild petunia (Ruellia humilis), nodding fescue (Festuca subverticillata), poison ivy (Toxicodendron radicans), greenbrier (Smilax spp.), Virginia spiderwort (Tradescantia virginiana), Virginia creeper (Parthenocissus quinquefolia), prairie ironweed (Vernonia fasciculata), hairy buttercup (Ranunculus sardous), resurrection fern (Pleopeltis polypodioides), and hairy sedge (Carex lacustris).

3.1.3 Upland Forest

Upland forest communities made up approximately 10 percent (400.30 acres) of the Survey Area and is composed of a canopy age ranging from approximately 20 to 70 years old. Dominant vegetation observed consisted of white oak (*Quercus alba*), southern red oak (*Quercus falcata*), post oak (*Quercus stellata*), blackjack oak (*Quercus marilandica*), mockernut hickory (*Carya tomentosa*), red hickory (*Carya ovalis*), shagbark hickory (*Carya ovata*), pignut hickory (*Carya glabra*), loblolly pine (*Pinus taeda*), eastern red cedar, American elm (*Ulmus americana*), honey locust (*Gleditsia triacanthos*), black locust (*Robinia pseudoacacia*), osage orange, Chinese privet (*Ligustrum sinense*), Devil's walkingstick (*Aralia spinosa*), Christmas fern (*Polystichum acrostichoides*), multiple greenbrier species (*Smilax spp.*), wild grapes (*Vitus spp.*), Virginia creeper, blackberry (*Rubus spp.*), false indigo bush (*Amorpha fruticosa*), wooly panic grass (*Dichanthelium acuminatum*), hirsute sedge (*Carex complanata*), Canadian black snakeroot (*Sanicula canadensis*), and little quaking-grass (*Briza minor*).

3.1.4 Utility Corridors and Open Land

Utility ROWs and other non-agricultural open land made up approximately 20 acres of the Survey Area; however, these ROWs function alongside the surrounding land use. Pipeline and transmission line easements currently allow for agricultural and livestock operations in most areas. In general, the vegetation is maintained in an early successional state due to herbicide application and routine mowing. Areas identified as ROW are typically maintained every 1 - 3 years. The vegetation in this land use community consists of prairie ironweed, Johnson grass, tall fescue, Palmer's pigweed, horse nettle, sensitive partridge pea, soft rush, perennial ryegrass, common wheat (*Triticum aestivum*), Cherokee sedge, Canadian black snakeroot, and little quaking-grass.

3.2 Protected Species Information

The USFWS IPaC for the Survey Area was reviewed to determine the potential occurrence of species listed by the USFWS as threatened, endangered, or species of special concern within the Project site (Appendix A). Three federally listed species were identified as potentially occurring within the Survey Area: the northern long-eared bat (*Myotis septentrionalis*), the wood stork (*Mycteria americana*), and Price's potato-bean (*Apios priceana*). Critical habitat for federally protected species has not been designated within Lowndes County, Mississippi. The Mississippi Natural Heritage Program is managed under the MDWFP, Museum of Natural Science. The state of Mississippi does not have state-protected designations for plants; however, there are aquatic species (mussels, fish, crayfish), amphibians, snakes, and birds that hold special state-endangered status. Several state-listed species are identified as potentially occurring in the Survey Area. The federal and state protected species identified are listed in Table 3-1 and discussed in further detail below.

Table 3-1: Protected Species Potentially Occurring within the Survey Area

Common Name	Scientific Name	Federal Status	State Status	Preferred Habitat Description	Habitat Present		
Mammals							
Northern long- eared bat	Myotis septentrionalis	LT	1	Summer roosts occur in tree cavities and under exfoliating bark, but this species has also been found in buildings and behind shutters. During the winter, northern longeared bats hibernate in tight crevices in caves and mines. Foraging is done primarily on forested hillsides and ridges	Yes		
			Birds				
Wood Stork	Mycteria americana	LT	LE	Freshwater wetlands, including ponds, bayheads, flooded pastures, oxbow lakes, and ditches	Yes		
			Reptiles				
Black-knobbed Map Turtle	Graptemys nigrinoda	-	LE	Large streams and rivers with relatively fast current, numerous basking logs, and abundant sandbar areas for nesting	No		
			Invertebra	tes			
Delicate spike	Elliptio arctata	-	LE	Creeks and rivers with moderate current and are usually found in crevices and under large rocks in silt deposits	Yes		
Monkeyface Mussel	Quadrula metanevra	-	LE	Medium to large rivers in relatively swift current in a stable clean-swept mix of coarse sand and gravel	Yes		
	Fish						
Crystal Darter	Crystallaria asprella	-	LE	Clean sand and gravel raceways of larger creeks and rivers; usually in water deeper than 2 feet with moderate to strong current	Yes		

Common Name	Scientific Name	Federal Status	State Status	Preferred Habitat Description	Habitat Present		
Frecklebelly madtom	Noturus munitus	-	LE	Stable gravel or rubble riffles and rapids in both the main river channels and in their larger tributaries	Yes		
Plants							
Price's Potato Bean Apios priceana LT - lightly disturbed areas such as forest openings, wood edges and where bluffs descend to streams							
Key: Statuses are LE= Listed Endangered, LT= Listed Threatened Sources: USFWS, 2020 and Mississippi Natural Heritage Program, 2018.							

3.2.1 Mississippi State-Listed Species

Five state-listed species were identified as having potential to occur within the Survey Area. Each of the five species and a description of its preferred habitat is provided below.

3.2.1.1 Black-knobbed Map Turtle

The black-knobbed map turtle (*Graptemys nigrinoda*) is a state-listed (endangered) species that prefers large streams and rivers with relatively fast current, numerous basking logs, and abundant sandbar areas for nesting. Streams must be wide enough to allow sunlight to reach the water level for several hours per day. No individual black-knobbed map turtles or suitable habitat was observed. Catalpa Creek is large enough for the black-knobbed map turtle; however, the reach of Catalpa Creek within the Survey Area does not receive enough direct sunlight preferred by the species to bask due to the dense canopy of vegetation surrounding the creek. The remaining streams identified within the Survey Area for the Project are smaller than those inhabited by the species.

3.2.1.2 Crystal Darter

The crystal darter (*Crystallaria asprella*) is a state-listed (endangered) fish that inhabits clean sand and gravel raceways of larger creeks and rivers. It is usually found in water deeper than 2 feet with moderate to strong current. In the altered main channel of the Tennessee-Tombigbee Waterway, crystal darters are known to occur over remnant gravel patches that are often near tributary confluences. No crystal darters were observed during the field surveys; however, suitable habitat is present within Catalpa Creek.

3.2.1.3 Frecklebelly Madtom

The frecklebelly madtom (*Noturus munitus*) (state-listed endangered) is a type of catfish that prefers stable gravel or rubble riffles and rapids in both the main river channels and in their larger tributaries. No

frecklebelly madtoms were observed during the field surveys; however, suitable habitat is present within Catalpa Creek.

3.2.1.4 Delicate Spike

Delicate spikes (*Elliptio arctata*) are state listed (endangered) mollusk that inhabit creeks and rivers with moderate current and are typically found in crevices and under large rocks in silt deposits. No delicate spikes were observed during the field surveys; however, suitable habitat may be present within Catalpa Creek.

3.2.1.5 Monkeyface Mussel

Monkeyface (*Quadrula metanevra*) are a state-listed (endangered) mollusk found to inhabit medium to large rivers in relatively swift current in a stable clean-swept mix of coarse sand and gravel. A typical riffle species. No monkeyface mussels were observed during the field surveys; however, suitable habitat may be present within Catalpa Creek.

3.2.2 Species Protected Under the Endangered Species Act

Burns & McDonnell identified three federally threatened species with potential to occur within the Survey Area. MS Solar 5, LLC is currently refining the layout for the Golden Triangle Solar Project to minimize potential impacts to areas where suitable habitat for protected species was identified. None of the species described herein were observed during environmental field surveys; and, no critical habitats were identified on the IPaC report (Appendix A).

3.2.2.1 Wood Stork

The wood stork (*Mycteria americana*) is a federally threatened bird found primarily in freshwater wetlands, including ponds, bayheads, flooded pastures, oxbow lakes, and ditches. Nesting usually occurs in bald cypress (*Taxodium distichum*) trees in swamps. No suitable roosting habitat for wood storks was observed within the Survey Area; however, foraging habitat for the species was observed within all of the open waters observed throughout the Survey Area.

3.2.2.2 Northern Long-eared Bat

The northern long-eared bat is a federally threatened mammal that roosts in tree cavities and under exfoliating bark, but this species has also been found in buildings and behind shutters. During the winter, northern long-eared bats hibernate in tight crevices in caves and mines. Foraging is done primarily on forested hillsides and ridges

Potentially Suitable Northern Long-Eared Bat Summer Roosting Habitat

In the USFWS's <u>Range-Wide Indiana Bat Survey Guidelines</u> (USFWS, 2019), suitable summer habitat for NLEB is defined as follows:

"Suitable summer habitat consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥3 inches diameter at breast height [dbh] that have exfoliating bark, cracks, crevices, and/or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit characteristics of suitable roost trees and are within 1,000 feet of forested/wooded habitat. NLEB has also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. NLEBs typically occupy their summer habitat from mid-May through mid-August each year; and the species may arrive or leave some time before or after this period.

Examples of unsuitable habitat:

- Individual trees that are greater than 1,000 feet from forested/wooded areas;
- Trees found in highly developed urban areas (e.g., street trees, downtown areas); and
- A pure stand of less than 3-inch dbh trees that are not mixed with larger trees."

Suitable roosting habitat for the northern long-eared bat was observed within forested areas, and suitable foraging habitat was observed within the perennial stream corridors throughout the Survey Area (Figure 3A-3N: Habitat Map, Appendix B).

3.2.2.3 Price's Potato-bean

Price's potato-bean (*Apios priceana*) is a federally threatened plant that prefers lightly disturbed areas such as forest openings, wood edges and where bluffs descend to streams. It also grows along highway ROWs and powerline corridors. No individual Price's potato-bean or suitable habitat for the species were observed within the Survey Area.

3.2.3 Bald Eagles and Migratory Birds

In Mississippi, the bald eagle is protected under the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Protection Act (MBTA). No bald eagles or nests were observed during the environmental field surveys within the Survey Area or along public roadways near the Project. There are

certain birds that are protected under the MBTA. In the USFWS IPaC Report for the Survey Area, eight Birds of Conservation Concern (BCC), including the bald eagle, were identified. Table 3-2 provides additional details regarding the BCCs identified as having a potential to occur within the Survey Area.

Table 3-2: Birds of Conservation Concern Potentially Occurring within the Survey Area

		Probability of Presence					
Common Name	Scientific Name	probability of presence breeding season survey effort — no data					
Nume	Numo	JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	Season				
American Kestrel	Falco sparverius paulus		April 1 – August 31				
Bald Eagle	Haliaeetus leucocephalus		September 1 – July 31				
Lesser Yellowlegs	Tringa flavipes		Breeds elsewhere				
Marbled Godwit	Limosa fedoa		Breeds elsewhere				
Red-headed Woodpecker	Melanerpes erythrocephalus		May 10 – September 10				
Rusty Blackbird	Euphagus carolinus	+	Breeds elsewhere				
Short-billed Dowitcher	Limnodromus griseus	+	Breeds elsewhere				
Willet	Tringa semipalmata		April 20 – August 5				

Source: USFWS, 2020

If tree clearing activities associated with construction of the Project overlap with the primary nesting season (March 15 – September 15), short-term inadvertent impacts could occur on bird species that nest in or near the construction areas. To the extent possible, the Project will be designed to minimize potential effects to bird species by avoiding forested areas identified within the Survey Area. Other mitigation measures MS Solar 5, LLC plans to implement include:

- Having at least one environmental inspector onsite during clearing and grading activities.
- Designing Project facilities to avoid sensitive resources where possible.
- Maximizing locations where the Project utilizes agricultural areas.
- Limiting the construction and operation workspaces to the minimum necessary.
- Conducting mitigation for effects to sensitive resources (e.g., wetlands) through agency permit conditions.
- Avoiding forested areas, to the extent reasonable.
- Minimizing routine mowing/maintenance during the bird nesting season (generally March 15 through September 15 in the general Project vicinity) to the extent feasible.

On Dec. 22, 2017, the U.S. Department of the Interior (DOI) revised its guidance on incidental take of migratory birds in Memorandum M-370501, which specifies that incidental take prohibitions apply only to actions that have *as their purpose* the taking or killing of migratory birds. Because MS Solar 5, LLC's purpose is the lawful construction of a clean energy facility, and not the intentional take of migratory birds, MS Solar 5, LLC does not anticipate further coordination with USFWS regarding migratory birds.

4.0 CONCLUSIONS

Suitable habitat for four of the five state-listed species was identified at Catalpa Creek: the crystal darter, frecklebelly madtom, delicate spike, and monkeyface mussel. The segment of Catalpa Creek that occurs within the Survey Area will not be affected by the Project. Although the Project design is still preliminary, MS Solar 5, LLC intends to avoid both Catalpa Creek and at least 30 feet of its riparian corridor. Additionally, suitable habitat was not observed for the black-knobbed map turtle. Since suitable habitat is either not present within the Survey Area, or it will not be affected by the Project, no direct or indirect impacts on Mississippi state-listed species is anticipate; and, no further consultation is needed.

The wood stork is federally protected under the ESA. Suitable roosting habitat for the wood stork does not exist within the Survey Area for the Project. However, suitable foraging habitat may be present near open water and large inundated wetlands. There are also large aquaculture/fish farms both north and south of the Project that may attract foraging wood storks. The Project will not affect fish farms or large open waters outside the immediate Project limits. For these reasons, the Project will have *no effect* on wood storks, and no further consultation is anticipated.

Only a few populations of Price's potato-bean are known to exist today because its exact habitat requirements. Suitable habitat for this plant was not observed in the Survey Area and no known occurrences have been identified in or near the Project. For these reasons, the Project will have *no effect* on Price's potato-bean, and no further consultation is anticipated.

Suitable roosting and foraging habitat for the NLEB was identified within the Survey Area. As previously discussed, MS Solar 5, LLC is still evaluating the results of environmental field surveys and habitat assessments and implementing avoidance measures as part of the solar array design. Once the Project design is determined, additional figures, mapping, and analysis will be provided to the USFWS as part of the section 7 ESA informal consultation process. At this time, presence/absence surveys are not planned.

5.0 REFERENCES

- Mississippi Museum of Natural Science. 2014. Endangered Species of Mississippi. Mississippi Department of Wildlife, Fisheries, and Parks, Mississippi Museum of Natural Science, Jackson, MS. https://www.mdwfp.com/media/256526/endangered species of mississippi.pdf.
- Mississippi Natural Heritage Program. 2018. Listed Species of Mississippi. Museum of Natural Science, Mississippi Dept. of Wildlife, Fisheries, and Parks, Jackson, MS. 6 pp. 24 September 2018.
- U.S. Fish and Wildlife Service (USFWS). 2019. Range-wide Indiana Bat Survey Guidelines. April 2019. Available via the internet at: https://www.fws.gov/arkansas-es/docs/FINAL%202019%20Range-wide%20IBat%20Survey%20Guidelines%204.10.19.pdf
- U.S. Fish and Wildlife Service (USFWS). 2020. IPaC Report for Golden Triangle Solar Project. Mississippi Ecological Services Field Office. Jackson, MS. May 4, 2020.





United States Department of the Interior

FISH AND WILDLIFE SERVICE

Mississippi Ecological Services Field Office 6578 Dogwood View Parkway, Suite A Jackson, MS 39213-7856

Phone: (601) 965-4900 Fax: (601) 965-4340 http://www.fws.gov/mississippiES/endsp.html



May 04, 2020

In Reply Refer To:

Consultation Code: 04EM1000-2020-SLI-0788

Event Code: 04EM1000-2020-E-01753

Project Name: Golden Triangle North Solar Project

Subject: List of threatened and endangered species that may occur in your proposed project

location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

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

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

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office. Submit consultation requests electronically to the following email: msfosection7consultation@fws.gov

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Mississippi Ecological Services Field Office 6578 Dogwood View Parkway, Suite A Jackson, MS 39213-7856 (601) 965-4900

Project Summary

Consultation Code: 04EM1000-2020-SLI-0788

Event Code: 04EM1000-2020-E-01753

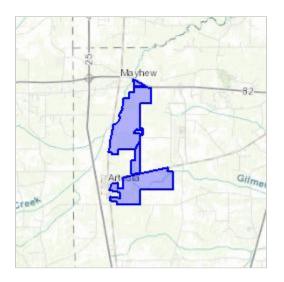
Project Name: Golden Triangle North Solar Project

Project Type: Department of Energy Operations

Project Description: Solar Farm Project in Lowndes County, MS

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/33.41617523573326N88.61215459983366W



Counties: Lowndes, MS

Threatened

Threatened

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat Myotis septentrionalis	Threatened
No critical habitat has been designated for this species.	

Species profile: https://ecos.fws.gov/ecp/species/9045

Birds

Wood Stork Mycteria americana

Population: AL, FL, GA, MS, NC, SC No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8477

Flowering Plants

NAME STATUS

Price"s Potato-bean *Apios priceana*

No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7422

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the <u>National Wildlife Refuge</u> system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described <u>below</u>.

- 1. The Migratory Birds Treaty Act of 1918.
- 2. The Bald and Golden Eagle Protection Act of 1940.
- 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the <u>USFWS</u> <u>Birds of Conservation Concern</u> (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ <u>below</u>. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the <u>E-bird data mapping tool</u> (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Kestrel <i>Falco sparverius paulus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 1 to Aug 31
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31

NAME	BREEDING SEASON
Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Marbled Godwit <i>Limosa fedoa</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Short-billed Dowitcher <i>Limnodromus griseus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Willet <i>Tringa semipalmata</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

- 1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
- 2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
- 3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (**•**)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

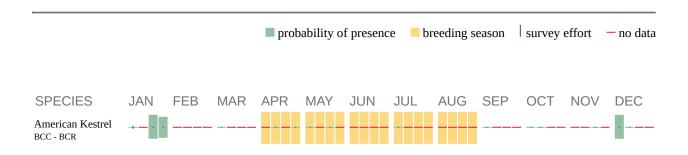
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

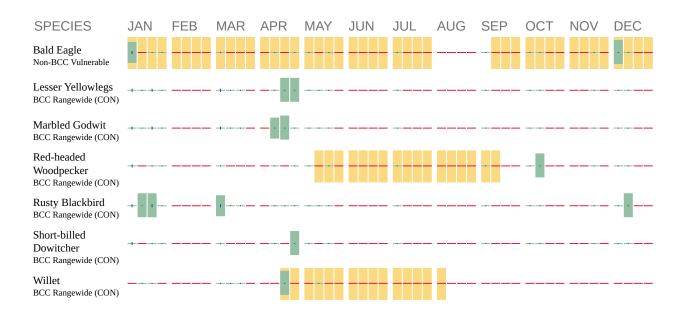
No Data (-)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/ management/nationwidestandardconservationmeasures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS <u>Birds of Conservation Concern</u> (<u>BCC</u>) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the <u>Avian Knowledge Network (AKN)</u>. The AKN data is based on a growing collection of <u>survey</u>, <u>banding</u>, <u>and citizen science datasets</u> and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (<u>Eagle Act</u> requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the <u>AKN Phenology Tool</u>.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the <u>Avian Knowledge Network (AKN)</u>. This data is derived from a growing collection of <u>survey</u>, <u>banding</u>, <u>and citizen science datasets</u>.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

- 1. "BCC Rangewide" birds are <u>Birds of Conservation Concern</u> (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
- 2. "BCC BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
- 3. "Non-BCC Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the <u>Diving Bird Study</u> and the <u>nanotag studies</u> or contact <u>Caleb Spiegel</u> or <u>Pam Loring</u>.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to <u>obtain a permit</u> to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

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

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

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

FRESHWATER EMERGENT WETLAND

- PEM1A
- PEM1Ax
- PEM1Cx

FRESHWATER FORESTED/SHRUB WETLAND

- <u>PFO1/4A</u>
- PFO1/SS1A
- PFO1/SS3A
- PFO1A
- PFO1Ax
- PFO1C
- PFO1Cx
- PFO6/SS1Fd
- PSS1/EM1A
- PSS1A
- PSS1Ax

FRESHWATER POND

- PUBH
- PUBHh
- PUBHx

RIVERINE

- R2UBH
- R4SBC
- R5UBH

MISSISSIPPI NATURAL HERITAGE PROGRAM <u>LISTED SPECIES OF MISSISSIPPI</u>

- 2018 -

	SPECIES NAME	COMMON NAME	GLOBAL RANK	STATE RANK	FEDERAL STATUS	STATE STATUS
NIMALIA						
BIVALVIA	ı.					
UNI	ONOIDA					
	UNIONIDAE					
	ACTINONAIAS LIGAMENTINA	MUCKET	G5	S1		LE
	CYCLONAIAS TUBERCULATA	PURPLE WARTYBACK	G5	S1		LE
	ELLIPTIO ARCTATA	DELICATE SPIKE	G2G3Q	S1		LE
	EPIOBLASMA BREVIDENS	CUMBERLANDIAN COMBSHELL	G1	S1	LE	LE
	EPIOBLASMA PENITA	SOUTHERN COMBSHELL	G1	S1	LE	LE
	EPIOBLASMA TRIQUETRA	SNUFFBOX	G3	S1	LE	LE
	EURYNIA DILATATA	SPIKE	G5	S1		LE
	HAMIOTA PEROVALIS	ORANGE-NACRE MUCKET	G2	S1	LT	LE
	MEDIONIDUS ACUTISSIMUS	ALABAMA MOCCASINSHELL	G2	S1	LT	LE
	PLETHOBASUS CYPHYUS	SHEEPNOSE	G3	S1	LE	LE
	PLEUROBEMA CURTUM	BLACK CLUBSHELL	GH	SX	LE	LE
	PLEUROBEMA DECISUM	SOUTHERN CLUBSHELL	G2	S1	LE	LE
	PLEUROBEMA MARSHALLI	FLAT PIGTOE	GX	SX	LE	LE
	PLEUROBEMA OVIFORME	TENNESSEE CLUBSHELL	G2G3	SX		LE
	PLEUROBEMA PEROVATUM	OVATE CLUBSHELL	G1	S1	LE	LE
	PLEUROBEMA RUBRUM	PYRAMID PIGTOE	G2G3	S2		LE
	PLEUROBEMA TAITIANUM	HEAVY PIGTOE	G1	SX	LE	LE
	PLEURONAIA DOLABELLOIDES	SLABSIDE PEARLYMUSSEL	G2	S1	LE	LE
	POTAMILUS CAPAX	FAT POCKETBOOK	G2	S1	LE	LE
	POTAMILUS INFLATUS	INFLATED HEELSPLITTER	G1G2Q	SH	LT	LE
	PTYCHOBRANCHUS FASCIOLARIS	KIDNEYSHELL	G4G5	S1		LE
	THELIDERMA CYLINDRICA CYLINDRICA	RABBITSFOOT	G3G4T3	S1	LT	LE
	THELIDERMA METANEVRA	MONKEYFACE	G4	SX		LE
	THELIDERMA STAPES	STIRRUPSHELL	GH	SX	LE	LE
MALACO	STRACA					
DEC	APODA					
	CAMBARIDAE					
	CREASERINUS GORDONI	CAMP SHELBY BURROWING CRAWFISH	G1	S1		LE
INSECTA						
COL	EOPTERA					
	SILPHIDAE					
	NICROPHORUS AMERICANUS	AMERICAN BURYING BEETLE	G2G3	SX	LE	LE
LEPI	DOPTERA					
	NYMPHALIDAE					
	NEONYMPHA MITCHELLII MITCHELLII	MITCHELL'S SATYR	G2T2	S1	LE	LE

SPECIES NAME	COMMON NAME	GLOBAL RANK	STATE RANK	FEDERAL STATUS	STATE STATUS
TINOPTERYGII					
ACIPENSERIFORMES					
<u>ACIPENSERIDAE</u>					
ACIPENSER OXYRINCHUS DESOTOI	GULF STURGEON	G3T2	S1	LT	LE
SCAPHIRHYNCHUS ALBUS	PALLID STURGEON	G2	S1	LE	LE
SCAPHIRHYNCHUS PLATORYNCHUS	SHOVELNOSE STURGEON	G4	S3?	SAT	
SCAPHIRHYNCHUS SUTTKUSI	ALABAMA STURGEON	G1	SH	LE	LE
<u>CYPRINIDAE</u>					
CHROSOMUS ERYTHROGASTER	SOUTHERN REDBELLY DACE	G5	S2		LE
NOTROPIS BOOPS	BIGEYE SHINER	G5	S1		LE
NOTROPIS CHALYBAEUS	IRONCOLOR SHINER	G4	S1		LE
PHENACOBIUS MIRABILIS	SUCKERMOUTH MINNOW	G5	S1		LE
PERCIDAE					
CRYSTALLARIA ASPRELLA	CRYSTAL DARTER	G3	S1		LE
ETHEOSTOMA BLENNIOIDES	GREENSIDE DARTER	G5	S1		LE
ETHEOSTOMA RUBRUM	BAYOU DARTER	G1	S1	LT	LE
PERCINA AURORA	PEARL DARTER	G1	S1	LT	LE
PERCINA PHOXOCEPHALA	SLENDERHEAD DARTER	G5	S1		LE
PERCINA TANASI	SNAIL DARTER	G2G3	S1	LT	
SILURIFORMES	5.0. H2 57 H11 2.1	0100	01		
ICTALURIDAE					
NOTURUS EXILIS	SLENDER MADTOM	G5	SH		LE
NOTURUS GLADIATOR	PIEBALD MADTOM	G3	S1		LE
NOTURUS MUNITUS	FRECKLEBELLY MADTOM	G3	S2		LE
ЛРНІВІ А					
ANURA					
<u>RANIDAE</u>					
RANA SEVOSA	DUSKY GOPHER FROG	G1	S1	LE	LE
CAUDATA					
<u>AMBYSTOMATIDAE</u>					
AMBYSTOMA TIGRINUM	TIGER SALAMANDER	G5	SH	PS	
AMPHIUMIDAE		•	5		
AMPHIUMA PHOLETER	ONE-TOED AMPHIUMA	G3	S1		LE
CRYPTOBRANCHIDAE	SILE TOES / IIVII TII OIVI/ C	G 5	31		
CRYPTOBRANCHUS ALLEGANIENSIS	HELLBENDER	G3G4	S 1	PS	LE
PLETHODONTIDAE	HELLBENDEN	0304	31	13	LL
ANEIDES AENEUS	GREEN SALAMANDER	G3G4	S 1		LE
EURYCEA LUCIFUGA	CAVE SALAMANDER	G5	S1		LE
GYRINOPHILUS PORPHYRITICUS	SPRING SALAMANDER	G5	S1		LE
PTILIA					
SQUAMATA					
<u>COLUBRIDAE</u>					
DRYMARCHON COUPERI	EASTERN INDIGO SNAKE	G3	SX	LT	LE
FARANCIA ERYTROGRAMMA	RAINBOW SNAKE	G4	S2		LE
HETERODONI CIMILIC	SOUTHERN HOGNOSE SNAKE	G2	SX		LE
HETERODON SIMUS					

SPECIES NAME	COMMON NAME	GLOBAL RANK	STATE RANK	FEDERAL STATUS	STATE STATUS
TESTUDINES					
<u>CHELONIIDAE</u>					
CARETTA CARETTA	LOGGERHEAD SEA TURTLE	G3	S1B,SNA	LT	LE
CHELONIA MYDAS	GREEN SEA TURTLE	G3	SNA	LT	LE
ERETMOCHELYS IMBRICATA	HAWKSBILL SEA TURTLE	G3	SNA	LE	LE
LEPIDOCHELYS KEMPII	KEMP'S RIDLEY SEA TURTLE	G1	S1B,S1N	LE	LE
<u>DERMOCHELYIDAE</u>					
DERMOCHELYS CORIACEA	LEATHERBACK SEA TURTLE	G2	SNA	LE	LE
<u>EMYDIDAE</u>					
GRAPTEMYS FLAVIMACULATA	YELLOW-BLOTCHED MAP TURTLE	G2	S2	LT	LE
GRAPTEMYS NIGRINODA	BLACK-KNOBBED MAP TURTLE	G3	S2		LE
GRAPTEMYS OCULIFERA	RINGED MAP TURTLE	G2	S2	LT	LE
PSEUDEMYS ALABAMENSIS	ALABAMA RED-BELLIED TURTLE	G1	S1	LE	LE
<u>TESTUDINIDAE</u>					
GOPHERUS POLYPHEMUS	GOPHER TORTOISE	G3	S2	LT	LE
S					
CHARADRIIFORMES					
<u>CHARADRIIDAE</u>					
CHARADRIUS MELODUS	PIPING PLOVER	G3	S2N	LT	LE
CHARADRIUS NIVOSUS <u>LARIDAE</u>	SNOWY PLOVER	G3	S2	PS:LT	LE
STERNULA ANTILLARUM	LEAST TERN	G4	S3B,S3N	PS:LE	
STERNULA ANTILLARUM ATHALASSOS	INTERIOR LEAST TERN	G4T2Q	S2B	PS:LE	LE
RECURVIROSTRIDAE					
HIMANTOPUS MEXICANUS	BLACK-NECKED STILT	G5	S1B	PS	
SCOLOPACIDAE					
CALIDRIS CANUTUS	RED KNOT	G5	S2N	LT	
CICONIIFORMES					
CICONIIIDAE					
MYCTERIA AMERICANA	WOOD STORK	G4	S2N	LT	LE
COLUMBIFORMES					
ACCITRIPIFORMES					
<u>ACCIPITRIDAE</u>					
ACCIPITER STRIATUS	SHARP-SHINNED HAWK	G5	\$1?B	PS	
ELANOIDES FORFICATUS	SWALLOW-TAILED KITE	G5	S2B		LE
FALCONIFORMES					
FALCONIDAE					
FALCO PEREGRINUS	PEREGRINE FALCON	G4	S1N		LE
GALLIFORMES		-			
ODONTOPHORIDAE					
COLINUS VIRGINIANUS	NORTHERN BOBWHITE	G4G5	S3S4	PS	
GRUIFORMES	- 			-	
GRUIDAE					
GRUS CANADENSIS PULLA	MISSISSIPPI SANDHILL CRANE	G5T1	S1	LE	LE
PASSERIFORMES	The state of the s	33.1			
EMBERIZIDAE					
-INDLINEID/IL	CEACIDE CDARROW	G4	S2	PS	
AMMODRAMUS MARITIMUS					
AMMODRAMUS MARITIMUS AMMODRAMUS SAVANNARUM	SEASIDE SPARROW GRASSHOPPER SPARROW	G5	S3B,S3N	PS	

			GLOBAL	STATE	FEDERAL	STATE
	SPECIES NAME	COMMON NAME	RANK	RANK	STATUS	STATUS
	<u>PARULIDAE</u>					
	VERMIVORA BACHMANII	BACHMAN'S WARBLER	GH	SXB	LE	LE
	TROGLODYTIDAE					
	THRYOMANES BEWICKII	BEWICK'S WREN	G5	S1B,S1N		LE
PEL	ECANIFORMES					
	PELECANIDAE					
	PELECANUS OCCIDENTALIS	BROWN PELICAN	G4	S1N		LE
PIC	IFORMES					
	PICIDAE					
	CAMPEPHILUS PRINCIPALIS	IVORY-BILLED WOODPECKER	G1	SX	LE	LE
	PICOIDES BOREALIS	RED-COCKADED WOODPECKER	G3	S1	LE	LE
MAMMA	ALIA					
CA	RNIVORA					
	<u>FELIDAE</u>					
	PUMA CONCOLOR CORYI	FLORIDA PANTHER	G5T1	SX	LE	LE
	<u>URSIDAE</u>					
	URSUS AMERICANUS	BLACK BEAR	G5	S1		LE
	URSUS AMERICANUS LUTEOLUS	LOUISIANA BLACK BEAR	G5T2	S1		LE
СНІ	ROPTERA					
	<u>VESPERTILIONIDAE</u>					
	LASIURUS CINEREUS	HOARY BAT	G3G4	S2?	PS	
	MYOTIS GRISESCENS	GRAY MYOTIS	G4	SH	LE	LE
	MYOTIS SEPTENTRIONALIS	NORTHERN LONG-EARED MYOTIS	G1G2	SH	LT	
	MYOTIS SODALIS	INDIANA OR SOCIAL MYOTIS	G2	S1B	LE	LE
RO	DENTIA					
	DIPODIDAE					
	ZAPUS HUDSONIUS	MEADOW JUMPING MOUSE	G5	S1	PS	
	MURIDAE					
	PEROMYSCUS POLIONOTUS	OLDFIELD MOUSE	G5	S2	PS	
SIR	ENIA					
	TRICHECHIDAE					
	TRICHECHUS MANATUS	MANATEE	G2	S1N	LT	LE
				- "		
LANTAE ISOETOP	PSIDA					
IJULIUF	ISOETACEAE					
	ISOETACEAE ISOETES LOUISIANENSIS	LOUISIANA QUILLWORT	G2G3	S2	LE	
DICOTVI	EDONEAE	LOUISIANA QUILLAVOIVI	0203	32	LL	
DICOTT	FABACEAE					
	APIOS PRICEANA	PRICE'S POTATO-BEAN	G3	S1	LT	
	LAURACEAE	I MICE STOTALO-DEAN	03	J1	LI	
	LINDERA MELISSIFOLIA	PONDBERRY	G2G3	S2	LE	
	OROBANCHACEAE	. Shobeliki	0203	32	LL	
	SCHWALBEA AMERICANA	CHAFFSEED	G2G3	SH	LE	
MONOC	OTYLEDONEAE	CHAFF3EED	G2G3	эп	LE	
IVIONOC						
	ORCHIDACEAE DI ATANTHEDA INTEGRILADIA	WHITE EDINGELESS OBCUID	6262	C1	I.T.	
	PLATANTHERA INTEGRILABIA	WHITE FRINGELESS ORCHID	G2G3	S1	LT	

Rank & Status Definitions

The Mississippi Natural Heritage Program uses the Heritage ranking system developed by The Nature Conservancy and maintained by NatureServe. Each species is assigned two ranks; one representing its range wide or global status (GRANK), and one representing its status in the state (SRANK). In addition, certain species may possess a legal protection status.

State Ranks

State ranks denote a species' conservation status in Mississippi on a five-point scale from critically imperiled (1) to secure (5). They are assigned by Heritage Program Staff and are denoted by an "S" followed by a number or character. These ranks should not be interpreted as legal designations.

- **SX Presumed Extirpated –** Species or ecosystem is believed to be extirpated from Mississippi. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
- **SH Possibly Extirpated** Known from only historical records in Mississippi, but still some home of rediscovery. There is evidence that the species or ecosystem may no longer be present in the jurisdiction, but not enough to state this with certainty.
- **S1 Critically Imperiled** in Mississippi because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation.
- **S2 Imperiled** in Mississippi because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it vulnerable to extirpation.
- **S3 Vulnerable** in Mississippi due to a restricted range (on the order of 21 to 100 occurrences), relatively few populations or occurrences, recent and widespread declines, or other factors making it vulnerable to extirpation.
- **S4 Apparently Secure –** Uncommon but not rare in Mississippi; some cause for long-term concern due to declines or other factors (more than 101 occurrences).
- **S5 Secure –** Common, widespread, and abundant in Mississippi.
- **SU Unrankable** Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
- SNR Unranked Conservation status not yet assessed.
- **SNA Not Applicable** A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities (e.g., long distance aerial and aquatic migrants, hybrids without conservation value, and non-native species or ecosystems.
- S#S# Range Rank A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community.
- S#? Inexact Numeric Rank Denotes inexact numeric rank.
- S#B Breeding Conservation status refers to the breeding population of the species in Mississippi.
- S#N Non-breeding Conservation status refers to the non-breeding population of the species in Mississippi.
- **S#M Migrant** species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in Mississippi.

Global ranks

Global ranks follow the same principle as state ranks, but refer to a species' rarity throughout its total range. They are assigned by the NatureServe Network and are denoted with a "G" followed by a number or character as described above. However, there are two additional definitions:

G#Q – **Questionable taxonomy that may reduce conservation priority** – Distinctiveness of this entity as a species, subspecies, or ecosystem is questionable. Resolution of this uncertainty may result in the change from a species to a subspecies or vice versa.

G#T# – Infraspecific Taxon (trinomial) – The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" which is appended to the species' global rank. It denotes the rarity of the subspecies. For example, a critically imperiled subspecies of an otherwise widespread and common species would be a G5T1.

Source: NatureServe Conservation Status Assessment

Federal and State Statuses

Federal and State statuses are legal protection designations for certain species. A federal listing status is determined by U.S. Fish & Wildlife as part of the 1974 Endangered Species Act while a state listing status is determined by the Mississippi Commission on Wildlife, Fisheries, & Parks. Note that plants receive no formal legal protection by state law in Mississippi other than that provided for in the trespass laws. Abbreviations used are defined below.

LE - Listed Endangered - A species which is in danger of extinction throughout all or a significant portion of its range.

LT – Listed Threatened - A species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

SAE – Endangered due to similarity of appearance - A species that is endangered due to similarity of appearance with another listed species and is listed for its protection.

SAT – Threatened due to similarity of appearance - A species that is threatened due to similarity of appearance with another listed species and is listed for its protection.

PS – Partial Status - A species is listed in parts of its range and not in others; or, one or more subspecies or varieties are listed, while the others are not listed.

PE – Proposed Endangered – Species proposed for official listing as endangered.

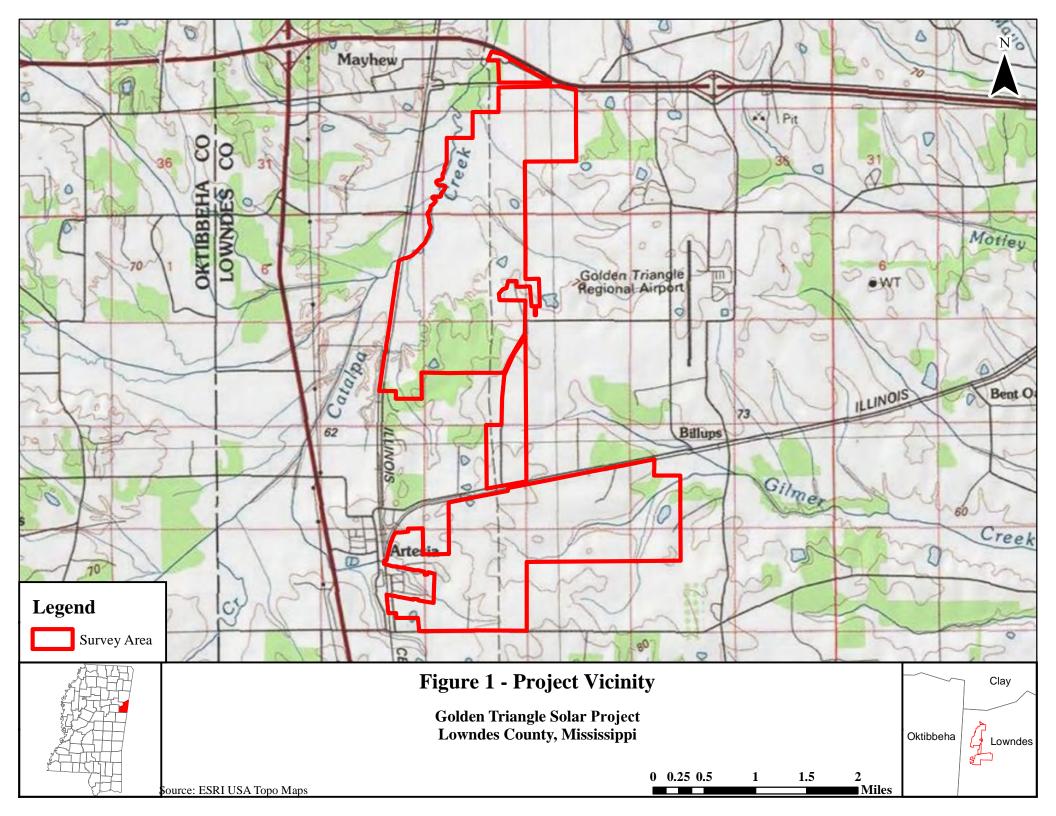
PT – Proposed Threatened – Species proposed for official listing as threatened.

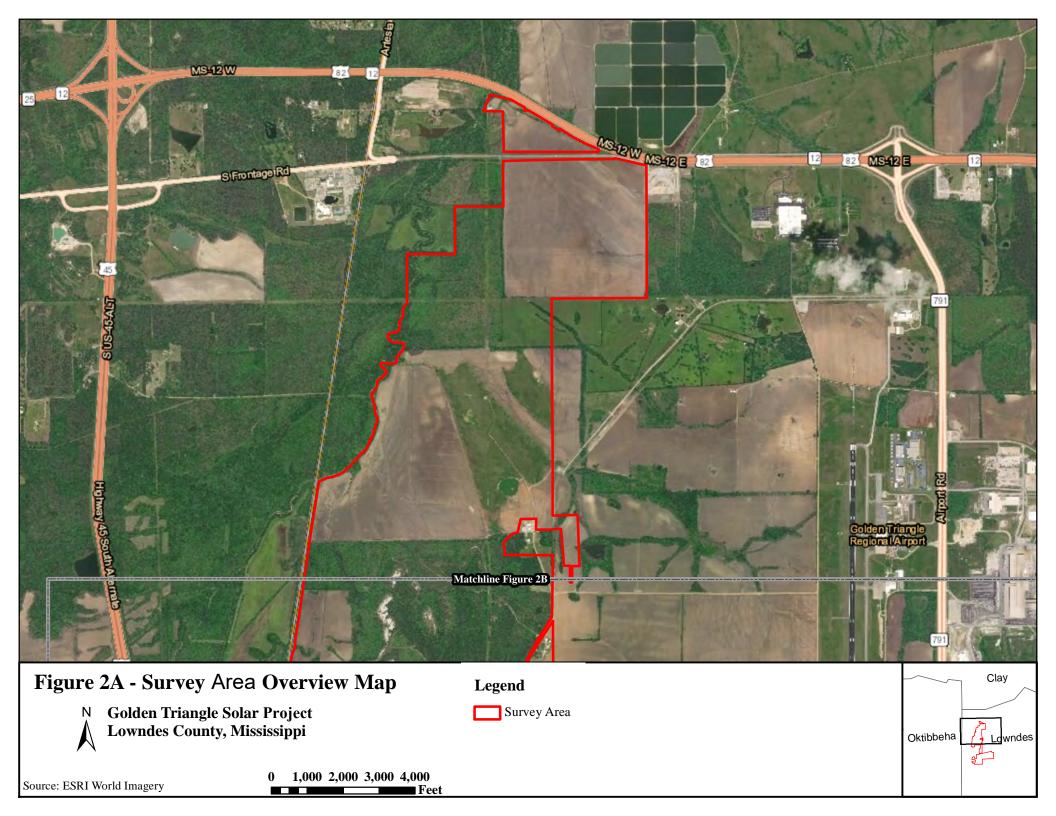
C – Candidate Species - A species under consideration for official listing for which there is sufficient information to support proposing to list as endangered or threatened.

SC – Species of Concern – A species that has not been petitioned or been given LE, LT, or C status but has been identified as important to monitor and in need of conservation actions.

Source: U.S. Fish & Wildlife Service Endangered Species Program







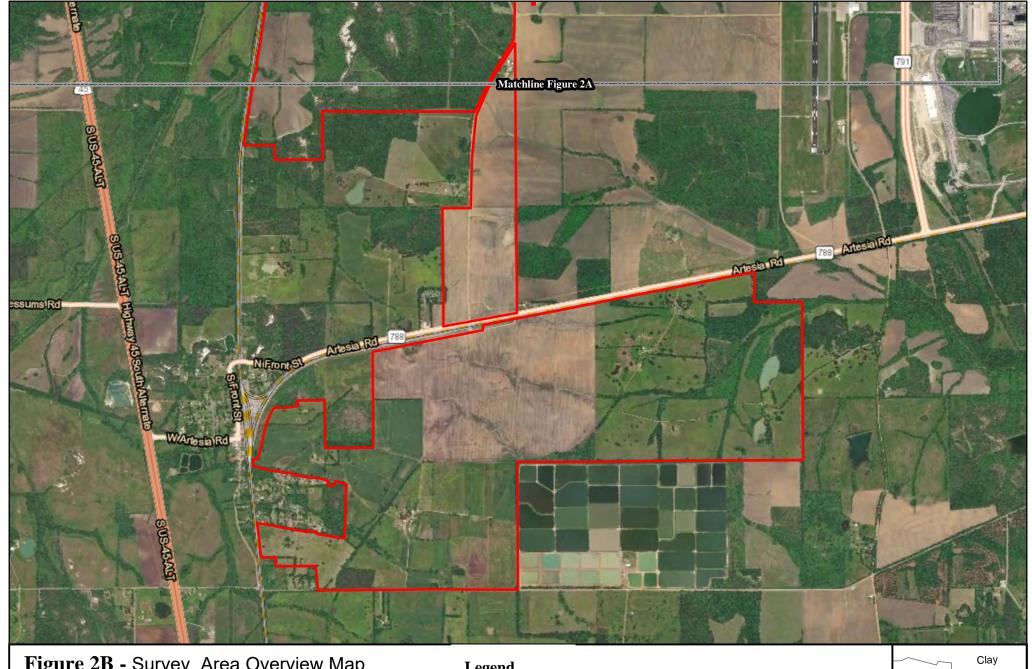


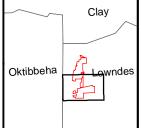
Figure 2B - Survey Area Overview Map

Source: ESRI World Imagery

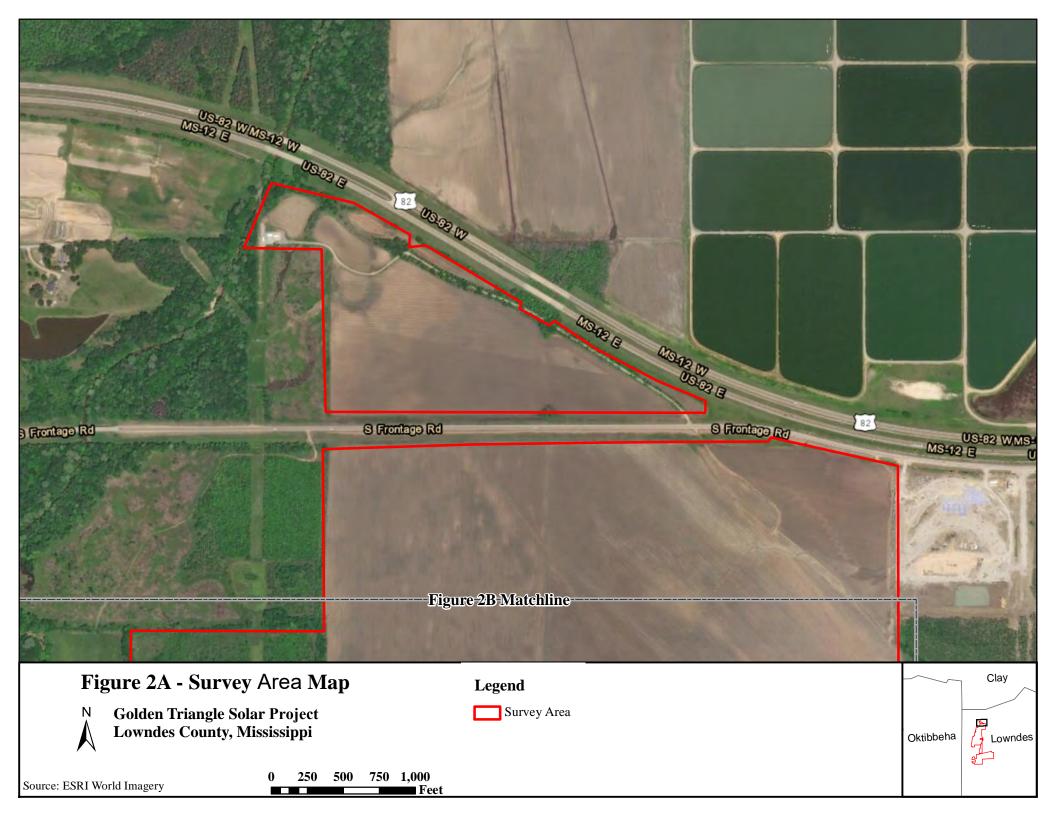
Golden Triangle Solar Project Lowndes County, Mississippi

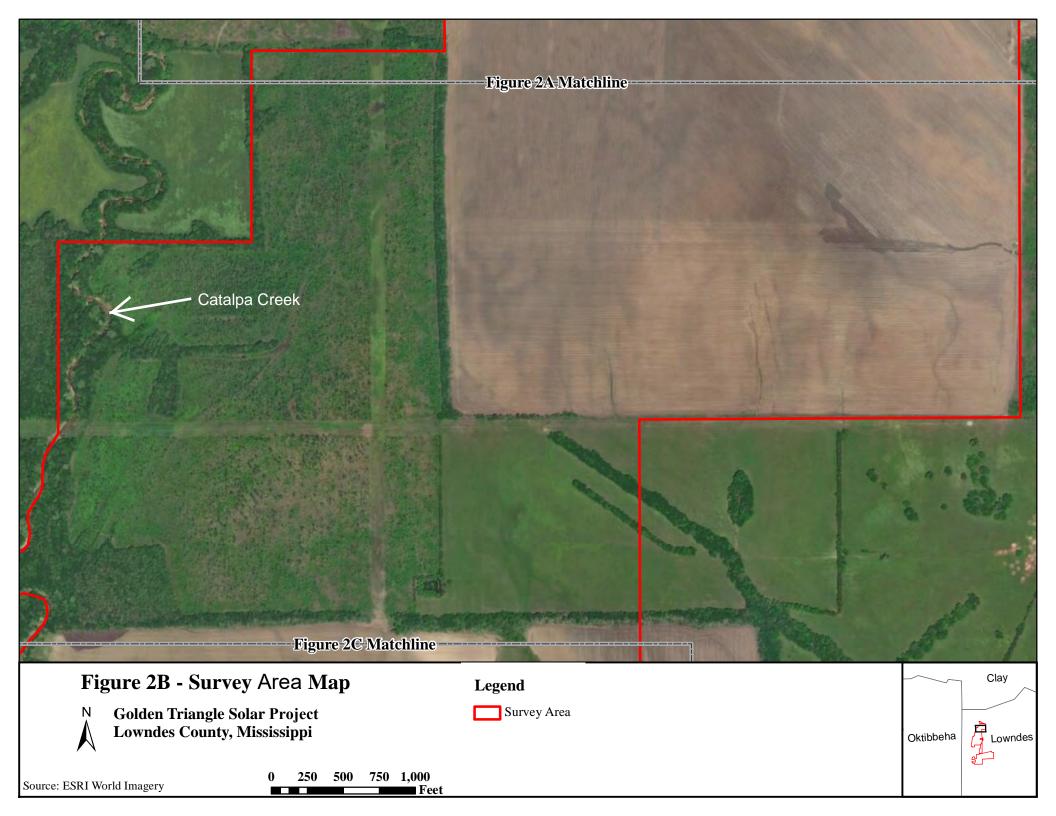
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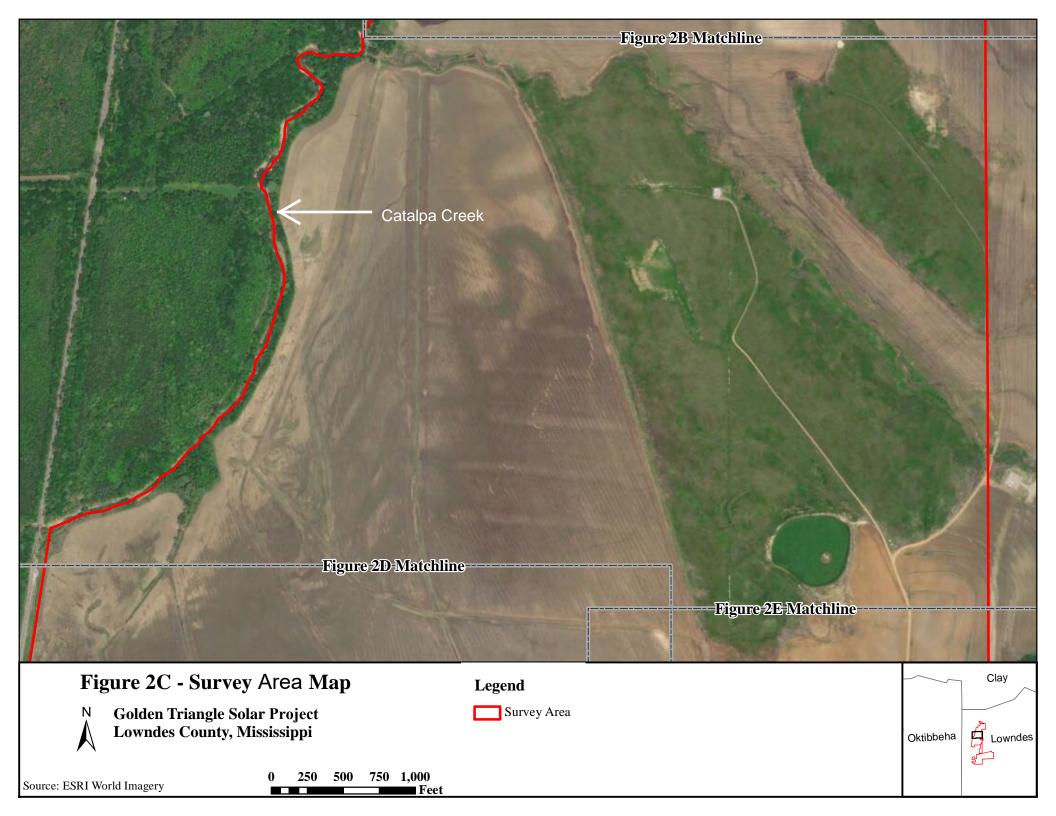
Survey Area

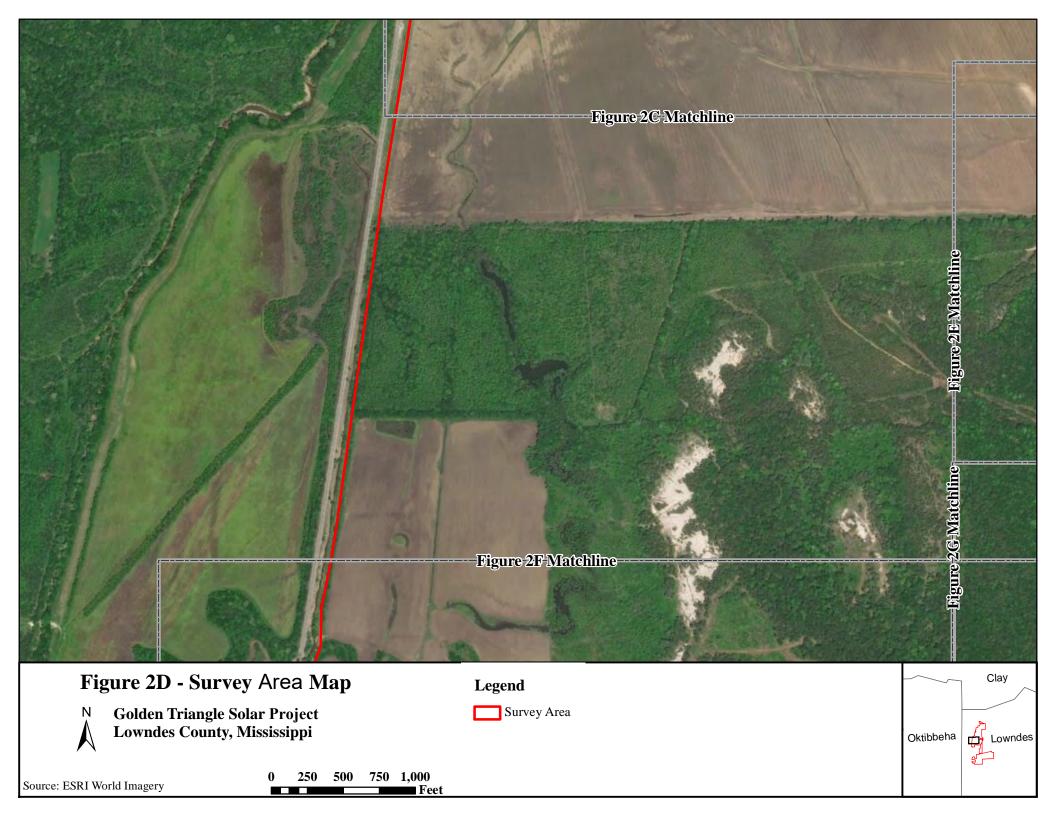


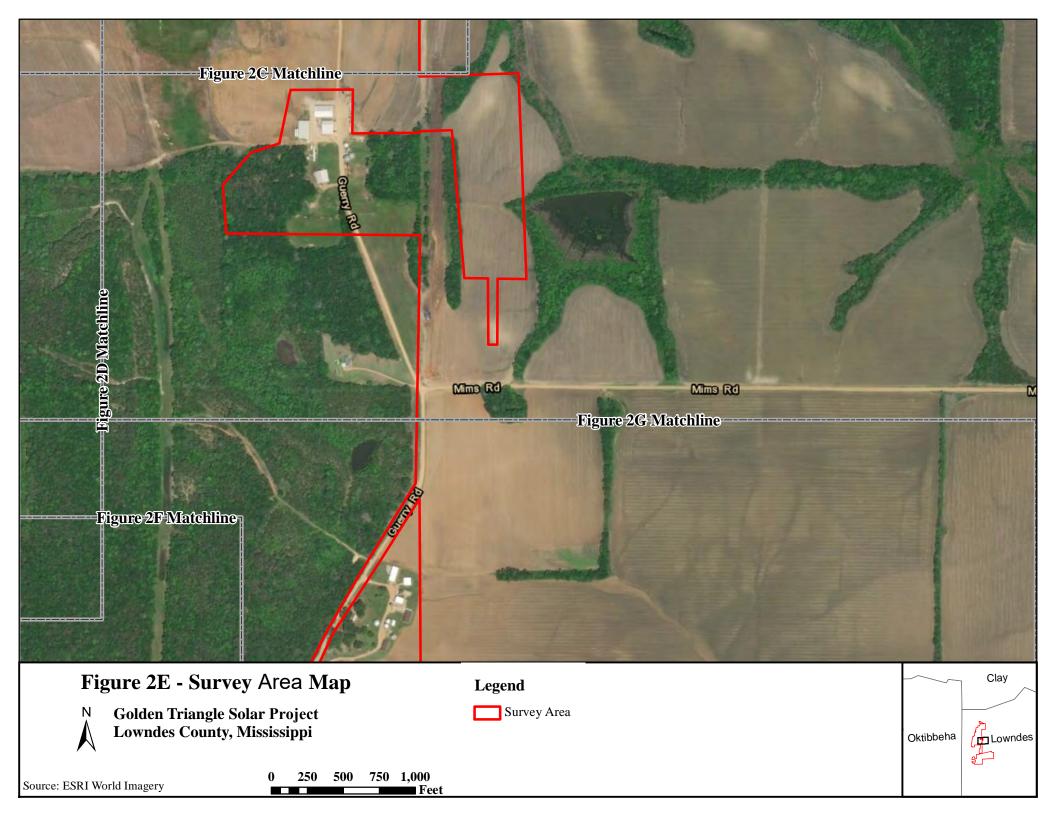
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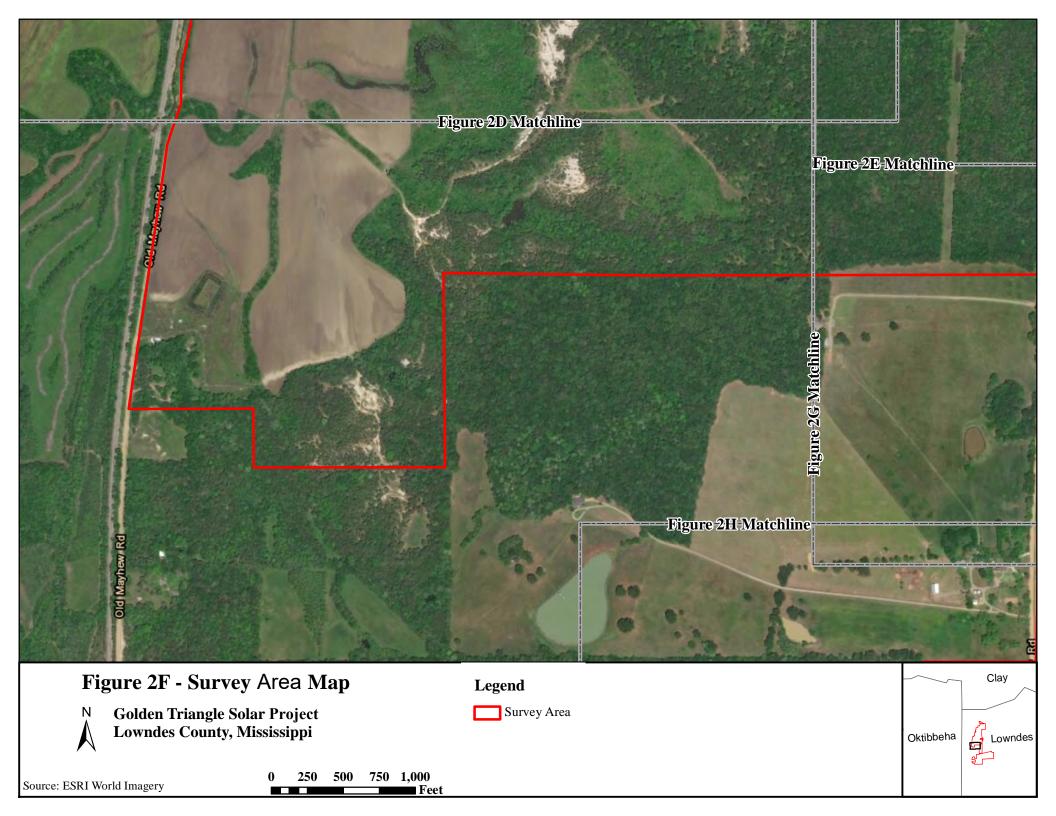


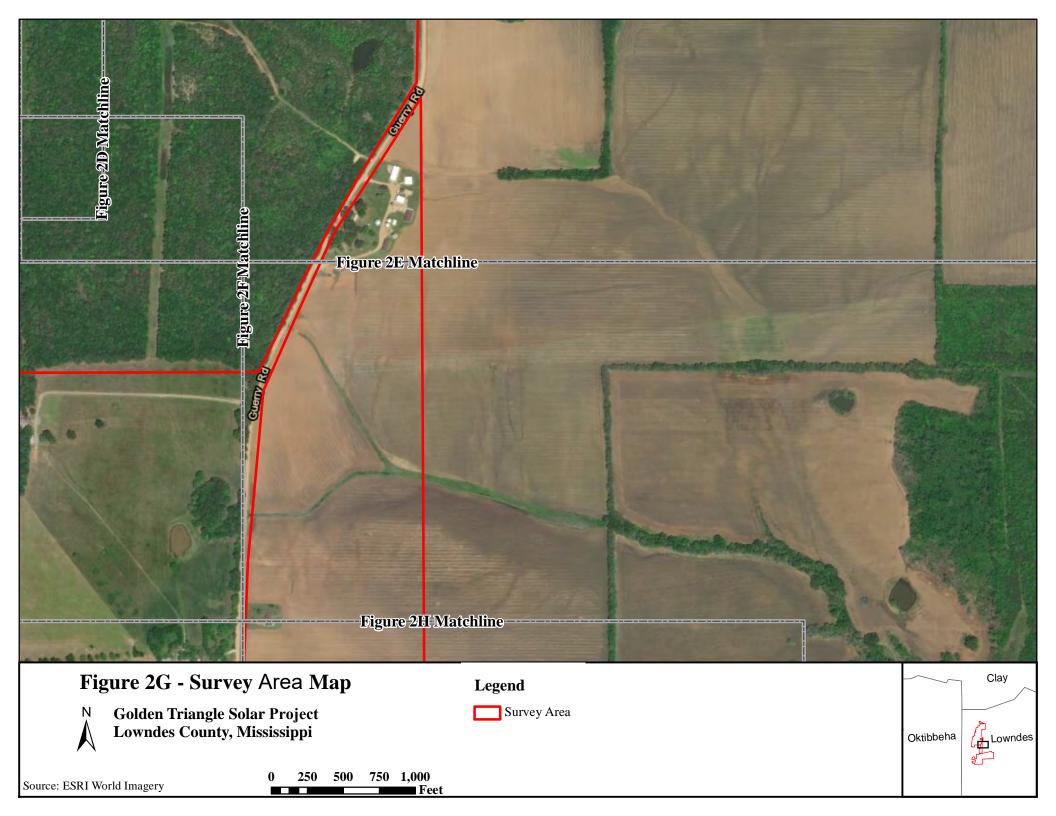


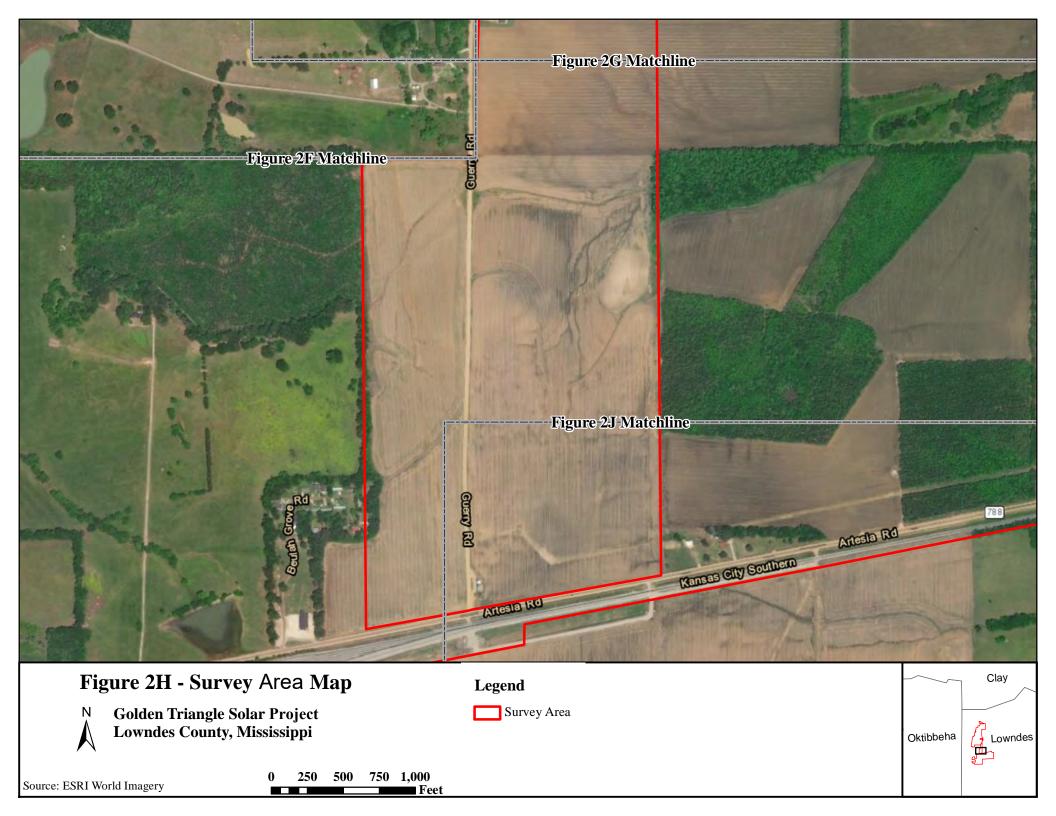


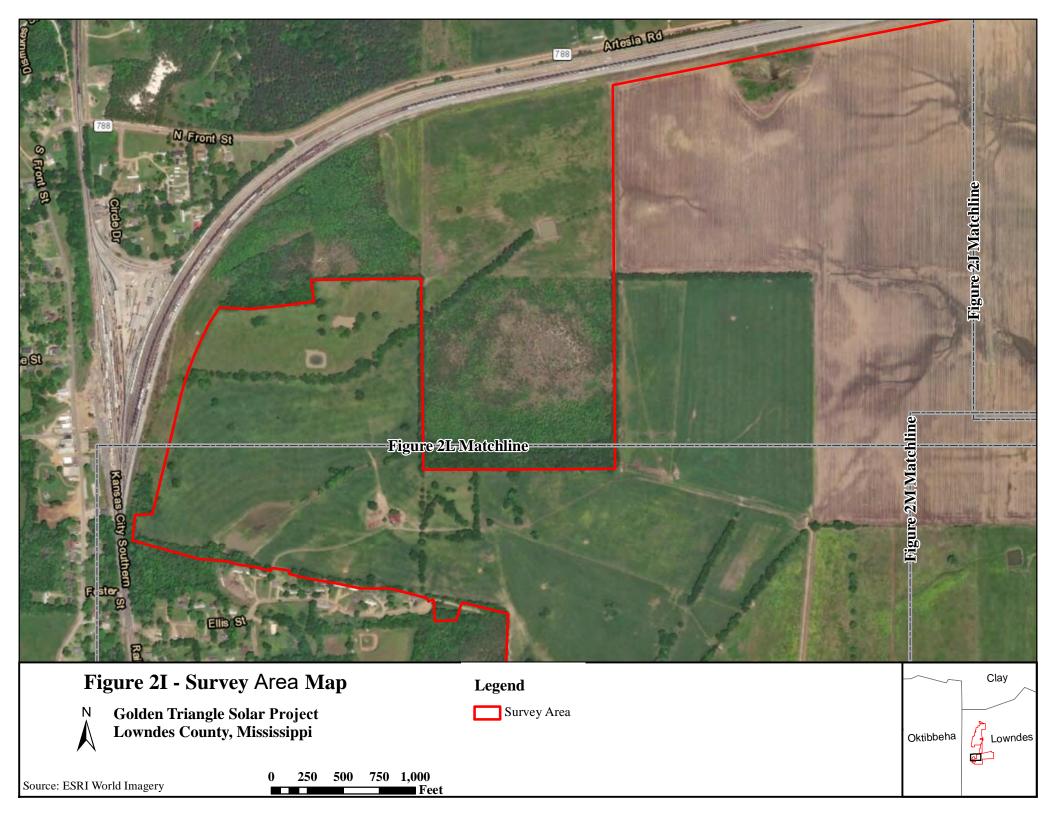


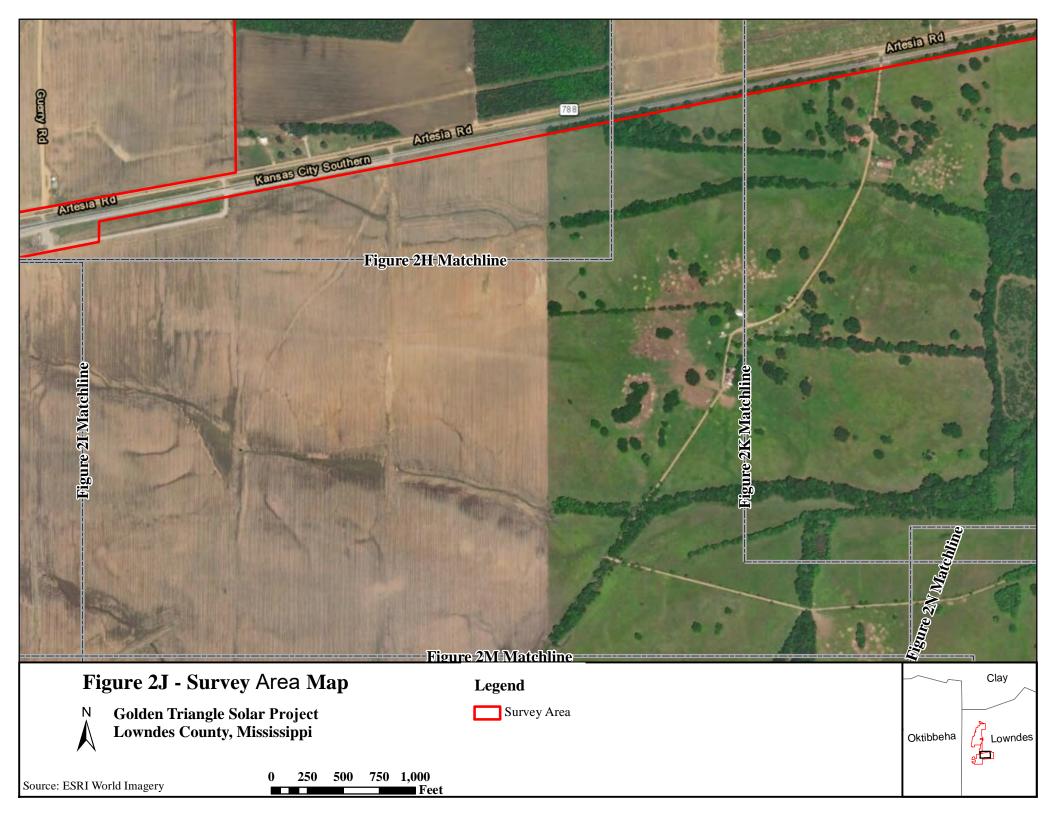


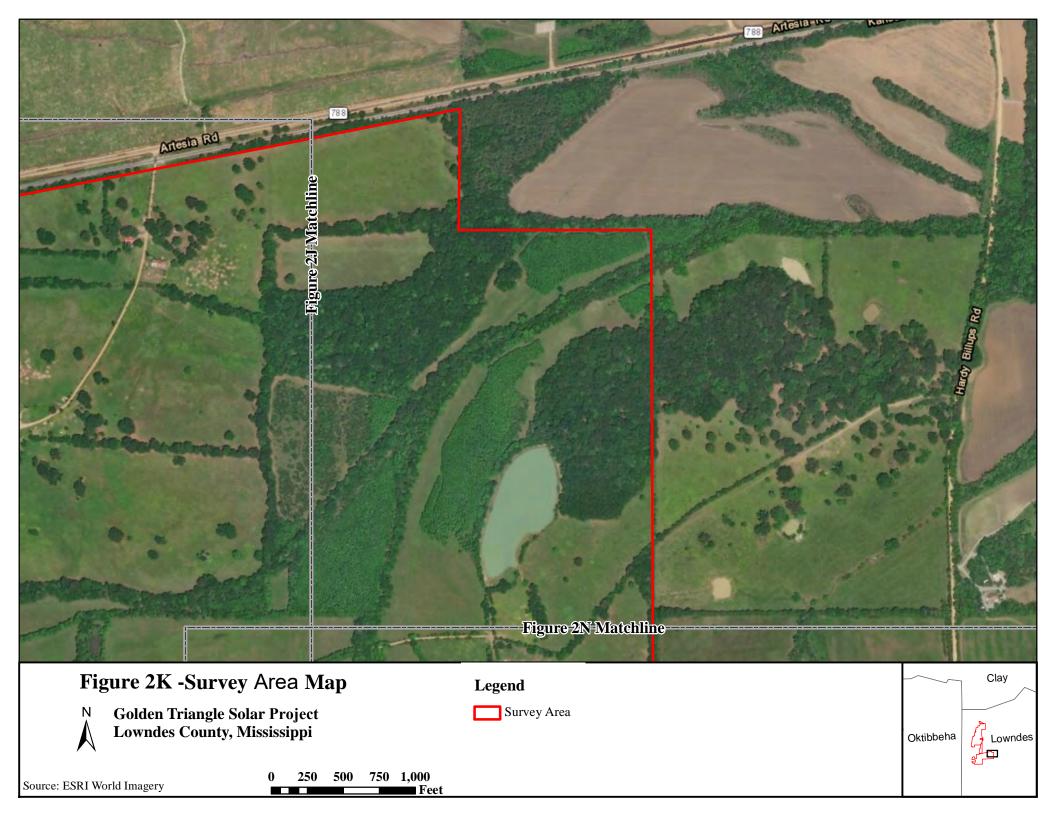


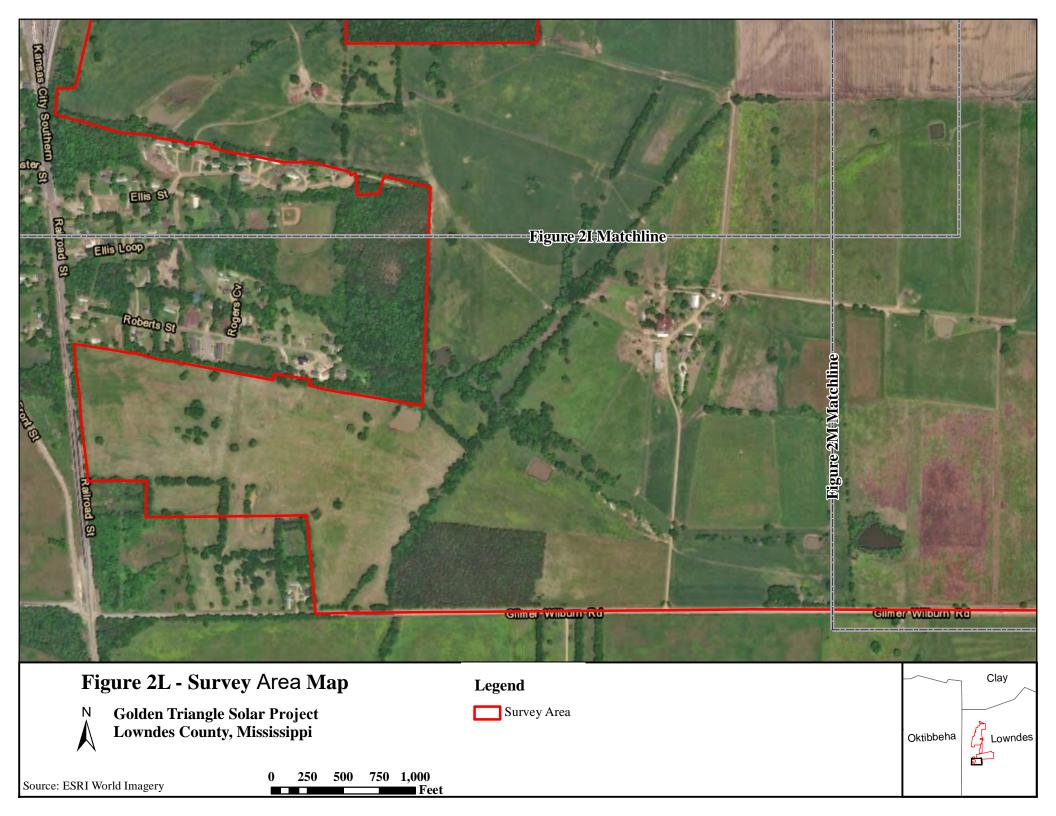


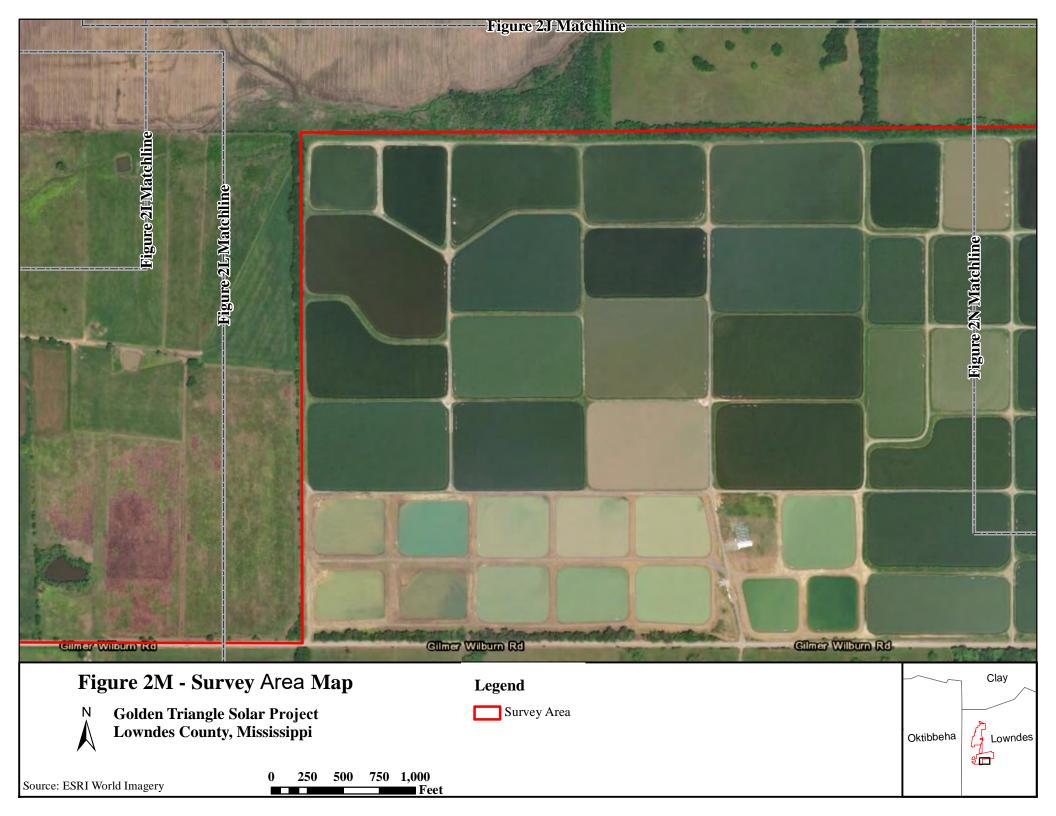




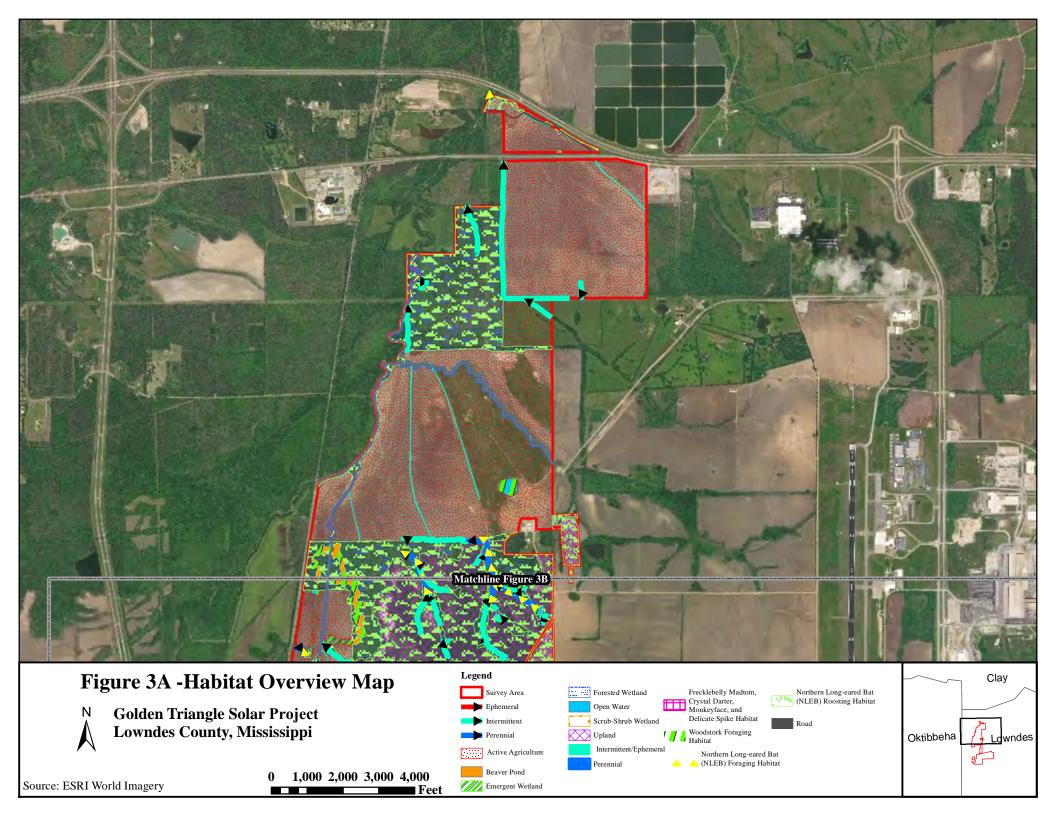


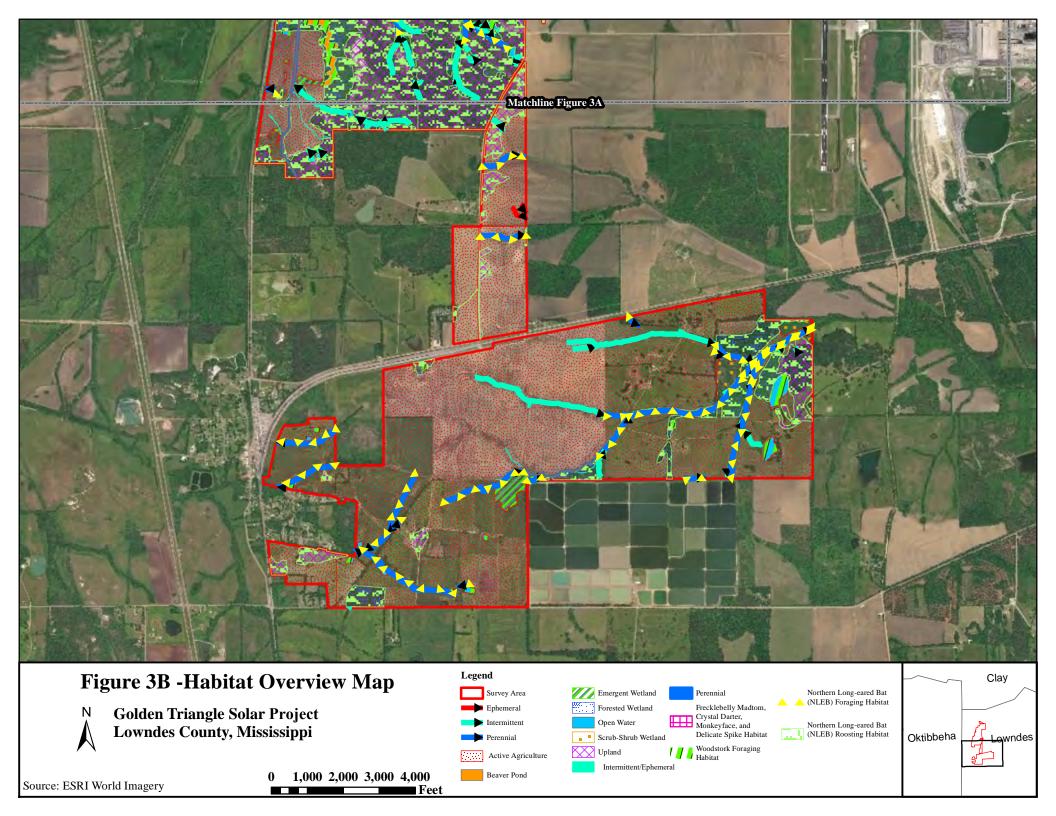


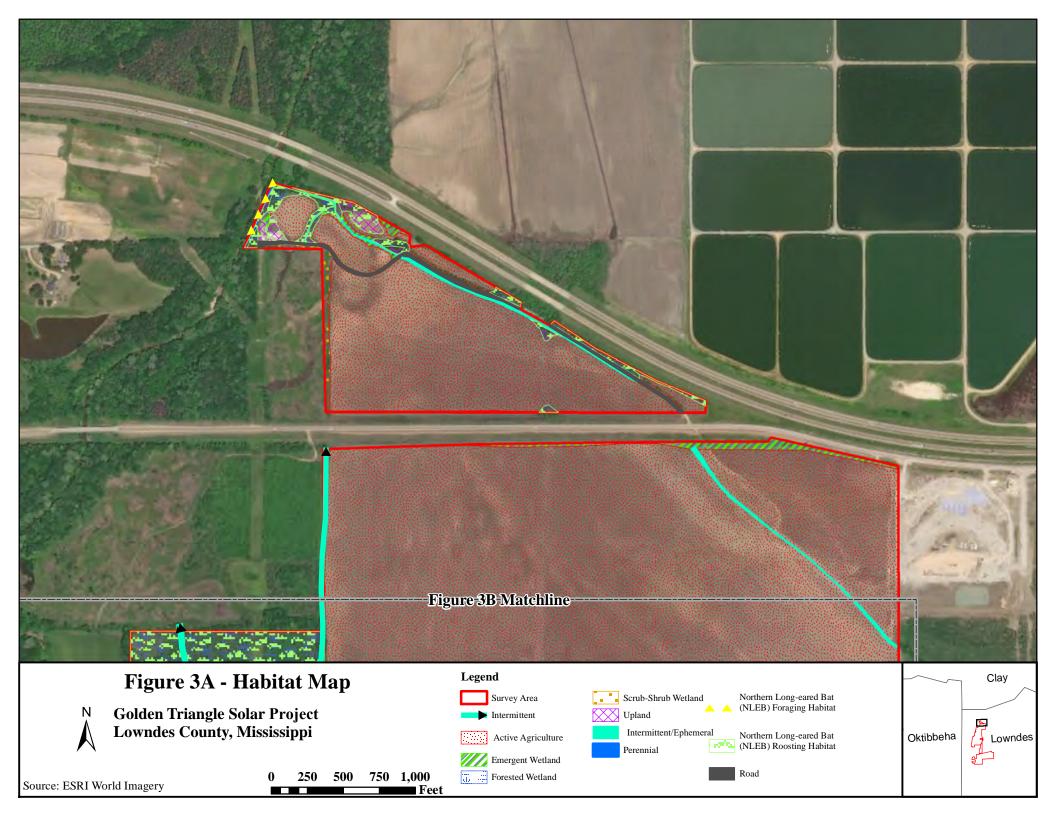


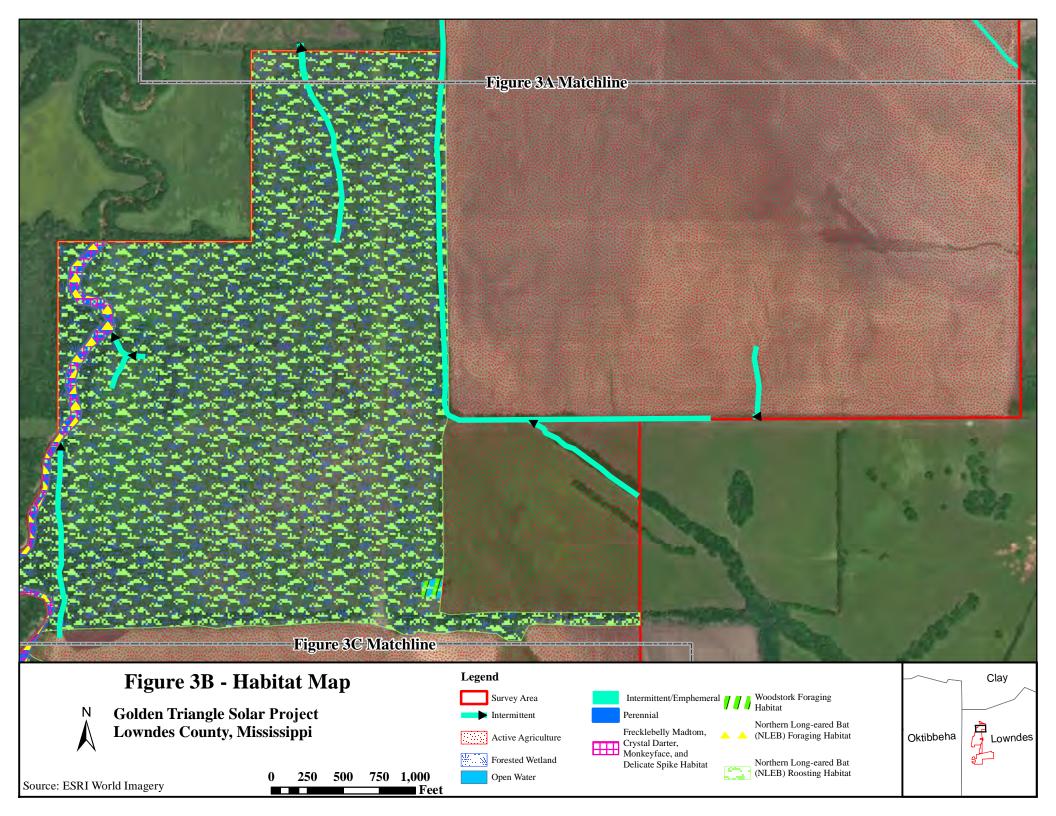


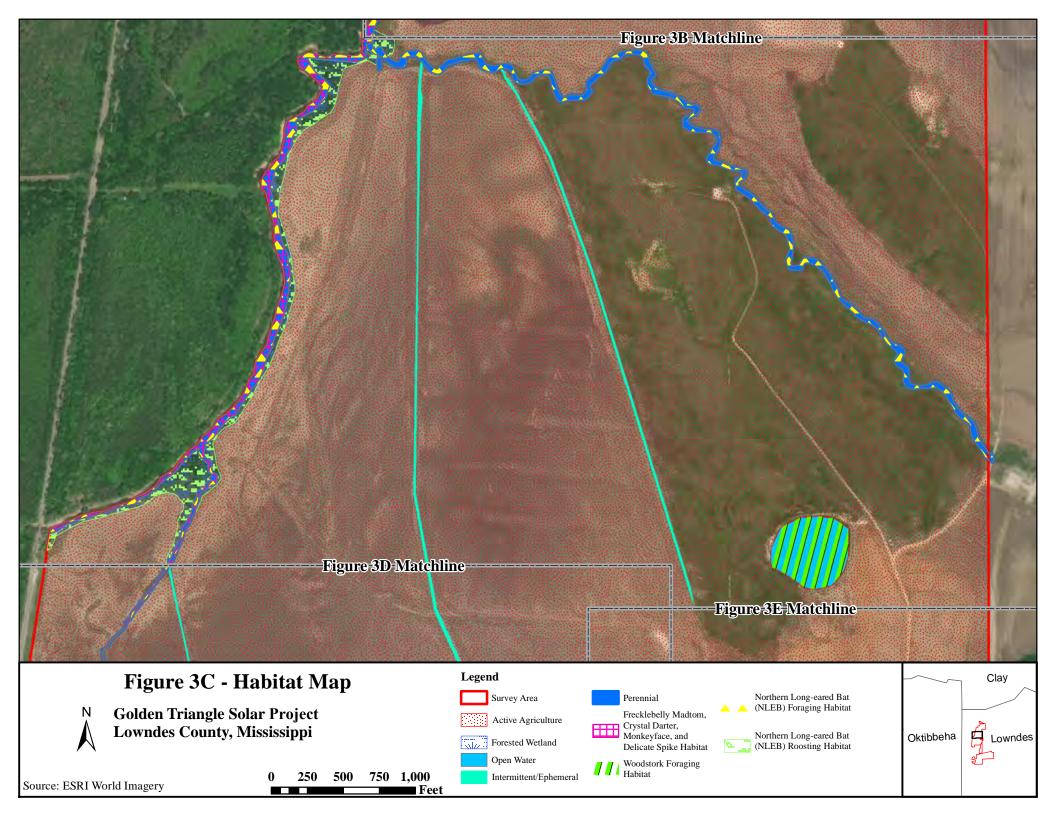


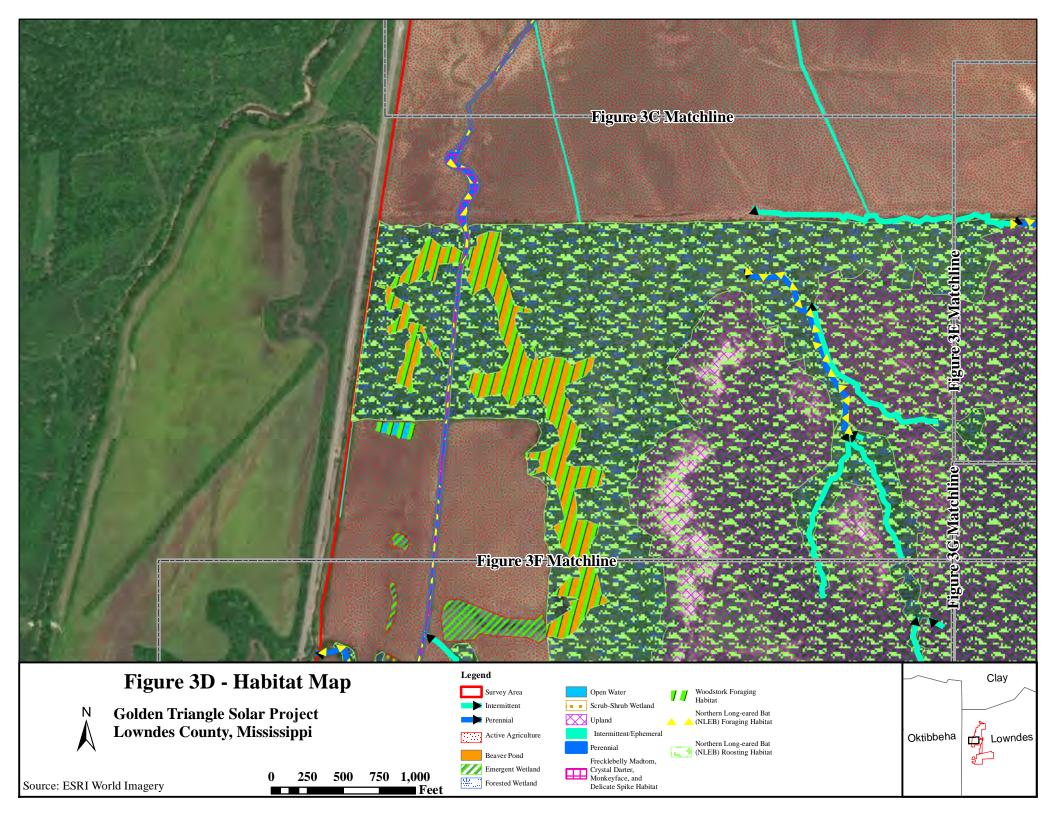


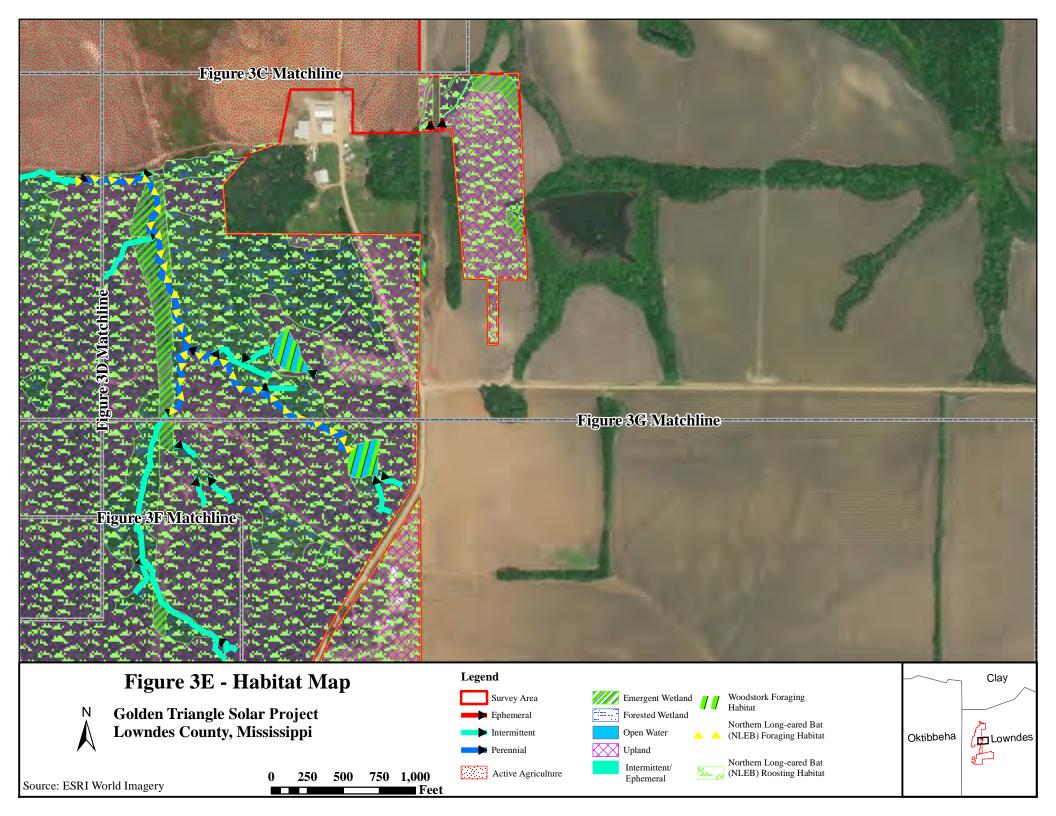


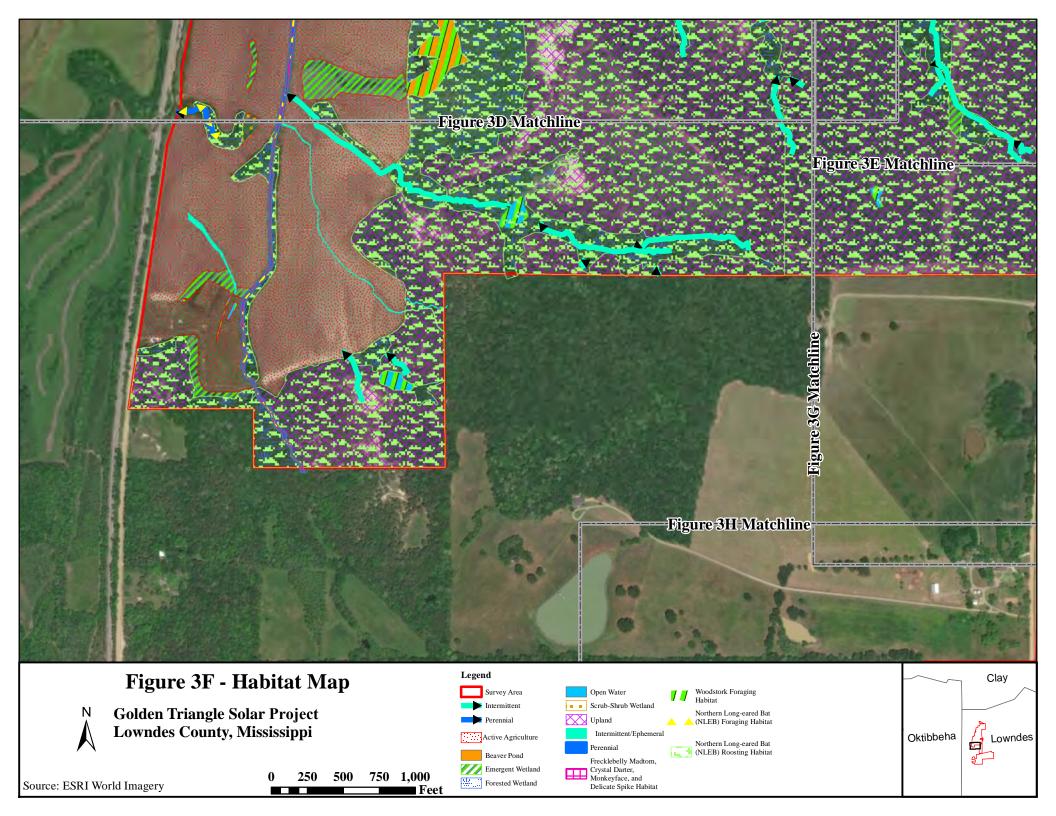


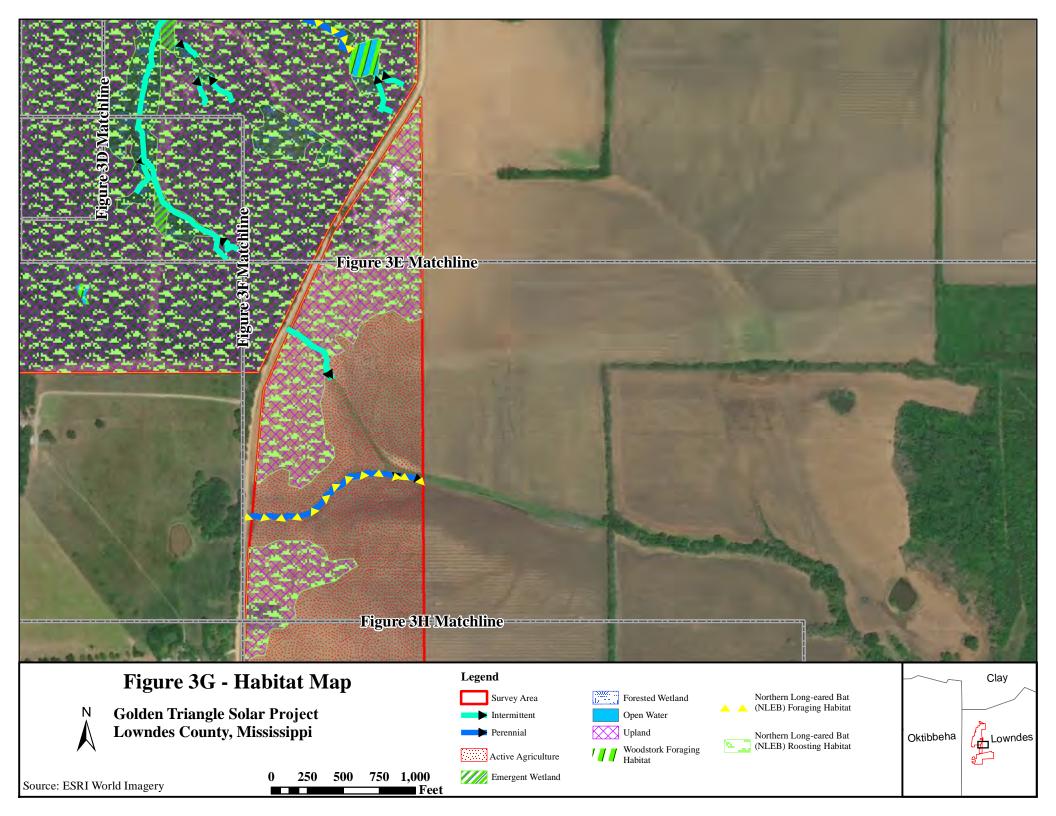


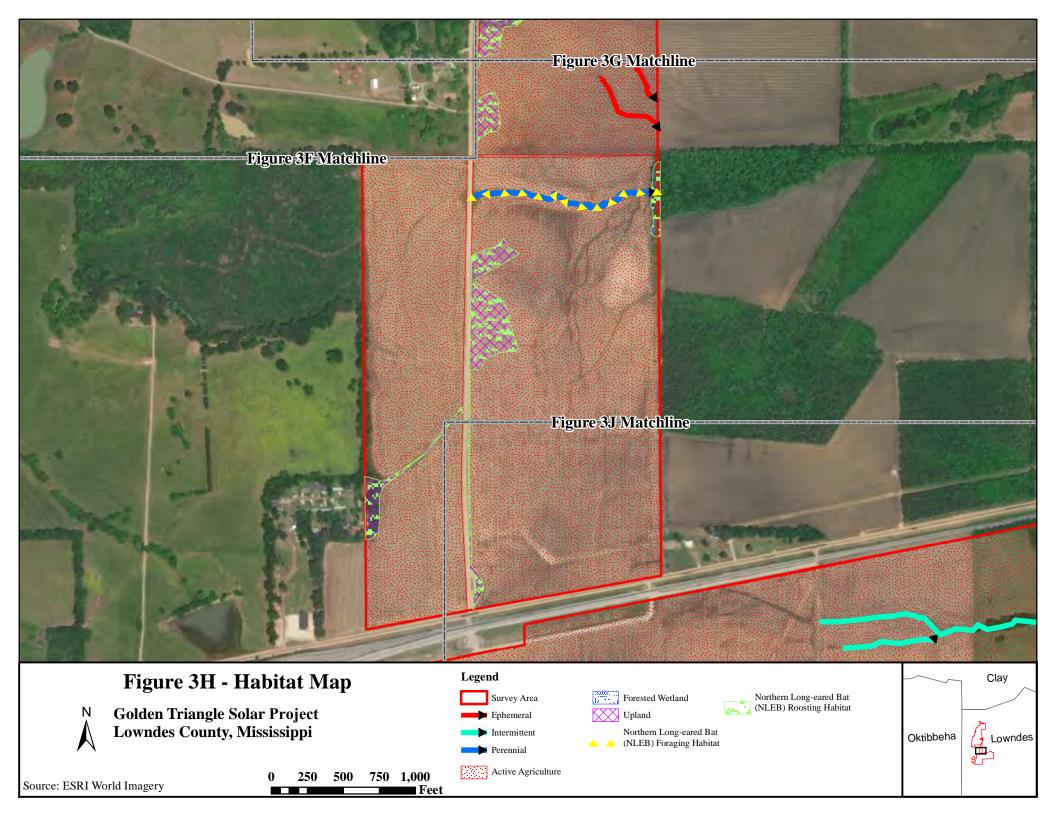


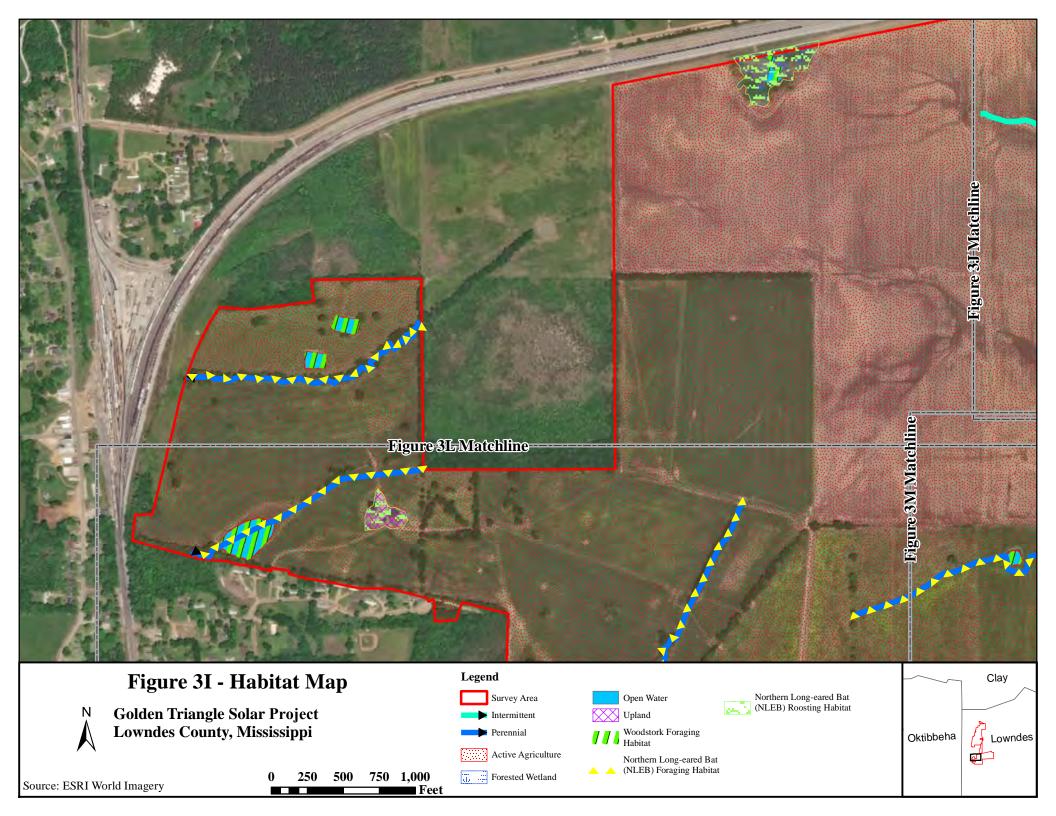


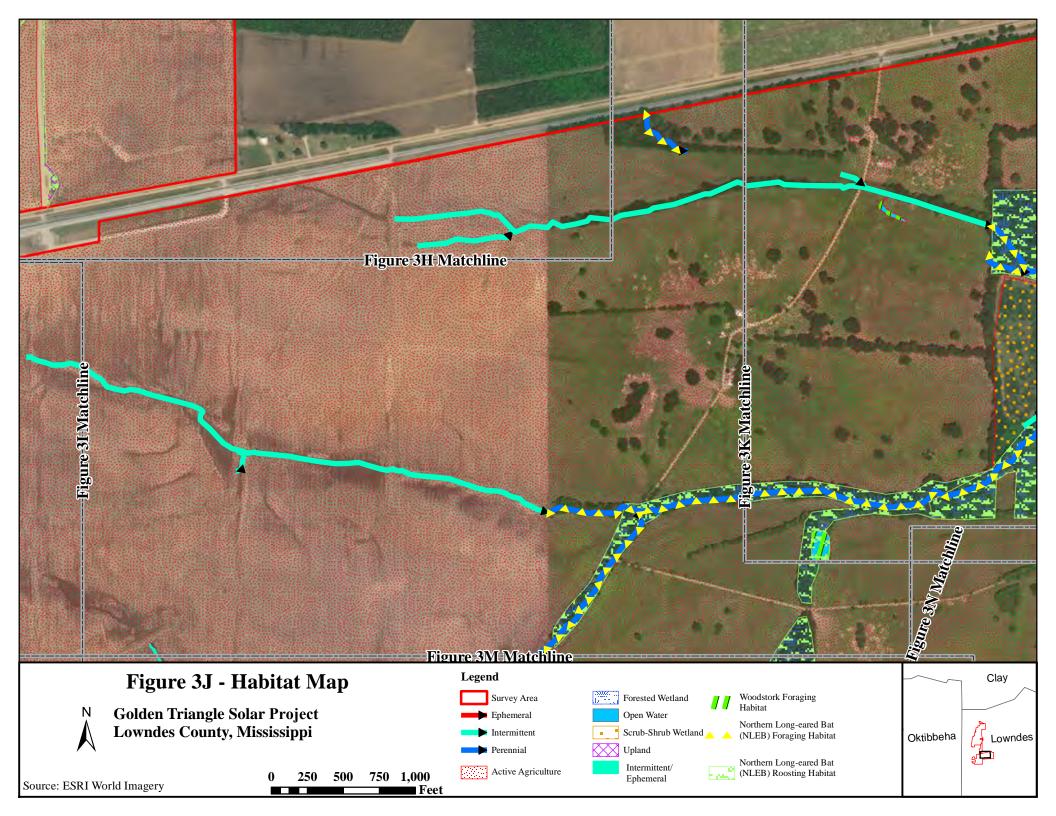


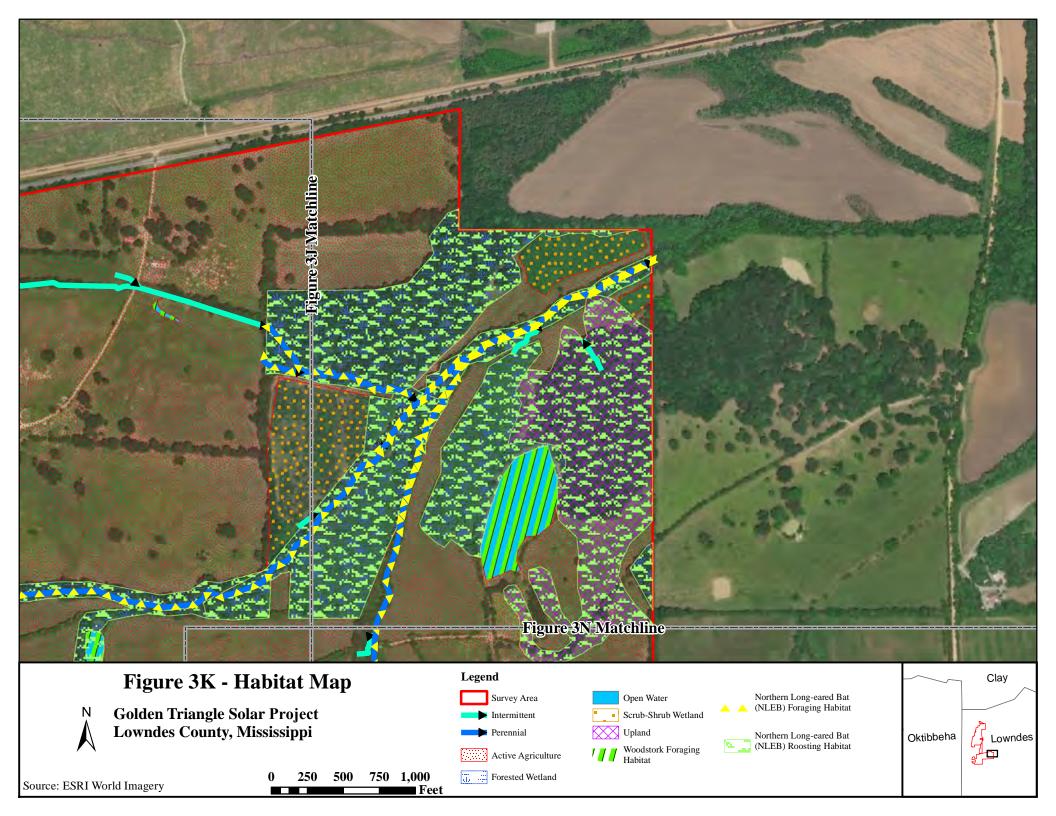


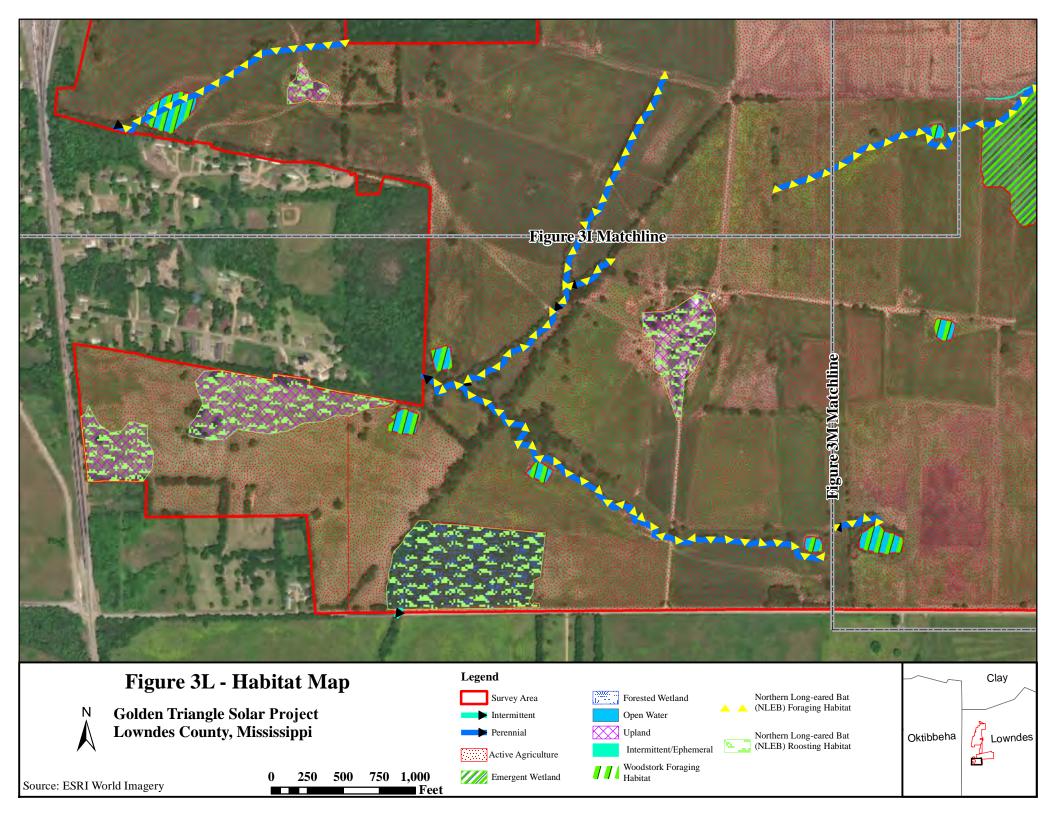


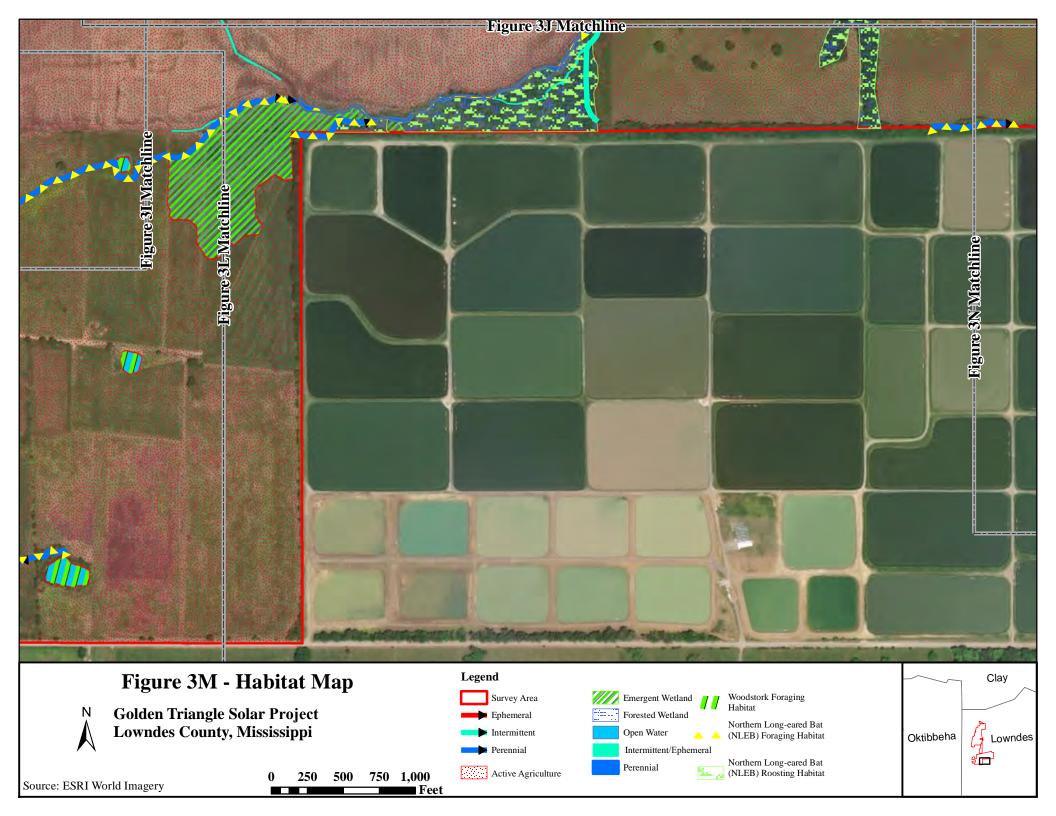


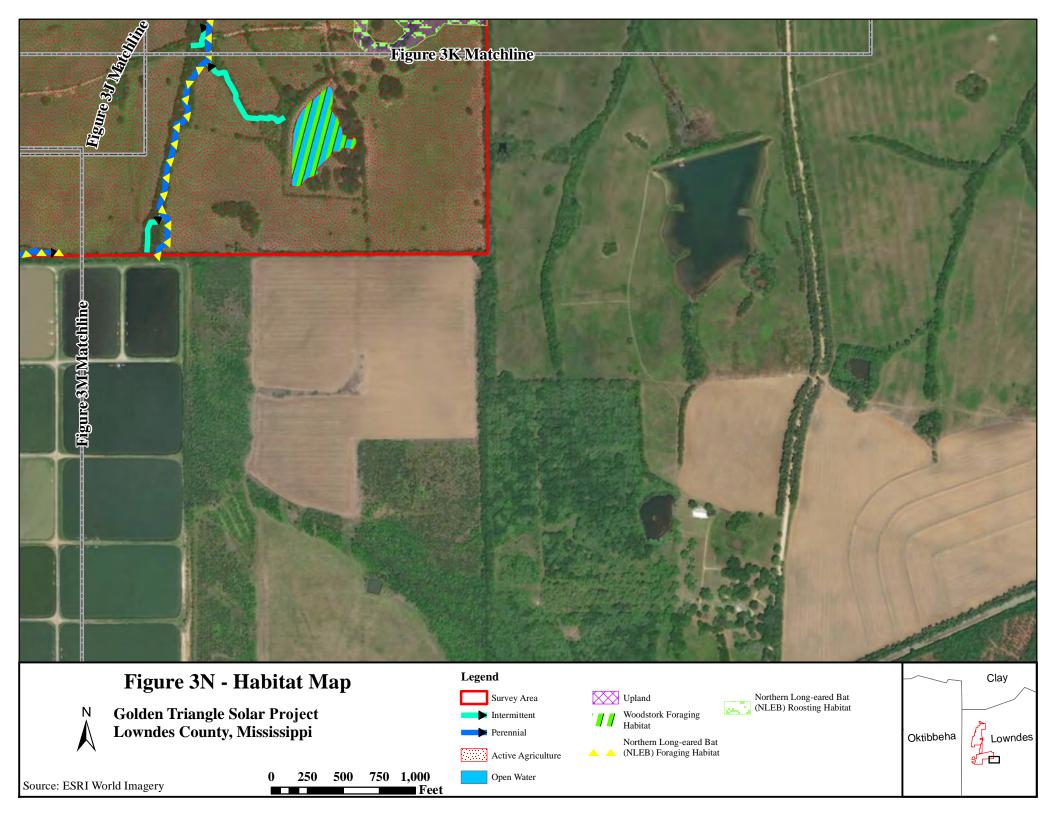










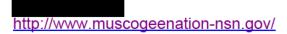


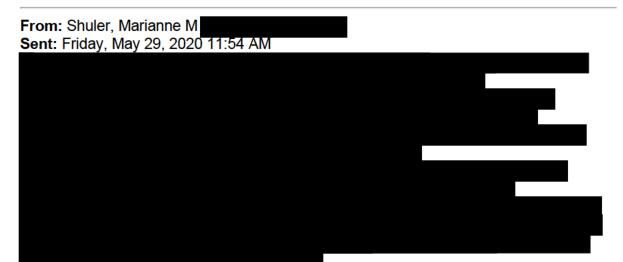


CREATE AMAZING.

Burns & McDonnell Atlanta Regional Office 3540 Mansell Road, Suite 300 Alpharetta, GA 30022 www.burnsmcd.com

APPENDIX E AGENCY CONSULTATIONS





Subject: TVA-Initiation of Consultation-Orgis Energy Solar-LowndesCoMS-TRIBAL-29May2020

Good Morning

By this email I am sending the attached letter initiating consultation regarding TVA's proposal to enter into a power purchase agreement with Orgis Energy for an approximately 200-mega watt solar photovoltaic generating facility approximately 11 miles west of the town of Columbus, Mississippi in Lowndes County, Mississippi.

The proposed phase I scope of work is attached for your review and comment.

Please let me know by June 28th, 2020 if you have any questions or comments on the proposed undertaking or phase I scope of work.

Thanks Marianne

<u>Due to COVID-19 safety precautions enacted by TVA, I am currently teleworking.</u>

Marianne Shuler

Senior Specialist, Archaeologist & Tribal Liaison Cultural Compliance



Dear Sir/Madam:

TENNESSEE VALLEY AUTHORITY (TVA), ORGIS ENERGY SOLAR PROJECT LOWNDES COUNTY, MISSISSIPPI (33.451115 -88.627758)

TVA proposes to enter into a Power Purchase Agreement with Orgis Energy for an approximately 200-mega watt solar photovoltaic (PV) generating facility approximately 11 miles west of the town of Columbus, Mississippi off Hwy 82, and 1.6 miles west of the Golden Triangle Regional Airport in Lowndes County, Mississippi. TVA determined the area of potential effects (APE) to be the area of proposed ground-disturbance, where physical effects could occur including the PV facility (located within 15 parcels), associated access routes, interconnect, and a 100-foot wide transmission line right-of-way (ROW) uprate that connects to the existing TVA Artesia substation (approximately 3,611 acres) as well as areas within a half-mile radius of the project within which the project would be visible, where visual effects on above-ground [or, historic architectural] resources could occur (Appendix A in the enclosed SOW).

Orgis Energy contracted with Burns & McDonnell to conduct a Phase I Cultural Resources survey. For your review, please find enclosed Burn & McDonnel's scope of work (SOW) for the Phase I Cultural Resources survey. Pursuant to 36 CFR § 800.4(b)(1), TVA finds that the SOW presented here is a reasonable and good faith effort to carry out identification efforts.

By this letter, TVA is initiating consultation regarding the proposed undertaking. TVA is proposing to do a Phase I Cultural Resources survey of the APE as described in the enclosed SOW. Due to the size and scope of the project TVA proposes to proceed under phases as provided under 36 CFR § 800.4(b)(2) and § 800.5(a)(3).

By this letter, TVA is consulting with the Absentee Shawnee Tribe of Indians of Oklahoma, Alabama-Coushatta Tribe of Texas, The Chickasaw Nation, The Choctaw Nation of Oklahoma, Coushatta Tribe of Louisiana, Eastern Shawnee Tribe of Oklahoma, Jena Band of Choctaw Indians, Kialegee Tribal Town, Mississippi Band of Choctaw Indians, The Muscogee (Creek) Nation, Shawnee Tribe, and Thlopthlocco Tribal Town regarding historic properties within the APE that may be of religious and cultural significance and eligible for listing in the Nataional Register of Historic Places (NRHP).

By this letter, TVA is seeking your comments regarding any properties that may be of religious and cultural significance and may be eligible for listing in the NRHP pursuant to $36CFR\ 800.2\ (c)(2)(ii),\ 800.3\ (f)(2),\ and\ 800.4\ (a)(4)(b).$

Please respond by June 28, 2020 regarding any comments on the proposed undertaking and Phase I scope of work. If you have any questions, please contact me by phone, (865) 632-2464 or by email, mmshuler@tva.gov.

Sincerely,

Marianne Shuler

Senior Specialist, Archaeologist and Tribal Liaison

Cultural Compliance

Ms. Marianne Shuler, Senior Specialist, Archaeologist and Tribal Liaison Cultural Compliance Tennessee Valley Authority 400 West Summit Hill Drive 460 WT 7D-K Knoxville, TN 37902

Dear Ms. Shuler:

Thank you for sending the letter and Phase I archaeological survey report for the proposed Power Purchase Agreement with Tennessee Solar I, LLC to purchase electric power from a new solar photovoltaic facility in Obion and Weakley Counties, Tennessee. We wish to consult under Section 106 of the National Historic Preservation Act.

The Chickasaw Nation supports the proposed undertaking and is not presently aware of any specific historic properties, including those of traditional religious and cultural significance, in the project area. In the event the agency becomes aware of the need to enforce other statutes we request to be notified under ARPA, AIRFA, NEPA, NAGPRA, NHPA and Professional Standards.

Your efforts to preserve and protect significant historic properties are appreciated. If you have any questions, please contact Ms. Karen Brunso, tribal historic preservation

Sincerely,

Lisa John, Secretary

Department of Culture and Humanities

cc: mmshuler@tva.gov

From: Section106

To: Shuler, Marianne M

Subject: Re: TVA-Initiation of Consultation-Orgis Energy Solar-LowndesCoMS-TRIBAL-29May2020

Date: Friday, July 10, 2020 3:47:23 PM

Attachments: image001.png

image002.png image003.png image004.png image005.png image006.png image007.png image008.png

This is an EXTERNAL EMAIL from outside TVA. THINK BEFORE you CLICK links or OPEN attachments. If suspicious, please click the "Report Phishing" button located on the Outlook Toolbar at the top of your screen.

Good afternoon Ms. Shuler,

Thank you for contacting the Muscogee (Creek) Nation regarding the proposed Orgis Energy Solar Project Phase I Cultural Resource and Historic Architectural Resource Survey Scope of Work located in Lowndes County, Mississippi. Lowndes County is located within the Muscogee (Creek) Nation's historic area of interest and, as such, is of the utmost importance to our Tribe. After reviewing the Scope of Work (SOW) compiled by Burns & McDonnell, we have several reservations concerning it and will not concur with the current SOW.

- The APE for this survey is 3,611 acres in total. When looking at the project area, there are six sites within it. This, to the Muscogee (Creek) Nation, should be treated as a cultural landscape rather than individual sites.
- The maps that were provided for the project areas show large portions only being pedestrian surveyed. This is unacceptable. Additionally, portions of these areas are forested as well and they are also being only pedestrian surveyed. This methodology does not follow the Mississippi state standards.
- The Mississippi state standards were updated in 2020 and this is not reflected in the field methodology. Please review these and re-do your methodology.

Not only do we have problems with the SOW, but we have learned that TVA already gave the go ahead for Burns & McDonnell to be in the field to conduct the fieldwork. This SOW is not up to standards and yet TVA has signed off on the work to begin. We request that a new SOW be compiled and sent out that addresses the concerns we have for this project. If you have any questions regarding this, please do not hesitate to contact me.

Thank you,

Robin Soweka Jr.

Historic and Cultural Preservation Department | Cultural Resource Specialist Muscogee (Creek) Nation



Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902

May 28, 2020

Mr. Jim Woodrick Director Mississippi Department of Archives and History Historic preservation Division Post Office Box 571 Jackson, Mississippi 39205-0521

Dear Mr. Woodrick:

TENNESSEE VALLEY AUTHORITY (TVA), ORGIS ENERGY SOLAR PROJECT LOWNDES COUNTY, MISSISSIPPI (33.45111, -88.62775)

TVA proposes to enter into a Power Purchase Agreement with Orgis Energy for an approximately 200-mega watt solar photovoltaic (PV) generating facility approximately 11 miles west of the town of Columbus, Mississippi off Hwy 82, and 1.6 miles west of the Golden Triangle Regional Airport in Lowndes County, Mississippi. TVA determined the area of potential effects (APE) to be the area of proposed ground-disturbance, where physical effects could occur including the PV facility (located within 15 parcels), associated access routes, interconnect, and a 100-foot wide transmission line right-of-way (ROW) uprate that connects to the existing TVA Artesia substation (approximately 3,611 acres), as well as areas within a half-mile radius of the project within which the project would be visible, where visual effects on above-ground [or, historic architectural] resources could occur (Appendix A in the enclosed SOW).

Orgis Energy contracted with Burns & McDonnell to conduct a Phase I Cultural Resources survey. For your review, please find enclosed Burn & McDonnel's scope of work (SOW) for the Phase I Cultural Resources survey. Pursuant to 36 CFR § 800.4(b)(1), TVA finds that the SOW presented here represents a reasonable and good faith effort to carry out identification efforts.

By this letter, TVA is initiating consultation regarding the proposed undertaking. TVA is proposing to do a Phase I Cultural Resources survey of the APE as described in the enclosed SOW. Due to the size and scope of the project, TVA proposes to proceed with identification and evaluation under phases as provided under 36 CFR § 800.4(b)(2) and § 800.5(a)(3).

Pursuant to 36 C.F.R. Part 800.3(f)(2), TVA is consulting with federally recognized Indian tribes regarding historic properties within the proposed project's APE that may be

Mr. Jim Woodrick Page 2 May 28, 2020

of religious and cultural significance and are eligible for the National Register of Historic Places.

Please contact Michaelyn Harle by telephone (865) 632-2248 or by email, mharle@tva.gov with your comments.

Sincerely,

Clinton E. Jones

Manager

Cultural Compliance

MSH:ABM Enclosures



July 13, 2020

Mr. Clinton E. Jones Tennessee Valley Authority 400 West Summit Hill Drive Knoxville, Tennessee 37902

RE: Golden Triangle Solar Project Phase I Cultural Resource and Historic

Architectural Resource Surveys Scope of Work, Lowndes County, Mississippi

MDAH Log 05-135-20

Dear Mr. Jones:

MDAH has reviewed the provided research design regarding the above-referenced project in accordance with our responsibilities under Section 106 of the National Historic Preservation Act and 36 CFR Part 800. Per our consultation on July 10, 2020, MDAH is concerned regarding the scope of pedestrian- only survey on several parcels that should instead be subject to systematic shovel testing, per the MS Standards and Guidelines for Archaeological Survey (MDAH 2020, MS Administrative Code, Title 16 Part 3 Chapter 1). As TVA indicated that these concerns were being addressed, this letter is to notify TVA that our official comment is on hold pending the submittal of additional maps for the survey in question.

Should there be a change in the funding status of the project, please let us know in order that we may provide you with appropriate comments in compliance with the above referenced regulations.

If you have any questions, please do not hesitate to contact us at (601) 307-0133.

Sincerely,

Cindy Carter-Davis Chief Archaeologist

FOR: Katie Blount

State Historic Preservation Officer



July 16, 2020

Mr. Clinton E. Jones Tennessee Valley Authority 400 West Summit Hill Drive Knoxville, Tennessee 37902

RE: Golden Triangle Solar Project Phase I Cultural Resource and Historic

Architectural Resource Surveys Scope of Work, Lowndes County, Mississippi

MDAH Log 05-135-20

Dear Mr. Jones:

MDAH has reviewed the provided research design regarding the above-referenced project in accordance with our responsibilities under Section 106 of the National Historic Preservation Act and 36 CFR Part 800. Per our consultation on July 10, 2020, MDAH is concerned regarding the scope of pedestrian- only survey on several parcels that should instead be subject to systematic shovel testing, per the MS Standards and Guidelines for Archaeological Survey (MDAH 2020, MS Administrative Code, Title 16 Part 3 Chapter 1). As per the additional information provided on July 16, 2020, MDAH agrees with the revised methodology, with the exception of the following:

- 1) Per the standards above, the parcels containing previously recorded archaeological sites should be subjected to systematic shovel testing to ascertain if
 - The previously recorded sites retain integrity and site locations are properly represented in the Mississippi Archaeological Site File;
 - b) The sites represent a larger cultural landscape, as defined by the NPS; and
 - c) The sites should actually be combined into a larger unit and considered a historic landscape or district.

If you have any questions, please do not hesitate to contact us at (601) 546-6945.

Sincerely,

Cindy Carter-Davis Chief Archaeologist

FOR: Katie Blount

State Historic Preservation Officer



Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902

November 20, 2020

Mr. Stephen Ricks U.S. Fish and Wildlife Service Ecological Services 6578 Dogwood View Parkway, Suite A Jackson, Mississippi 39213

Dear Mr. Ricks:

TENNESSEE VALLEY AUTHORITY (TVA) - GOLDEN TRIANGLE SOLAR PROJECT

TVA has entered into a Power Purchase Agreement with MS Solar 5, LLC to purchase power and environmental attributes generated by the proposed Golden Triangle Solar Project in Lowndes County, Mississippi. The project would be constructed by MS Solar 5 and is expected to generate up to 200 megawatts (MW) of alternating current (AC) capacity with a 50 MW AC – 200-Megawatt hour Battery Energy Storage System. Total land impacts for implementation of the project, or proposed action, would be less than the overall project site (approx. 3,792 acres). Up to150 acres of forest that could provide summer roosting habitat for northern long-eared bats (NLEBs) may be removed. Efforts would be made to minimize clearing of these areas as refinement of future design allows. Additionally, MS Solar 5 would avoid tree clearing activities of potential NLEB habitat during the NLEB pup season (June 1 - July 31) in order to minimize potential impacts to bat populations that may be present within the project site. Wetlands providing potential foraging habitat would also be avoided to the greatest extent practicable. See attached Protected Species Habitat Assessment Report (PSHAR) for a more detailed project description, figures, and photos.

Review of the TVA Regional Natural Heritage database and the U.S. Fish and Wildlife Service Information for Planning and Consultation (IPaC) website identified three species listed as federally endangered, threatened, candidate, or delisted and monitored under the Endangered Species Act (ESA) that have the potential to occur within the project area in Lowndes County, Mississippi. These species include one plant (Price's potato-bean), one bird (wood stork), and one mammal (northern long-eared bat) that have the potential to occur within Lowndes County based on historic range, proximity to known occurrence records, biological characteristics, and/or physiographic characteristics. No federally designated critical habitats for these species are present within or adjacent to the project action area, therefore no adverse modification of critical habitats would occur.

Field surveys were conducted by biologists from Burns and McDonnell Engineering Company from March 3-April 8, April 20-23, May 4-8, and October 7, 2020 to determine whether suitable habitat for federally listed species occurs within the project action area. Suitable roosting habitat for the wood stork does not exist within the survey area for the project. However, suitable foraging habitat may be present near open water and large, inundated wetlands. The

Mr. Stephen Ricks Page 2 November 20, 2020

project footprint includes wetland areas (totaling approximately 569.6 acres). Proposed panel layouts avoid any impacts on wetlands. There are also large aquaculture/fish farms both north and south of the project that may attract foraging wood storks. The project would not affect fish farms or large open waters outside the immediate project limits. Therefore TVA has determined there would be no effects to wood storks or wood stork habitat resulting from implementation of the proposed action.

Additional species specific botanical surveys were performed by a qualified botanist from Mississippi State University on October 7, 2020. Supplemental findings are documented in Appendix C of the PSHAR. No individual Price's potato-bean were observed during field surveys; however, potential habitat for the species was observed within the survey area. Potential habitat for the species occurs in ravine areas that would not be developed during project construction or operation, thus the project will have no effect on Price's potato-bean.

Phase 1 Bat Habitat Assessments were conducted from March 3-April 8, and April 20-23, 2020, using the 2019 and 2020 Range-Wide Indiana Bat Summer Survey Guidelines as a surrogate protocol for determining presence/absence of the federally threatened NLEB. See Figures 2A-2N-Survey Area Overview Maps in PSHAR Appendix B. No caves, mines, buildings, bridges or potential winter roosting structures were identified during field surveys of the project footprint. Suitable summer roosting habitat for the NLEB was observed within forested areas at the project site, and suitable foraging habitat was observed within the perennial stream corridors, fence rows, wetlands, and forests throughout the project site (see Habitat Overview Maps 3A-3N in PSHAR Appendix B). The project footprint includes wetland areas, 4 perennial streams, and 4 intermittent streams, some of which may provide suitable foraging habitat and sources of drinking water for bats. Wetlands and streams would be avoided to the greatest extent practicable. Best Management Practices would be used around these bodies of water, minimizing sedimentation and avoiding changes to hydrology. Forest fragments and forested edges in the project footprint offer additional suitable foraging habitat for NLEBs. Up to 150 acres of suitable summer roosting habitat for NLEBs may be removed (see Protected Species Habitat Map PSHAR appendix B, page 47). See additional information within the PSHAR (e.g., project description, methods, survey locations, maps, summary of results, photos etc.).

There are no known records documenting the presence of NLEB from within Lowndes County, Mississippi. No known hibernacula or maternity roosts occur within five miles of the project site. All tree removal would occur outside of the time when NLEB pups would be present in maternity roosts (June 1 - July 31). Therefore, TVA has determined that while removal of suitable roosting habitat could have indirect adverse effects on NLEB and result in 'incidental take' as defined in the ESA, this 'incidental take' is excepted from ESA Section 9 Take Prohibitions. Based on the USFWS' online Northern Long-Eared Bat 4(d) rule determination key accessed on November 11, 2020 (see verification letter attached, Consultation Code: 04EM1000-2021-TA-0157), this project may affect NLEB and may rely on the Service's January 5, 2016, Programmatic Biological Opinion (PBO) on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions to fulfill its Section 7(a)(2) consultation obligation.

Mr. Stephen Ricks Page 3 November 20, 2020

We respectfully request concurrence with our determination. However, it is our understanding that unless the Service advises us within 30 days of November 13, 2020, when the NLEB verification letter was generated, that our IPaC-assisted determination was incorrect, that the verification letter adequately verifies that the PBO satisfies and concludes our responsibilities for this Action under ESA Section 7(a)(2) with respect to the northern long-eared bat.

Should you have any questions or wish to discuss the project in more detail, please contact Jesse Troxler at jctroxler@tva.gov.

Sincerely,

W. Douglas White

Manager

Biological Compliance

Will Dhales

JCT:ABM Enclosures



400 West Summit Hill Drive, Knoxville, Tennessee 37902

August 4, 2021

Mr. Barry White Director Mississippi Department of Archives and History Historic preservation Division Post Office Box 571 Jackson, Mississippi 39205-0521

Dear Mr. White:

RE: TENNESSEE VALLEY AUTHORITY (TVA), ORGIS ENERGY SOLAR (GOLDEN TRIANGLE FIRST PHASE) PROJECT RESPONSE TO ADDITONAL TESTING AND REDESIGN LOWNDES COUNTY, MISSISSIPPI (33.45111, -88.62775) (TVA TRACKING NUMBER – CID 79483)

TVA previously consulted with your office (letter dated February 2, 2021) regarding the findings of the Phase I identification efforts on the first phase of the proposed Origis Energy Solar project located in Lowndes County, Mississippi (Shaver et al. 2021). TVA received a number of comments resulting from this consultation from your office and the consulting federally recognized Indian tribes (Tribes). Based on the comments received, Origis redesigned the solar array in order to expand the avoidance area within the Ho-ta-na Reservation and sites DS1, DS2, 22LO603, 22LO728, 22LO731, 22LO834, 22LO835, and 22LO836. Your office incorporated these sites and DS3 (an early to mid-19th to 20th century dense artifact concentration) into one site with new number 22LO1068. While the proposed project plan avoided the majority of recorded site 22LO1068, a portion of the proposed project substation and Battery Energy Storage System (BESS) and two gen-tie right-of-ways (ROWs) were located within the boundaries of site 22LO1068 (Figure 1- newly proposed redesign). Specifically, a portion of the BESS and gen-tie were located within a portion DS3 identified by Shaver et al. (2021) as previously, significantly disturbed.

TVA held a consultation meeting on May 7, 2021 with your office and Tribes to discuss the proposed project, and a follow-up call with your office and Origis Energy on May 8, 2021. Based on the results of these meetings, Origis contracted with TRC to conduct the additional testing within the boundaries of site 22LO1068. TRC discussed the plan for additional testing with Mississippi Department of Archives and History (MDAH) on May 28, 2021. In a letter dated June 4, 2021, TVA provided the scope of work (SOW) by TRC to conduct additional testing within MDAH's identified site 22LO1068 boundary (approximately 340 acres) to consulting parties. We received concurrence from MDAH in a letter dated June 26, 2021 on the proposed additional testing. TVA also had a Tribal consultation call on June 30, 2021. During this consultation meeting, some of the Tribes continued to express concerns about the identification

Mr. Barry White Page 2 August 4, 2021

level efforts proposed for the additional testing within the boundaries of site 22LO1068. A request was made that shovel test be conducted at 5-meter intervals within the boundaries of site 22LO1068. The Tribes also expressed concerns about the location of the substation and BESS within the boundaries of site 22LO1068. Following this consultation call, TVA discussed these concerns with Origis and Origis has again attempted to redesign the project to address these concerns and avoid further adverse effects on site 22LO1068. Origis now proposes to move the substation and BESS outside of site 22LO1068 completely (Figure 1). Origis will remain outside site 22LO1068 with the exception of a proposed 3,346.5 feet long by 150 feet wide 161-kilovolt overhead transmission gen-tie ROW.

Attached is the proposed SOW for the archaeological survey within the gen-tie ROW and substation/BESS. Systematic shovel testing will be done at 30-meter intervals. If positive shovel tests are encountered, shovel testing will drop to 5-meter intervals. Origis will establish the placement of the transmission line poles within the gen-tie ROW following the results of the survey in order to avoid intact deposits.

By this letter, TVA is seeking your comments regarding the attached SOW. Pursuant to 36 CFR Part 800.3(f)(2), TVA is consulting with federally recognized Indian tribes regarding properties within the proposed project's area of potential effects that may be of religious and cultural significance to them and eligible for the National Register of Historic Places.

Please contact Michaelyn Harle by email, mharle@tva.gov, with your comments.

Sincerely.

Clinton E. Jones

Manager

Cultural Compliance

MSH: ABM Enclosures cc (Enclosures):

> Mr. Christopher Daniel Program Analyst Advisory Council on Historic Preservation cdaniel@achp.gov

References Cited

Shaver, Douglas, Brandy Harris, Kim House, and Jess Kepka

2021 Phase I Cultural Resources Survey for the Proposed Golden Triangle Solar Farm Project, Lowndes County, Mississippi. Report submitted by Burns and McDonnell to MS Solar 5, LLC and the Tennessee Valley Authority

INTERNAL COPIES NOT TO BE INCLUDED WITH OUTGOING LETTER:

S. Dawn Booker, BR 2C-C J. Taylor Cates, BR 2C-C Michael C. Easley, BR 2C-C Michaelyn S. Harle, WT 11C-K Brandon J. Hartline, BR 2C-C Susan R. Jacks, WT 11C-K Dana M. Nelson, WT 11C-K Rebecca C. Tolene, WT 7B-K William B. Wells, BR 2C-C W.Douglas White, WT 11C-K ECM, ENVRecords

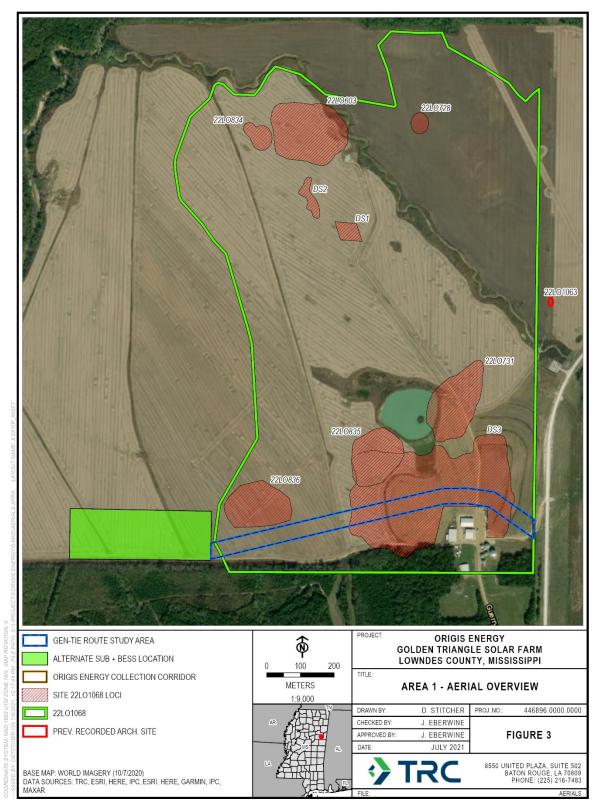


Figure 1. Proposed redesign of the BESS/Substation and Gen-tie ROW



400 West Summit Hill Drive, Knoxville, Tennessee 37902

December 16, 2021

Mr. Barry White
Director
Mississippi Department of Archives and History
Historic preservation Division
Post Office Box 571
Jackson, Mississippi 39205-0521

Dear Mr. White:

TENNESSEE VALLEY AUTHORITY (TVA), ORIGIS ENERGY SOLAR (GOLDEN TRIANGLE FIRST PHASE) PROJECT PHASE I SURVEY OF ADDITONAL TESTING AND REDESIGN LOWNDES COUNTY, MISSISSIPPI (33.45111, -88.62775) (TVA TRACKING NUMBER – CID 79483) (MDAH Log 05-135-20)

TVA previously consulted with your office (letter dated February 2, 2021) regarding the findings of the Phase I identification efforts on the first phase of the proposed Origis Energy Solar project located in Lowndes County, Mississippi (Shaver et al. 2021). The original report for the proposed solar facility has been updated based on consulting parties' comments; this report and the two addendum reports discussed in the letter and can be downloaded at <u>Golden Triangle Folder</u>. A list of updates to the original report can be found in the attached Microsoft Excel spreadsheet.

Proposed Redesign Survey Area

Per our August 2021 consultation letter, Orgis redesigned the solar array in order to expand the avoidance area within the Ho-ta-na Reservation and sites DS1, DS2, 22LO603, 22LO728, 22LO731, 22LO834, 22LO835, and 22LO836. Your office incorporated these sites and DS3 (an early to mid-19th to 20th century dense artifact concentration) into one site with new number 22LO1068. Origis proposed to move the substation and Battery Energy Storage System (BESS) outside of site 22LO1068 completely. Origis will keep all project elements outside site 22LO1068 with the exception of a proposed 3,346.5 feet long by 150 feet wide 161-kilovolt overhead transmission gen-tie right-of-way (ROW) (referred to as Area 1). TVA proposed to conduct an additional archaeological survey within footprint of the BESS and within the gen-tie ROW. In addition, TVA also proposed to conduct additional testing within Origis's proposed 1.4-mile-long collection line ROW within the boundaries of sites 22LO1080 and DS4, DS21, and DS24 (incorporated into Site 22LO1069 by MDAH) (referred to as Area 2). TVA consulted on the scope of work (SOW) for the proposed additional survey and received your concurrence with the SOW in a letter dated August 31,2021. TRC's resulting addendum report for the additional survey can be downloaded at Golden Triangle Folder.

Mr. Barry White Page 2 December 16, 2021

Area I

The survey identified no archaeological sites in the footprint of the proposed BESS. During the additional survey of the gen-tie ROW, a possible Woodland period New Market projectile point was recovered from the surface and an unidentified biface was recovered from the surface near another shovel test. Both surface finds correlate with the materials previously identified at previously-recorded site 22LO835, which is located just north of this location within the area of avoidance. A historic artifact scatter also was identified within this location; the current survey agrees with Shaver et al.'s 2021 original recommendations for DS 3. Shovel testing indicated highly disturbed soils with little to no vertical integrity, resulting from the removal of previously extant structures, wood clearing, and earthmoving activities. In addition, the pre-contact/contact area as well as the antebellum/postbellum landscape in this area has been drastically altered by modifications to the landscape including removal of associated structures, the addition of drainage features, terracing of the landform, and most importantly, pipeline installation and the adoption of industrial-scale corn and soybean agriculture. These factors have diminished the location's integrity of association, feeling, and setting.

TVA maintains that DS-3 should be considered ineligible for the National Register of Historic Places (NRHP). However, as the current survey did not include the entire boundary of MDAH's site 22LO1080, TVA recommends that the NRHP eligibility status of this larger site should be considered "undetermined". TVA finds that the portion of site 22LO1080 within the gen-tie ROW does not retain sufficient integrity and that the proposed undertaking would have no adverse effect to this site.

Area 2

In Area 2, portions of two sites identified during Shaver et al.'s (2021) survey are within the current area of potential effects (APE): 22LO1069 and 22LO1080. As explained above, site 22LO1069 encompasses five surface concentrations of nineteenth – twentieth century historic artifact scatters (DS20, and DS23–25). The proposed Origis TL ROW would cross three of these artifact concentrations (DS20, DS23 and DS25). Site 22LO1080 was recorded as a light density surface scatter of historic artifacts spread across an agricultural field.

The additional testing for the portions of sites 22LO1069 and 22LO1080 within the proposed transmission line ROW are consistent with Shaver et al.'s (2021) original recommendation that these sites have little potential for intact deposits and lack integrity. However, as the current survey did not include the entire boundaries of any of the two sites, TVA recommends that the NRHP eligibility status of the sites be considered unassessed, in order to acknowledge the possibility that NRHP-eligible deposits outside the current APE could be identified in future. TVA finds that the portions of sites 22LO1069 and 22LO1080 within the ROW do not retain sufficient integrity and that the proposed undertaking would have no adverse effect to these sites.

Mr. Barry White Page 3 December 16, 2021

Additional Survey Area: Results

Due to avoidance measures for site 22LO1068, Origis is proposing to add an additional 150 acres originally slated for the proposed second phase of Golden Triangle (Golden Triangle II) to this phase of construction to meet the needed generating capacity. TVA has revised the APE to include the 150-acre parcel where ground disturbance would occur as well as areas within a half-mile radius of the project within which the project would be visible, where visual effects on above-ground resources could occur.

A Phase I Cultural Resources survey was conducted at this location and will be included as an addendum report titled, *Addendum – Phase I Cultural Resources Survey for the Golden Triangle I Solar Farm Project, Lowndes County, Mississippi* can be downloaded at Golden Triangle Folder.

No archaeological resources were identified during this survey. The majority of the viewshed was part of the original APE and has already been reviewed. Ten additional architectural resources were identified on three properties (Resources 45 through 47) as a result of the new survey. Resource 45 is associated with the Smith Oaks Plantation. The property includes a circa 1880s former commissary/store building (46a), a large circa 1900 bell on a metal frame that does not appear to be in its original location (46b), associated historic agricultural outbuildings (46c through 46g), a small family cemetery (Smith Oaks Cemetery) (46h), a nonhistoric-age dwelling, and additional non-historic-age outbuildings. Resource 45 in its entirety lacks integrity due to the loss of original outbuildings and barns that would have historically been part of the complex, and to replacement of the original dwelling. With the exceptions of the former commissary (Resource 46a) and cemetery (Resource 46h), the resources lack architectural distinction or known historic associations. Resource 46a retains integrity of design, materials, workmanship, feeling, and location, despite loss of the original setting and associated historic-period dwelling(s) and outbuildings. Burns and McDonald recommend Resource 46a NRHP eligible under Criterion A for its associations with post-emancipation plantation history. Regarding Smith Oaks Cemetery (46h), not enough analysis has been done to assess the cemetery's eligibility under Criterion D; this cemetery should therefore be considered unassessed. Both 46a and 46h are located approximately 0.12 mile outside the project footprint. There is limited vegetation cover obscuring the viewshed, but portions of the of the project area may be visible. However, the integrity of setting for these two resources has been reduced due to the loss of the original dwelling and associated agricultural buildings. Thus, setting does not represent a contributing aspect of the resources' possible NRHP eligibility.

Therefore, TVA finds that although there would be a visual effect to resources 46a and 46h, this effect would not be adverse. Resource 47 (former African American cemetery) was previously recorded within the viewshed based on archival information but was not identified during the current study due to lack of surface expression. The cemetery warrants additional NRHP eligibility analysis and should be considered unassessed. The cemetery is located outside the project footprint and the viewshed to the project area is obscured by existing pond berms; the undertaking would not affect this property should it be determined eligible.

Mr. Barry White Page 4 December 16, 2021

Findings

TVA finds that the proposed redesign of the Golden Triangle I solar project (including the newly proposed location of the BESS, gen-tie route, transmission line ROW, and additional areas) would have no adverse effects to historic properties.

Pursuant to 36 C.F.R. Part 800.3(f)(2), TVA is consulting with federally recognized Indian tribes regarding historic properties within the proposed project's APE that may be of religious and cultural significance and are eligible for the National Register of Historic Places.

Pursuant to 36 CFR Part 800.5(c) we are notifying you of TVA's finding of no adverse effect; providing the documentation specified in § 800.11(e); and inviting you to review the finding. Also, we are seeking your agreement with TVA's eligibility determinations and finding that the undertaking as currently planned will have no adverse effects on historic properties.

Please contact Michaelyn Harle by email, mharle@tva.gov, with your comments.

Sincerely,

James W. Osborne, Jr.

Jan W. Os., J.

Manager

Cultural Compliance

MSH:ABM Enclosures

Reference Cited

Shaver, Douglas, Brandy Harris, Kim House, and Jess Kepka

2021 Phase I Cultural Resources Survey for the Proposed Golden Triangle Solar Farm Project, Lowndes County, Mississippi. Prepared by Burns and McDonnell Engineering Company, Inc., Kansas City, Missouri, for Origis Energy.

INTERNAL COPIES NOT TO BE INCLUDED WITH OUTGOING LETTER:

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Dana M. Nelson, WT 11B-K
Rebecca C. Tolene, WT 11C-K
William B. Wells, III BR 2C-C
W. Douglas White, WT 11C-K
ECM, ENVRecords



P. O. Box 571 Jackson, MS 39205-0571 601-576-6850 mdah.ms.gov

January 28, 2022

Mr. James Osborne Jr. Tennessee Valley Authority 400 West Summit Hill Drive Knoxville, Tennessee 37902

RE: Phase I Cultural Resources Survey of the Proposed Golden Triangle I Solar Farm Project in Lowndes County, Mississippi (TRC), MDAH Project Log 12-139-21, MDAH Report # 22-0015

Addendum- Phase I Cultural Resources Survey for the Golden Triangle I Solar Farm Project, S27/28, T18N, R16E (Burns McDonnell) MDAH Project Log 12-139-21, MDAH Report # 22-0014

Dear Mr. Osborn:

We have reviewed the Phase I Archaeology Survey Report by James Eberwine of TRC, received on December 17, 2021, for the above referenced undertaking pursuant to our responsibilities under Section 106 of the National Historic Preservation Act and 36 CFR Part 800. We have also reviewed the Addendum Phase I Cultural Resources Survey Report by Doug Shave of Burns McDonnell, also received on December 17, 2021 pursuant to our responsibilities under the above authorities.

After review, MDAH Archaeology Section offers the following comments on the TRC Report:

- 1. Please provide photographs of the proposed "New Market" point. This is an exotic type not typically found in Mississippi, which would have bearing on the proposed interpretation of 22Lo885.
- 2. TRC should submit revisit site cards for sites 22Lo1068, 22Lo1069, 22Lo885, and 22Lo1080 in accordance with the *Standards for Archaeological Practice*.
- 3. MDAH concurs that the overall site determination should remain unknown pending further work. MDAH does NOT concur that the proposed project will have no effect to historic properties, given that historic resources are present. Additionally, MDAH asserts that site 22Lo1068 should be assessed as a cultural landscape or historic district. However, given that the project will not impact the majority of the total area for sites 22Lo1068, 22Lo1069, and 22Lo1080, MDAH finds that the proposed project will have no adverse effect to historic properties as long as the project remains within the proposed footprint included in the report.

After review, MDAH Architectural History Section offers the following comments on the TRC report:

1) On page 9, the document entitled Phase I Cultural Resources Survey Proposed Golden Triangle I Solar Farm Project Lowndes County, MS November 2021 says under header 2.2 "Architectural

Field Methods. A built resources survey was not part of this investigation. Thus, no architectural field methods." Does this indicate that TVA has not surveyed all the above-ground resources? This section of the report should be clarified.

After review, MDAH Archaeology Section has the following comments for the Burns McDonnell Addendum report:

- 1. It is interesting that out of 712 shovel tests, adjacent to roads and on known historic plantations, that not a single artifact, even clear glass, was recovered. Where are the identifiers of the excavated tests? See Standards for Archaeological Practice, 6.5. Phase I Field Documentation Standards: "The choice of methods for recording Phase I survey field data are to be based on a research design and enable independent interpretation and recordation. At a minimum, the following information shall be recorded: 1. Identifier; 2. Name of excavator; 3. Date; 4. Description of cultural material; 5. Soils; 6. Profile; and 7. UTM coordinates (for both positive and negative STPs)". MDAH requests information on STP locations, including soil profiles and depths of excavation so that we may review the methodology.
- 2. Per the above- mentioned Standards, the report should have presented a section on field methodology as a section of the report.
- 3. All projects should include the topographic map information (Township, Section, Range, and Quad Name) within the text introduction.
- 4. Given our current questions regarding shovel test methodology, MDAH does not concur with the determination of no effect to archaeological resources.

After review, MDAH Architectural History Section has the following comments for the Burns McDonnell Addendum report:

1) We concur that the Smith Oaks Plantation Commissary, as well as the Smith Oaks Cemetery, are eligible for listing on the National Register of Historic Places. The Commissary is eligible for listing under Criterion A and C, and the cemetery is eligible under Criterion D.

Additionally, MDAH has the following general comments:

- 1) It is unclear from these reports what architectural resources been previously surveyed and reviewed. Please resubmit the documentation and findings for architectural resources from all project phases in one succinct document (please exclude archeological resources) with one map, indicate what resources have been identified and surveyed and clearly mark their location.
- 2) In Phase I Cultural Resources Survey for the Golden Triangle 1 Solar Farm Project, Lowndes County, Mississippi MS Solar 5, LLCGolden Triangle I Solar Farm Project No. 121591 October 2021 REVISED FINAL DRAFT presented to MDAH, some of the resources seen in survey forms here appear eligible but it was unclear if these resources had previously been presented to MDAH.
 - a. **Resource 17**: A circa 1940 Hay Barn appears eligible for listing under criterion A and C for Agriculture and Architecture.

- b. **Resource 40**: The circa 1900 dwelling on the north side of Gilmer Wilburn Rd, approximately 0.20 mi east of intersection with Railroad St is potentially eligible for listing under Criterion C Architecture.
- c. **Resource 41:** includes a dairy barn and silos, which appear to be eligible for listing under Agriculture and Architecture.
- 3) The revised Burns McDonnell report has **not** been reviewed, as no site cards reflecting the changes of eligibility or MDAH comments on sites were submitted prior to submission of the revised report, as required in the *Standards for Archaeological Practice*. Revised cards should be submitted to Site File Registrar Patty Miller- Beech at pmbeech@mdah.ms.gov Following this step, please resubmit the revised draft to Section106@mdah.ms.gov
- 4) Please note that multiple reports on a single submission creates a high amount of confusion during review. If a report is revised, it should be submitted separately so that MDAH can accurately track the status of the project per our responsibilities under the National Historic Preservation Act and in accordance with the requirements of the Historic Preservation Fund.

Please provide a copy of this letter to Mr. Eberwine and Mr. Shaver. If you have questions or concerns, I can be reached at 601-579-6945.

Sincerely,

Cindy Carter-Davis

FOR: Katie Blount

State Historic Preservation Officer



400 West Summit Hill Drive, Knoxville, Tennessee 37902

February 15, 2022

Mr. Barry White
Director
Mississippi Department of Archives and History
Historic preservation Division
Post Office Box 571
Jackson, Mississippi 39205-0521

Dear Mr. White:

TENNESSEE VALLEY AUTHORITY (TVA), ORIGIS ENERGY SOLAR (GOLDEN TRIANGLE I) LOWNDES COUNTY, MISSISSIPPI (33.45111, -88.62775) (TVA TRACKING NUMBER – CID 79483) (MDAH LOG 05-135-20)

TVA would like to start by addressing your comments to our most recent December 2021 consultation letter. In our letter we provided your office:

- 1. Burns and McDonnel's revised Phase I report for the archaeological and architectural survey for the entire originally proposed APE;
- 2. an addendum report conducted by TRC for additional archaeological testing in portions of the previously surveyed APE; and,
- 3. an addendum report by Burns and McDonnel for an additional 150 acres that was originally proposed for Golden Triangle II.

TRC Addendum Report

1. MDAH states, please provide photographs of the proposed "New Market" point. This is an exotic type not typically found in Mississippi, which would have bearing on the proposed interpretation of 22Lo885.

A photograph of the project point is located on page 22, Plate 44

2. MDAH states, *TRC should submit revisit site cards for sites 22Lo1068, 22Lo1069, 22Lo885, and 22Lo1080 in accordance with the Standards for Archaeological Practice.*

TRC has recently updated the site cards based on Patty Miller-Beech's instructions.

3. MDAH states, MDAH concurs that the overall site determination should remain unknown pending further work. MDAH does NOT concur that the proposed project will have no effect to historic properties, given that historic resources are present. Additionally, MDAH asserts that site 22Lo1068 should be assessed as a cultural landscape or historic district. However, given that the project will not impact the majority of the total area for sites 22Lo1068, 22Lo1069, and

Mr. Barry White Page 2 February 15, 2022

22Lo1080, MDAH finds that the proposed project will have no adverse effect to historic properties as long as the project remains within the proposed footprint included in the report.

As we stated in our December 16, 2021 letter, we stated that it was TVA's findings that the proposed undertaking would have **no adverse effects** to sites 22Lo1068, 22Lo1069, and 22Lo1080. In addition, we addressed both indirect and direct effects of the proposed gen-tie and proposed transmission line right-of-way (ROW). TVA will ensure that the notice to proceed (NTP) will have language that no work is to be conducted outside the gen-tie and transmission line ROWs within the boundaries of 22Lo1068, 22Lo1069, and 22Lo1080. Further as currently planned, only the ROW within the boundary 22Lo1068 is under contract and no longer within the project area.

4. MDAH states, on page 9, the document entitled Phase I Cultural Resources Survey Proposed Golden Triangle I Solar Farm Project Lowndes County, MS November 2021 says under header 2.2 "Architectural Field Methods. A built resources survey was not part of this investigation. Thus, no architectural field methods." Does this indicate that TVA has not surveyed all the above-ground resources? This section of the report should be clarified.

TRC's addendum report is additional archaeological testing for portions of the original project footprint. An architectural survey had been previously conducted within the APE by Burns and McDonnell as part of the Phase I Cultural Resources Survey (Shaver et al. 2021) and TVA's effect findings and eligibility determinations were provided to your office in our February 2021 consultation letter. In order to allow for flexibility in design the entire project footprint and a 0.5-mile buffer was subject to an architectural survey (Figure 5 in Shaver et al. 2021). We provide more detail about our consultation on these resources below. TRC will provide additional language in the final report to clarify that the architectural resources have already been surveyed.

Burns and McDonnell's addendum report for the additional 150 acres

Regarding your questions to the survey for the additional 150 acres, per our December 16, 2021 consultation letter, due to avoidance measures for site 22LO1068, Origis proposed to add an additional 150 acres originally slated for the proposed second phase of Golden Triangle (Golden Triangle II) to this phase of construction to meet the needed generating capacity. The entire report including this parcel was recently provided to your office in a letter dated January 28, 2022. Although some of the information that you requested (e.g., township, range; scope of work) was provided in the addendum report, we do recognize that some of the detail may have been lost by splitting up the reports. We are working with Burns and McDonnell's to ensure that any additional information that you have requested is covered in the larger report. For this reason and in order to move the consultation forward, TVA has spoken to Origis and we agreed to remove the 150 acres from consideration for this undertaking. TVA will not provide Origis a notice to proceed for this 150-acre parcel until completion of consultation for Golden Triangle II.

Mr. Barry White Page 3 February 15, 2022

Site Cards

MDAH states, the revised Burns McDonnell report has not been reviewed, as no site cards reflecting the changes of eligibility or MDAH comments on sites were submitted prior to submission of the revised report, as required in the Standards for Archaeological Practice. Revised cards should be submitted to Site File Registrar Patty Miller- Beech at pmbeech@mdah.ms.gov Following this step, please resubmit the revised draft to Section106@mdah.ms.gov

Please see our attached timeline regarding site cards. TVA has supplied MDAH with sufficient information for the site cards associated with the Burns and McDonnell phase I report. After TVA expressed concerns regarding MDAH's request for the contractor to change their National Register eligibility (NRHP) recommendations prior to TVA reviewing the report or making eligibility determinations in consultation, TVA and MDAH agreed to not include the NRHP eligibility status until conclusion of the Section 106 consultation process. We will ensure that this is done following completion of the Section 106 consultation.

Architectural Resources

MDAH states,

1) It is unclear from these reports what architectural resources been previously surveyed and reviewed. Please resubmit the documentation and findings for architectural resources from all project phases in one succinct document (please exclude archeological resources) with one map, indicate what resources have been identified and surveyed and clearly mark their location.
2) In Phase I Cultural Resources Survey for the Golden Triangle 1 Solar Farm Project, Lowndes County, Mississippi MS Solar 5, LLC Golden Triangle I Solar Farm Project No. 121591 October 2021 REVISED FINAL DRAFT presented to MDAH, some of the resources seen in survey forms here appear eligible but it was unclear if these resources had previously been presented to MDAH

The only new architectural resources that have not been previously provided to your office for review are associated with the addendum report. As we have stated above, we are removing this addendum report from consideration for the Golden Triangle I project and will be consulted on as part of the Golden Triangle II undertaking that we recently supplied your office the consultation letter in January, 2021. In regards to the remaining project, the entire visual APE for the undertaking was consulted on in our February 2021. The response to this original consultation letter expressed concerns about the archaeological resources. There was no mention regarding disagreement on TVA's findings and determinations regarding architectural resources within the APE. We again sent a letter in April 2021 addressing MDAH's comments and again received no comments regarding architectural resources. On August 13, 2021 in an email to MDAH, TVA stated "We have not received any comments regarding the architectural survey provided in our February 1, 2021 consultation letter. We are proceeding with the expectation that there were no comments on this portion of determinations of eligibility".

Mr. Barry White Page 4 February 15, 2022

On August 16, 2021, we received a response from MDAH that stated "Regarding the architectural survey, Eric had no concerns and concurred with no resources affected". The three resources listed by MDAH were provided in the original and have remain unchanged. TVA provided two comment matrices in our letters on in our February 1, 2021 letter and again in our most recent letter that described any updates to the original report. All the updates were done to address MDAH's comments and requests. None of these updates were associated with architectural resources. Thus, these questions have been addressed previously in our consultation with your office.

Findings of effects

With the removal of the additional 150 acres from the proposed undertaking, MDAH's concurrence on the "no adverse effect" finding with the conditions that the undertaking would not extend outside the ROW of 22Lo1068, 22Lo1069, and 22Lo1080, TVA maintains that the proposed undertaking would have no adverse effects to historic properties. TVA will require Origis to construct a temporary barrier along both ROWs in order to ensure that no inadvertent damage would occur to the sites. TVA has afforded the Mississippi State Historic Preservation Office a reasonable opportunity to comment and have taken your comments and the comments of other consulting parties into account when redesigning the undertaking. By this letter, TVA is notifying your office with our intent to proceed with the undertaking by executing the Power Purchase Agreement and providing Origis a Notice to Proceed.

Please contact Michaelyn Harle by email, mharle@tva.gov, with any comments.

Sincerely,

James W. Osborne, Jr.

Jan W. Os., A.

Manager

Cultural Compliance

MSH:ABM Enclosures

Reference Cited

Shaver, Douglas, Brandy Harris, Kim House, and Jess Kepka

2021 Phase I Cultural Resources Survey for the Proposed Golden Triangle Solar Farm Project, Lowndes County, Mississippi. Prepared by Burns and McDonnell Engineering Company, Inc., Kansas City, Missouri, for Origis Energy

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