**APPENDIX A – TVA'S SITE CLEARING AND GRADING SPECIFICATIONS** 

## Tennessee Valley Authority Site Clearing and Grading Specifications

1. <u>General</u> - 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. <u>Regulations</u> 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 <u>contractor and subcontractors will be</u> responsible for meeting all conditions <u>specified in permits</u>. 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. <u>Wetlands</u> 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. <u>Sensitive Area Preservation</u> 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. <u>Water Quality Control</u> 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. <u>Turbidity and Blocking of Streams</u> - 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 guidance 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. <u>Vehicle Exhaust Emissions</u> 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 <<u>https://www.tva.com/Energy/Transmission-System/Transmission-System-Projects</u>> (n.d.).

Revision July 2017

APPENDIX B - FARMLAND CONVERSION IMPACT RATING FORM (AD-1006)

F.	U.S. Departme	5		TING			
PART I (To be completed by Federal Agen	cy)	Date O	f Land Evaluation	Request			
Name of Project		Federal Agency Involved					
Proposed Land Use		County and State					
PART II (To be completed by NRCS)	PART II (To be completed by NRCS) Date F NRCS		equest Received	Ву	Person C	ompleting For	m:
Does the site contain Prime, Unique, Statewide or Local Important Farmland? (If no, the FPPA does not apply - do not complete additional parts of this form)		?	YES NO	Acres	Irrigated	Average	Farm Size
Major Crop(s)	Farmable Land In Govt.	Jurisdictio	on	Amount of Acres:	Farmland As %	Defined in FP	PPA
Name of Land Evaluation System Used	Name of State or Local S	Site Asse	ssment System	Date Land	Evaluation R	eturned by NF	RCS
PART III (To be completed by Federal Age	ncy)			Alternative Site Rating           Site A         Site B         Site C         Site D			
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) Lan	d Evaluation Information						
A. Total Acres Prime And Unique Farmland							
B. Total Acres Statewide Important or Local	Important Farmland						
C. Percentage Of Farmland in County Or Lo	ocal Govt. Unit To Be Converted						
D. Percentage Of Farmland in Govt. Jurisdi	ction With Same Or Higher Relati	ive Value	•				
<b>PART V</b> (To be completed by NRCS) Land Relative Value of Farmland To Be Co		s)					
<b>PART VI</b> ( <i>To be completed by Federal Agency</i> ) Site Assessment Criteria ( <i>Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106</i> )		(15) Maximum	Site A	Site B	Site C	Site D	
1. Area In Non-urban Use			(10)				
2. Perimeter In Non-urban Use			(10)				
3. Percent Of Site Being Farmed	0		(20)				
4. Protection Provided By State and Local	Government		(15)				
5. Distance From Urban Built-up Area			(15)				
6. Distance To Urban Support Services	Average		(10)				
<ol> <li>7. Size Of Present Farm Unit Compared To</li> <li>8. Creation Of Non-farmable Farmland</li> </ol>	Average		(10)				
9. Availability Of Farm Support Services			(5)				
10. On-Farm Investments			(20)				
11. Effects Of Conversion On Farm Suppor	t Sonvicos		(10)				
12. Compatibility With Existing Agricultural			(10)				
TOTAL SITE ASSESSMENT POINTS	536		160				
PART VII (To be completed by Federal A	aency						
Relative Value Of Farmland (From Part V)	igency		100				
Total Site Assessment (From Part VI above	or local site assessment)		160				
TOTAL POINTS (Total of above 2 lines)	· · · · · · · · · · · · · · · · · · ·		260				
Site Selected:	Date Of Selection				al Site Asses	sment Used?	1
Reason For Selection:				I			

#### 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, <a href="http://fppa.nrcs.usda.gov/lesa/">http://fppa.nrcs.usda.gov/lesa/</a>.
- 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 <a href="http://offices.usda.gov/scripts/ndISAPI.dll/oip">http://offices.usda.gov/scripts/ndISAPI.dll/oip</a> 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 weighed 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:

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

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.

APPENDIX C – GOLDEN TRIANGLE WETLAND AND WATERBODY DELINEATION REPORT



## 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.

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## LIST OF ABBREVIATIONS

<u>Abbreviation</u>	Term/Phrase/Name
1987 Manual	1987 Corps of Engineers Wetlands Delineation Manual
° F	Degrees Fahrenheit
Burns & McDonnell	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	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

#### 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.

1-1

## 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-pyeweed (*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
2016 - total	49.83	55.22
2017 - total	58.05	55.22
2018 - total	68.19	55.22
2019 - total	88.88	55.22
January 2020	10.52	5.40
February 2020	14.96	5.70
March 2020	6.80	4.85
April 2020	11.6	4.94
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.

Waterbody ID	Waterbody Type	Length of Stream (feet) in Survey Area	Latitude (N°)	Longitude (W°)	Jurisdicational <sup>a</sup>
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

Table 3-2: Waterbodies within the Survey Area

Waterbody ID	Waterbody Type	Length of Stream (feet) in Survey Area	Latitude (N°)	Longitude (W°)	Jurisdicational <sup>a</sup>
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

Waterbody ID	Waterbody Type	Length of Stream (feet) in Survey Area	Latitude (N°)	Longitude (W°)	Jurisdicational <sup>a</sup>
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

Waterbody ID	Waterbody Type	Length of Stream (feet) in Survey Area	Latitude (N°)	Longitude (W°)	Jurisdicational <sup>a</sup>
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 <sup>a</sup>
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 <sup>a</sup>
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.

Waterbody #	Waterbody Type	Area of Wetland (acre) in Survey Area	Latitude (N°)	Longitude (W°)	Jurisdicational <sup>a</sup>
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

Table 3-3: Wetlands Identified in the Survey Area

Waterbody #	Waterbody Type	Area of Wetland (acre) in Survey Area	Latitude (N°)	Longitude (W°)	Jurisdicational <sup>a</sup>
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

#### 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,

ferre le. Brown

Jesse A Brown Senior Environmental Scientist Burns and McDonnell

#### 4.0 REFERENCES

- Headwaters, Inc., 2016. Wetland Delineation and Determination for the GTRA Mega Site. Prepared for Calvert-Spradling Engineers, Inc. January 2016.
- Mississippi State University (MSU). 2020. Delta Agriculture Weather Center. Weather Station: "MSU North Farm Starkv." ID: DREC-2021. Located at 33.47299, -88.77677. Precipitation data retrieved from weather station via the internet at <u>http://deltaweather.extension.msstate.edu/msunorth-farm-starkv</u>.
- U.S. Climate Data. 2020. Climate Starkville Mississippi. Historic rainfall data retrieved from website in May/June 2020. Rainfall totals for 2015, 2016, 2017, 2018, and 2019. Accessed data at https://www.usclimatedata.com/climate/starkville/mississippi/united-states/usms0761.
- U.S. Army Corps of Engineers. 1987. 1987 Corps of Engineers Wetland Delineation Manual (1987 Manual).
- U.S. Army Corps of Engineers. 2010. Regional Supplement to the Army Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coast Plain Region – Version 2.0 (Regional Supplement).
- Vrbin, Tess. 2020. <u>The Dispatch</u>. *Starkville collects rainfall data in light of last year's rain events*. February 11, 2020. Columbus and Starkville, Mississippi. Obtained via the internet at https://www.cdispatch.com/news/article.asp?aid=79270.

4-18

**APPENDIX A - FIGURES** 

**APPENDIX B - REPRESENTATIVE PHOTOGRAPHS** 

APPENDIX C - RAINFALL DATA (STARKVILLE, MS)

APPENDIX D - REPRESENTATIVE WETLAND DETERMINATION DATA FORMS

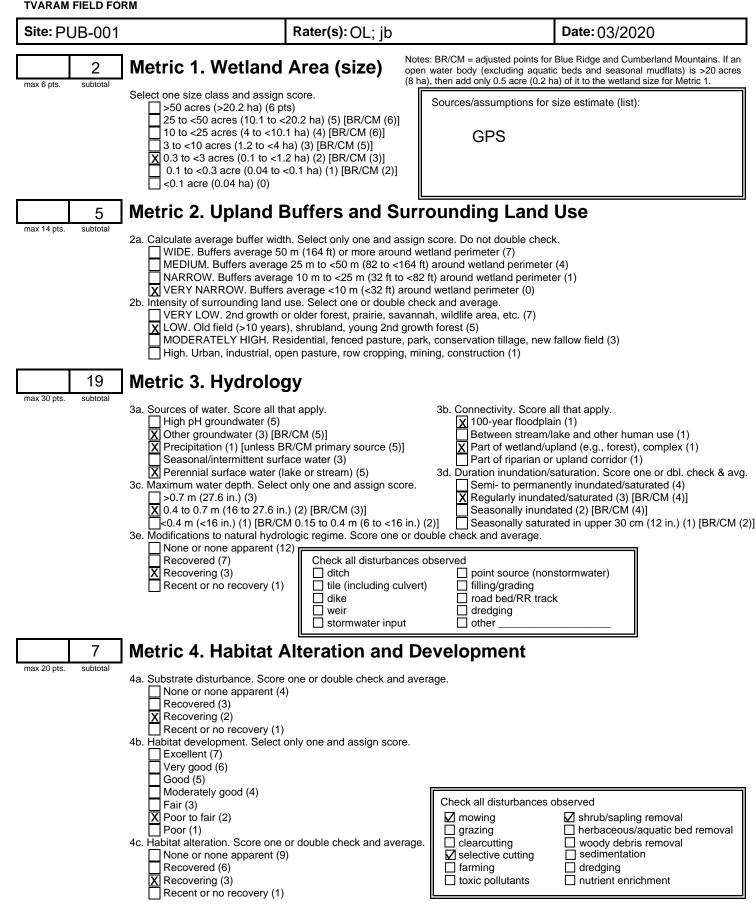




# CREATE AMAZING.



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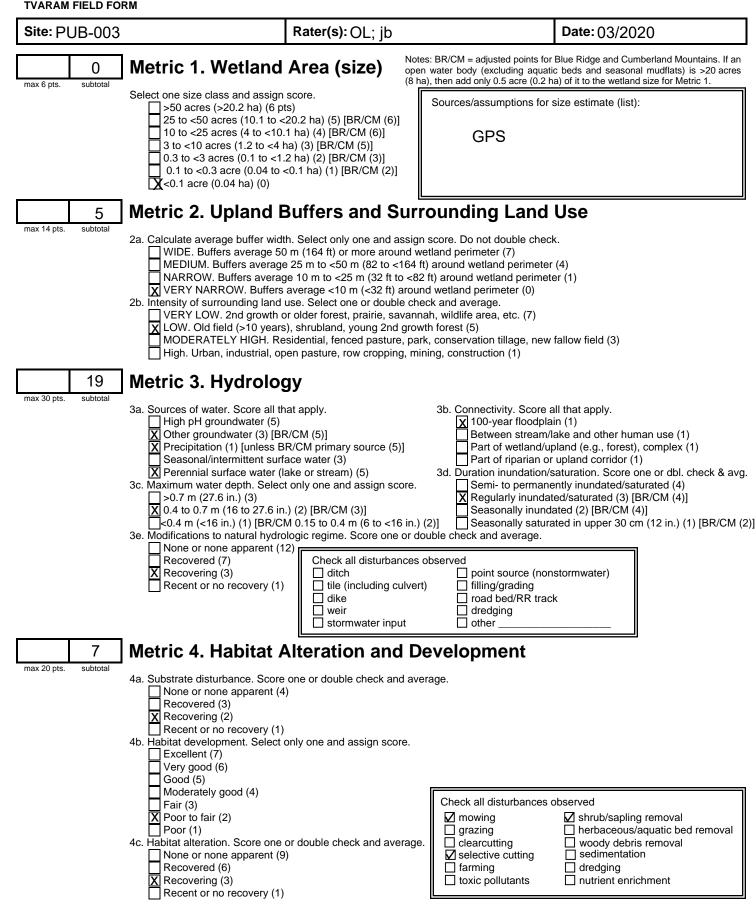
Site: PUB-001	Rater(s	s): OH:jb	Date: 03/2	2020
33 subtotal previous page				
	Metric 5. Special Wetlar	nds		
max 10 pts. subtotal	*If the documented raw score for Metric 5 is	30 points or higher, the site is au	tomatically considered a Ca	tegory 3 wetland.
raw score*	Select all that apply. Where multiple values documentation for each selection (photos, c Bog, fen, wet prairie (10); acidophilic veg., Assoc. forest (wetl. &/or adj. upland) incl. Sensitive geologic feature such as spring/ Vernal pool (5); isolated, perched, or slope Island wetland >0.1 acre (0.04 ha) in rese Braided channel or floodplain/terrace dep Gross morph. adapt. in >5 trees >10 in. (2 Ecological community with global rank (Na Known occurrence state/federal threatene [*use higher rank where mixed rank or q Superior/enhanced habitat/use: migratory Cat. 1 (very low quality) : <1 acre (0.4 ha)	thecklists, maps, resource speciali , mossy substrate >10 sq.m, sphagnun >0.25 acre (0.1 ha); old growth (10); m seep, sink, losing/underground stream e wetland (4); headwater wetland [1st c rvoir, river, or perennial water >6 ft (2 r ressions (floodplain pool, slough, oxboi 25 cm) dbh: buttress, multitrunk/stool, s atureServe): G1*(10), G2*(5), G3*(3) [* ad/endangered species (10); other rare ualifier] [exclude records which are only songbird/waterfowl (5); in-reservoir bu	ist concurrence, data source n or other moss (5); muck, orga lature >18 in. (45 cm) dbh (5) [e , cave, waterfall, rock outcrop/c order perennial or above] (3) m) deep (5) w, meander scar, etc.) (3) tilted, shallow roots/tip-up, or pr use higher rank where mixed ra species with global rank G1*(1) y "historic"] ttonbush (4); other fish/wildlife r	es, references, etc). nic soil layer (3) xclude pine plantation] liff (5) neumatophores (3) nk or qualifier] D), G2*(5), G3*(3) nanagement/designation (3)
1	Metric 6. Plant Commur	nities, Interspersio	on, Microtopogi	raphy
nax 20 pts. subtotal	6a. Wetland vegetation communities. Score all present using 0 to 3 scale. Aquatic bed Emergent Shrub Forest Mudflats X Open water <20 acres (8 ha) Moss/lichen. Other	2 = Present and either com	5 acre) contiguous acre <u>0.1 acre)]</u> prises a small part of wetlar <u>mprises a significant part bu</u> prises a significant part of v pr comprises a small part ar	<u>it is of low quality</u> vetland's vegetation and id is of high quality
	6b. Horizontal (plan view) interspersion. Select only one. ☐ High (5)	Narrative Description of Ve low = Low species diversity native species		ve or disturbance tolera
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] X None (0)	mod = Native species are do nonnative &/or disturb and species diversity w/o presence of rare, high = A predominance of na	bance tolerant native specie moderate to moderately hig threatened or endangered	s can also be present, gh, but generally species sp &/or disturbance
	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) X Nearly absent <5% cover (0) Absent (1)	Mudflat and Open Water C           0 =         Absent <0.1 ha (0.25 ar	cres) [For BR/CM <0.04 ha to 2.5 acres) [BR/CM 0.04 t .5 to 9.9 acres) [BR/CM 0.2	( <u>0.1 acre)]</u> o <0.2 ha to <02 ha ( <u>0.5 to 5 acre</u>
	6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in.) Standing dead >25 cm (10 in.) dbh	Hypothetical Wetland for E	Estimating Degree of Inters	spersion
	Amphibian breeding pools	None Low	Low Moderate	Moderate High

(max 100 pts)

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

0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



Site: PUB-003	Rater(s	s): OH:jb	Date: 03/2020
31 subtotal previous page			
	Aetric 5. Special Wetla	nds	
nax 10 pts. subtotal *	f the documented raw score for Metric 5 is	30 points or higher, the site is au	utomatically considered a Category 3 wetland.
	Bog, fen, wet prairie (10); acidophilic veg. Assoc. forest (wetl. &/or adj. upland) incl. Sensitive geologic feature such as spring. Vernal pool (5); isolated, perched, or slop Island wetland >0.1 acre (0.04 ha) in rese Braided channel or floodplain/terrace dep Gross morph. adapt. in >5 trees >10 in. (2 Ecological community with global rank (N: Known occurrence state/federal threatene [*use higher rank where mixed rank or q Superior/enhanced habitat/use: migratory	checklists, maps, resource special , mossy substrate >10 sq.m, sphagnu >0.25 acre (0.1 ha); old growth (10); r /seep, sink, losing/underground strear e wetland (4); headwater wetland [1st rvoir, river, or perennial water >6 ft (2 ressions (floodplain pool, slough, oxbo 25 cm) dbh: buttress, multitrunk/stool, atureServe): G1*(10), G2*(5), G3*(3) ad/endangered species (10); other ran- ualifier] [exclude records which are or songbird/waterfowl (5); in-reservoir b	alist concurrence, data sources, references, etc). um or other moss (5); muck, organic soil layer (3) mature >18 in. (45 cm) dbh (5) [exclude pine plantation] m, cave, waterfall, rock outcrop/cliff (5) 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)
	Metric 6. Plant Commu	nities, Interspersio	on, Microtopography
	a. Wetland vegetation communities. core all present using 0 to 3 scale. Aquatic bed Emergent Shrub Forest Mudflats X Open water <20 acres (8 ha)	2 = Present and either cor is of moderate quality,	25 acre) contiguous acre
61	Moss/lichen. Other	and is of high quality	
	elect only one. High (5)	low = Low species diversit native species	ty &/or dominance of nonnative or disturbance tolera
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] X None (0)	nonnative &/or distu and species diversity w/o presence of rare high = A predominance of r tolerant native sp ab	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 osent or virtually absent, and high sp diversity and off presence of rate, threatened, or endangered species
	c. Coverage of invasive plants. dd or deduct points for coverage. Extensive >75% cover (-5) Moderate 25-75% cover (-3) Sparse 5-25% cover (-1) X Nearly absent <5% cover (0) Absent (1)	Mudflat and Open Water (           0 =         Absent <0.1 ha (0.25 at the first of the fi	- · ·
	6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in.) Standing dead >25 cm (10 in.) dbh	Hypothetical Wetland for	Estimating Degree of Interspersion
	Amphibian breeding pools	None Low	Low Moderate High
			amounts or if more common of marginal quality amounts, but not of highest quality or in small

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

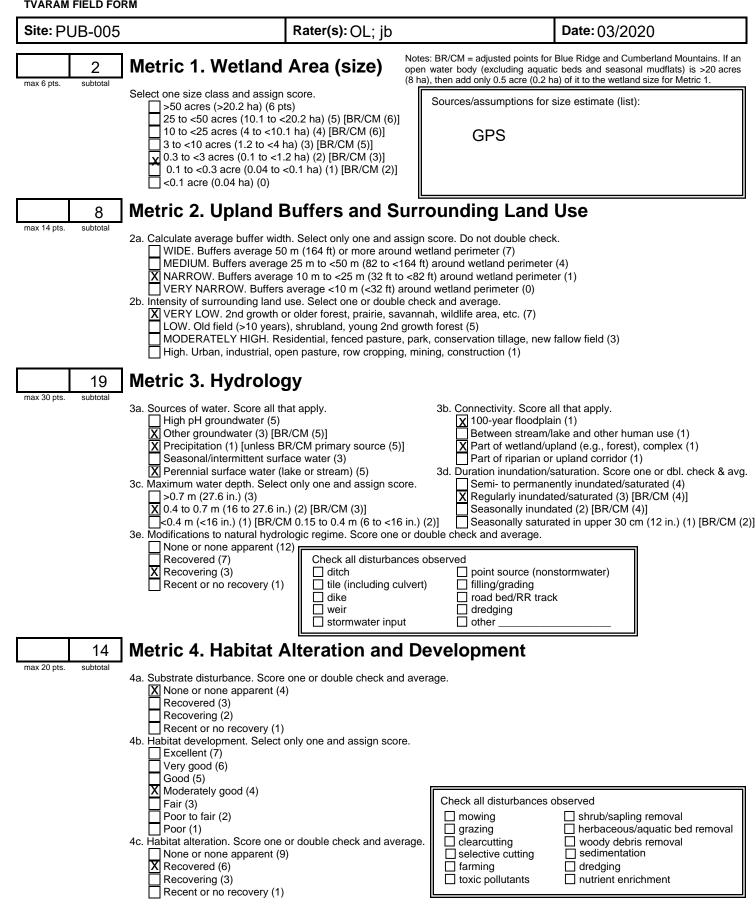
0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

**GRAND TOTAL** 

(max 100 pts)

Last Edited 2010



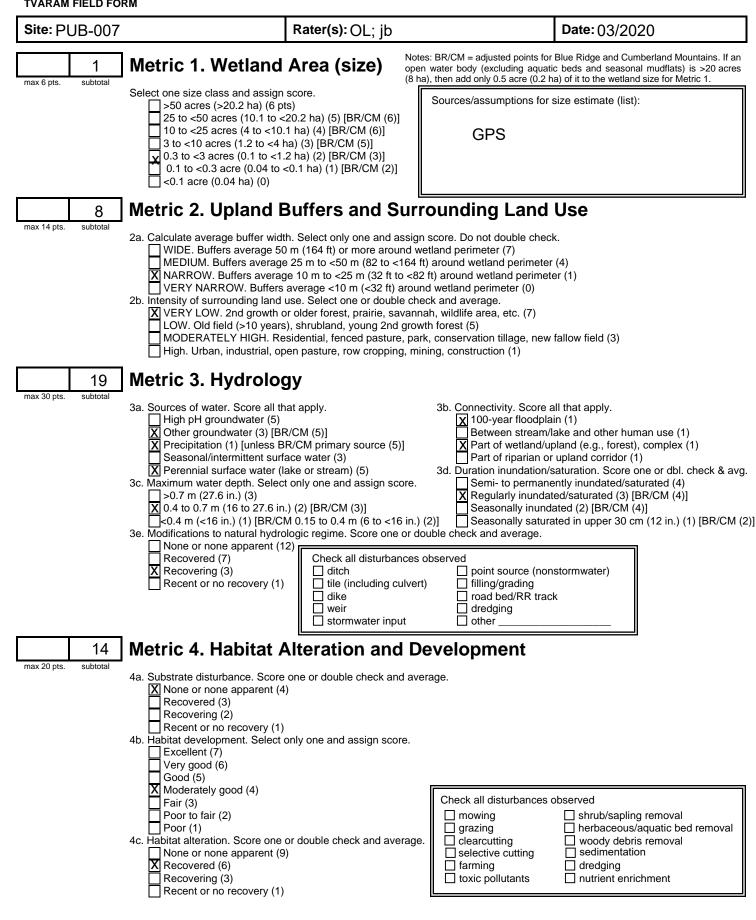
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Site: PUB-005	Rater(s	): OH:jb	Date: 03/2	020
13 subtotal previous page				
	Metric 5. Special Wetlan	nds		
nax 10 pts. subtotal	*If the documented raw score for Metric 5 is	30 points or higher, the site is aut	omatically considered a Cate	egory 3 wetland.
aw score*	Select all that apply. Where multiple values a documentation for each selection (photos, cf Bog, fen, wet prairie (10); acidophilic veg., Assoc. forest (wetl. &/or adj. upland) incl. > Sensitive geologic feature such as spring/s Vernal pool (5); isolated, perched, or slope Island wetland >0.1 acre (0.04 ha) in reser Braided channel or floodplain/terrace depre Gross morph. adapt. in >5 trees >10 in. (25 Ecological community with global rank (Na Known occurrence state/federal threatened [*use higher rank where mixed rank or qu Superior/enhanced habitat/use: migratory s Cat. 1 (very low quality) : <1 acre (0.4 ha)	apply in row, score row as single f necklists, maps, resource speciali mossy substrate >10 sq.m, sphagnum 0.25 acre (0.1 ha); old growth (10); m seep, sink, losing/underground stream, wetland (4); headwater wetland [1st cr voir, river, or perennial water >6 ft (2 m essions (floodplain pool, slough, oxbox 5 cm) dbh: buttress, multitrunk/stool, s tureServe): G1*(10), G2*(5), G3*(3) [* d/endangered species (10); other rare alifier] [exclude records which are only songbird/waterfowl (5); in-reservoir but	feature with highest point val ist concurrence, data sources n or other moss (5); muck, organ ature >18 in. (45 cm) dbh (5) [ex , cave, waterfall, rock outcrop/clif order perennial or above] (3) n) deep (5) w, meander scar, etc.) (3) tilted, shallow roots/tip-up, or pre- use higher rank where mixed rar species with global rank G1*(10) y "historic"] ttonbush (4); other fish/wildlife m	ue. Provide s, references, etc). ic soil layer (3) clude pine plantation] f (5) eumatophores (3) nk or qualifier] ), G2*(5), G3*(3) anagement/designation (3)
1	Metric 6. Plant Commun			
nax 20 pts. subtotal	6a. Wetland vegetation communities. Score all present using 0 to 3 scale. Aquatic bed Emergent Shrub Forest Mudflats X Open water <20 acres (8 ha) Moss/lichen. Other	2 = Present and either com	i acre) contiguous acre <u>0.1 acre)]</u> prises a small part of wetland <u>mprises a significant part but</u> prises a significant part of we prises a significant part and	is of low quality etland's vegetation and d is of high quality
	6b. Horizontal (plan view) interspersion.	Narrative Description of Ve		
	Select only one.	low = Low species diversity native species		
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)]	and species diversity	pminant component of the ve pance tolerant native species moderate to moderately high threatened or endangered s	a can also be present, n, but generally
	$\mathbf{X}$ None (0)	high = A predominance of na tolerant native sp abs		sp &/or disturbance igh sp diversity and of
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Water C		2.4 1
	Extensive >75% cover (-5) Moderate 25-75% cover (-3) Sparse 5-25% cover (-1)	$\frac{0}{0} = \frac{\text{Absent} < 0.1 \text{ ha} (0.25 \text{ ac})}{1 = \text{Low } 0.1 \text{ to } < 1 \text{ ha} (0.25 \text{ c})}$		
	X Nearly absent <5% cover (0) Absent (1)	$\frac{(0.1 \text{ to } 0.5 \text{ acre})]}{2 = \text{Moderate 1 to <4 ha (2.}}$ 3 = High 4 ha (9.9 acres) or		
	6d. Microtopography. Score all present using 0 to 3 scale.	Hypothetical Wetland for E	stimating Degree of Inters	persion
	Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in.) Standing dead >25 cm (10 in.) dbh Amphibian breeding pools			
		None Low Microtopography Cover So	Low Moderate	Moderate High
		0 = Absent 1 = Present in very small ar	mounts or if more common o	
		2 = Present in moderate an amounts of highest qua		ality or in small

(max 100 pts)

- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

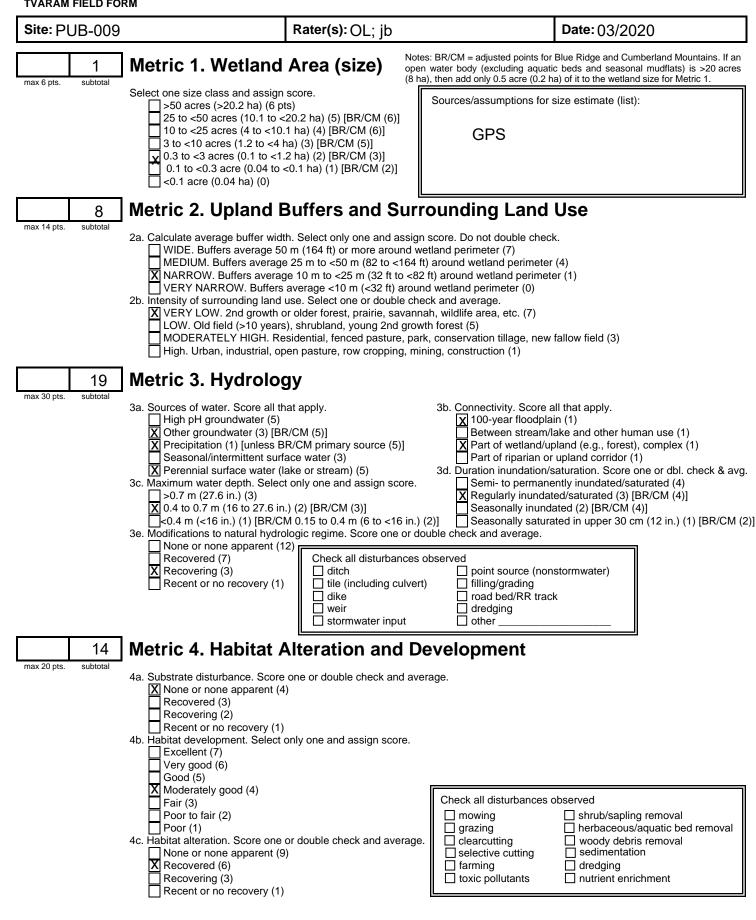


Site: PUB-007	Rate	er(s): OH:jb		Date: 03/2020	
42 subtotal previous page					
max 10 pts. subtotal	Metric 5. Special Wet	lands			
max 10 pts. subtotal	*If the documented raw score for Metric	5 is 30 points or higher, the site is	automatically co	nsidered a Category 3 wet	land.
raw score*	Assoc. forest (wetl. &/or adj. upland) Sensitive geologic feature such as sp Vernal pool (5); isolated, perched, or Island wetland >0.1 acre (0.04 ha) in Braided channel or floodplain/terrace Gross morph. adapt. in >5 trees >10 Ecological community with global ran Known occurrence state/federal threa [*use higher rank where mixed rank Superior/enhanced habitat/use: migra		cialist concurrenc gnum or other moss ); mature >18 in. (4 eam, cave, waterfall 1st order perennial (2 m) deep (5) xbow, meander sca ol, stilted, shallow ro 3) [*use higher rank rare species with gle only "historic"] r buttonbush (4); otl	ee, data sources, reference (5); muck, organic soil layer ( 5 cm) dbh (5) [exclude pine pl I, rock outcrop/cliff (5) or above] (3) ar, etc.) (3) oots/tip-up, or pneumatophore where mixed rank or qualifier obal rank G1*(10), G2*(5), G3 her fish/wildlife management/c	es, etc). 3) antation] s (3) ] *(3) lesignation (3
max 20 pts. subtotal	Metric 6. Plant Comm	nunities, Interspers	ion, Micr	otopography	
	6a. Wetland vegetation communities. Score all present using 0 to 3 scale. Aquatic bed Emergent Shrub Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	2 = Present and either c is of moderate quality.	0.25 acre) contigu aa (0.1 acre)] comprises a smal comprises a sign comprises a significant p ses a significant p	Lous acre I part of wetland's vegetati <u>nificant part but is of low qu</u> ficant part of wetland's veg <u>a small part and is of high</u> part or more of wetland's v	uality jetation and quality
	6b. Horizontal (plan view) interspersion.				
	Select only one. High (5) Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] None (0)	native species mod = Native species are nonnative &/or dis and species divers w/o presence of ra high = A predominance of tolerant native sp	e dominant comp sturbance tolerant sity moderate to r are, threatened o of native species absent or virtuall	onent of the vegetation, all t native species can also b moderately high, but gener <u>r endangered species</u> with nonnative sp &/or dist y absent, and high sp dive o throatened or ordenado	though e present, rally urbance rsity and oft
	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 Wate           0 =         Absent <0.1 ha (0.2	r Class Quality 5 acres) [For BR/ 25 to 2.5 acres) [ a (2.5 to 9.9 acres	[BR/CM 0.04 to <0.2 ha s) [BR/CM 0.2 to <02 ha (0	
	6d. Microtopography. Score all present using 0 to 3 scale. ☐ Vegetated hummocks/tussocks ☐ Coarse woody debris >15 cm (6 ☐ Standing dead >25 cm (10 in.) d		or Estimating De	egree of Interspersion	6
	Amphibian breeding pools				

(max 100 pts)

- amounts of highest quality 3 = Present in moderate or greater amounts and of highest quality
- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



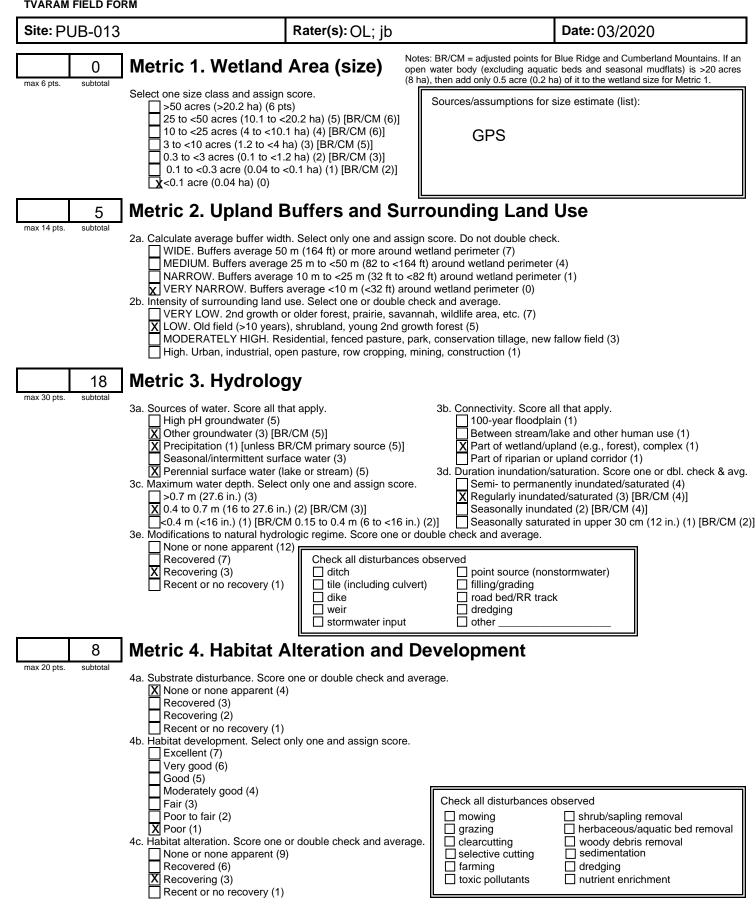
	9 Rater(s	s): OH:jb	Date: 03/2020
42			
	Metric 5. Special Wetlar	nds	
nax 10 pts. subtotal	*If the documented raw score for Metric 5 is	30 points or higher, the site is a	automatically considered a Category 3 wetland.
raw score*	Bog, fen, wet prairie (10); acidophilic veg. Assoc. forest (wetl. &/or adj. upland) incl. Sensitive geologic feature such as spring/ Vernal pool (5); isolated, perched, or slop Island wetland >0.1 acre (0.04 ha) in rese Braided channel or floodplain/terrace dep Gross morph. adapt. in >5 trees >10 in. (2 Ecological community with global rank (Na Known occurrence state/federal threatence [*use higher rank where mixed rank or q	checklists, maps, resource speci , mossy substrate >10 sq.m, sphagn >0.25 acre (0.1 ha); old growth (10); /seep, sink, losing/underground strea e wetland (4); headwater wetland [15 ervoir, river, or perennial water >6 ft ( ressions (floodplain pool, slough, oxl 25 cm) dbh: buttress, multitrunk/stool atureServe): G1*(10), G2*(5), G3*(3) ed/endangered species (10); other ra ualifier] [exclude records which are c y songbird/waterfowl (5); in-reservoir	ialist concurrence, data sources, references, etc). num 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)
nax 20 pts. subtotal	Metric 6. Plant Commu	nities, Interspersi	ion, Microtopography
	6a. Wetland vegetation communities. Score all present using 0 to 3 scale. Aquatic bed Emergent Shrub Forest Mudflats X Open water <20 acres (8 ha) Moss/lichen. Other	2 = Present and either cc is of moderate quality	25 acre) contiguous acre
	6b. Horizontal (plan view) interspersion.	Narrative Description of	
	Select only one. High (5) Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] X None (0)	native species mod = Native species are nonnative &/or distr and species diversi <u>w/o presence of ran</u> high = A predominance of tolerant native sp a	ity &/or dominance of nonnative or disturbance tolera dominant component of the vegetation, although urbance tolerant native species can also be present, ity moderate to moderately high, but generally re, threatened or endangered species native species with nonnative sp &/or disturbance bsent or virtually absent, and high sp diversity and off 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) X Nearly absent <5% cover (0) Absent (1)	Mudflat and Open Water           0 =         Absent <0.1 ha (0.25)	• • • • • • • • •
	6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in.) Standing dead >25 cm (10 in.) dbh Amphibian breeding pools	Hypothetical Wetland for	r Estimating Degree of Interspersion
		None Low	Low Moderate Moderate High

(max 100 pts)

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

  - 0- 29 = Category 1, low wetland function, condition, quality\*\*
    30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
    60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

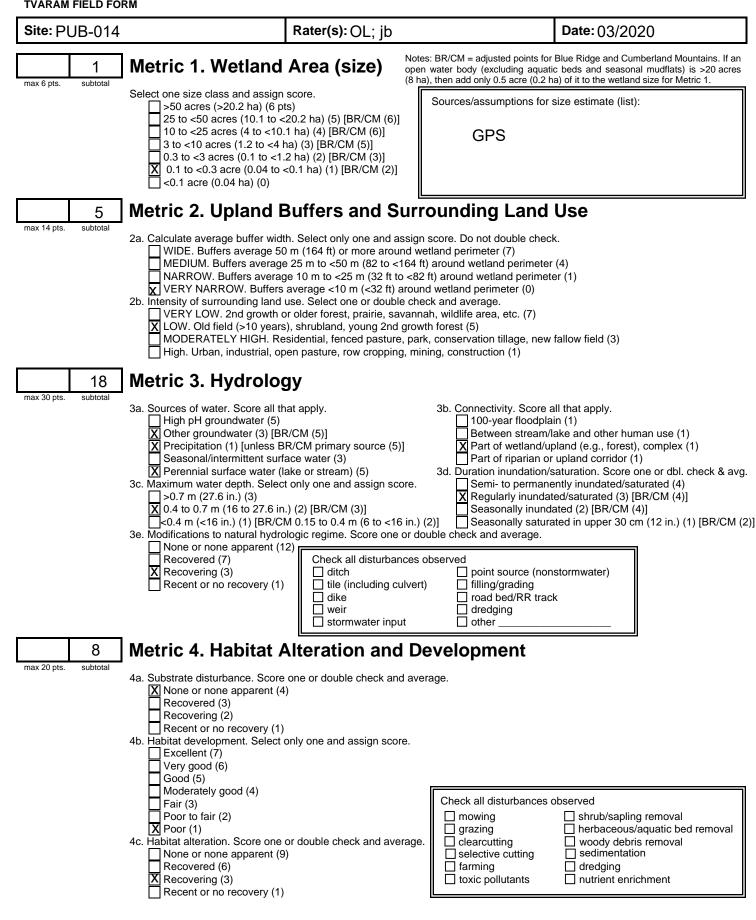


Site: PUB-013	Rater(s)	OH:jb		Date: 03/2	020	
31 subtotal previous page						
Metric	5. Special Wetlan	ds				
max 10 pts. subtotal *If the docu	mented raw score for Metric 5 is 3	30 points or higher, the site i	s automatically c	onsidered a Cate	egory 3 wetla	nd.
documenta Bog, Asso Sens Vern Islan Braic Gros Ecolo Knov [*us	at apply. Where multiple values a tion for each selection (photos, ch fen, wet prairie (10); acidophilic veg., r c. forest (wetl. &/or adj. upland) incl. > itive geologic feature such as spring/s al pool (5); isolated, perched, or slope d wetland >0.1 acre (0.04 ha) in reserv led channel or floodplain/terrace depre s morph. adapt. in >5 trees >10 in. (25 opgical community with global rank (Nat wn occurrence state/federal threatened e higher rank where mixed rank or qua rior/enhanced habitat/use: migratory s 1 (very low quality) : <1 acre (0.4 ha) /	ecklists, maps, resource sp mossy substrate >10 sq.m, spha 0.25 acre (0.1 ha); old growth (1 eep, sink, losing/underground si wetland (4); headwater wetland voir, river, or perennial water >6 sissions (floodplain pool, slough, cm) dbh: buttress, multitrunk/st ureServe): G1*(10), G2*(5), G3 /endangered species (10); othe alifier] [exclude records which an ongbird/waterfowl (5); in-reserv	ecialist concurrer agnum or other mos 0); mature >18 in. ( ream, cave, waterfa [1st order perennia ft (2 m) deep (5) oxbow, meander so ool, stilted, shallow '(3) [*use higher rar r rare species with g e only "historic"] bir buttonbush (4); c	nce, data sources ss (5); muck, organ (45 cm) dbh (5) [ex all, rock outcrop/clif al or above] (3) car, etc.) (3) roots/tip-up, or pne hk where mixed rar global rank G1*(10) other fish/wildlife m	s, references, ic soil layer (3) iclude pine plan ff (5) eumatophores ( nk or qualifier] ), G2*(5), G3*(3 ianagement/des	tation] (3) 3) signation (3)
1 Metric	6. Plant Commun	ities, Intersper	sion, Mic	rotopogr	aphy	
Score all pr Aqu Eme Shru Fore Mud	est	Vegetation Communit         0 =       Absent or <0.1 ha	(0.25 acre) contig ha (0.1 acre)] comprises a sin or comprises a sig comprises a sigr lity, or comprises	all part of wetland gnificant part but nificant part of we a small part and	<u>t is of low qua</u> etland's veget d is of high qu	lity tation and ality
	s/lichen. Other	and is of high qual	ity	-		
Select only High Mod Mod	i (5) erately high (4) [BR/CM (5)] erate (3)[BR/CM (5)] erately low (2) [BR/CM (3)] (1) [BR/CM (2)]	and species dive w/o presence of high = A predominance tolerant native sp	ersity &/or domina re dominant com isturbance toleral ersity moderate to rare, threatened of native species o absent or virtua	ance of nonnative ponent of the ve nt native species o moderately high or endangered s s with nonnative Illy absent, and h	getation, altho s can also be h, but general species sp &/or distur high sp diversi	ough present, ly bance ity and off
Add or dedi Exte Mod Spa X Nea	ge of invasive plants. uct points for coverage. nsive >75% cover (-5) erate 25-75% cover (-3) rse 5-25% cover (-1) rly absent <5% cover (0) ent (1)	but not always, t           Mudflat and Open Wat           0 = Absent <0.1 ha (0.	25 acres) [For BF 0.25 to 2.5 acres) na (2.5 to 9.9 acre	/ R/CM <0.04 ha (( ) [BR/CM 0.04 to es) [BR/CM 0.2 to	0.1 acre)] 0 <0.2 ha 10 <02 ha (0.5	
☐ Veg ☐ Coa ☐ Star	pography. resent using 0 to 3 scale. etated hummocks/tussocks rse woody debris >15 cm (6 in.) iding dead >25 cm (10 in.) dbh ihibian breeding pools	Hypothetical Wetland	for Estimating E	Degree of Inters	persion Moderate	6 as
		Microtopography Cov           0 = Absent           1 = Present in very sm           2 = Present in modera           amounts of highes	er Scale all amounts or if te amounts, but r	more common o	f marginal qua	ality

(max 100 pts)

- amounts of highest quality 3 = Present in moderate or greater amounts and of highest quality
- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

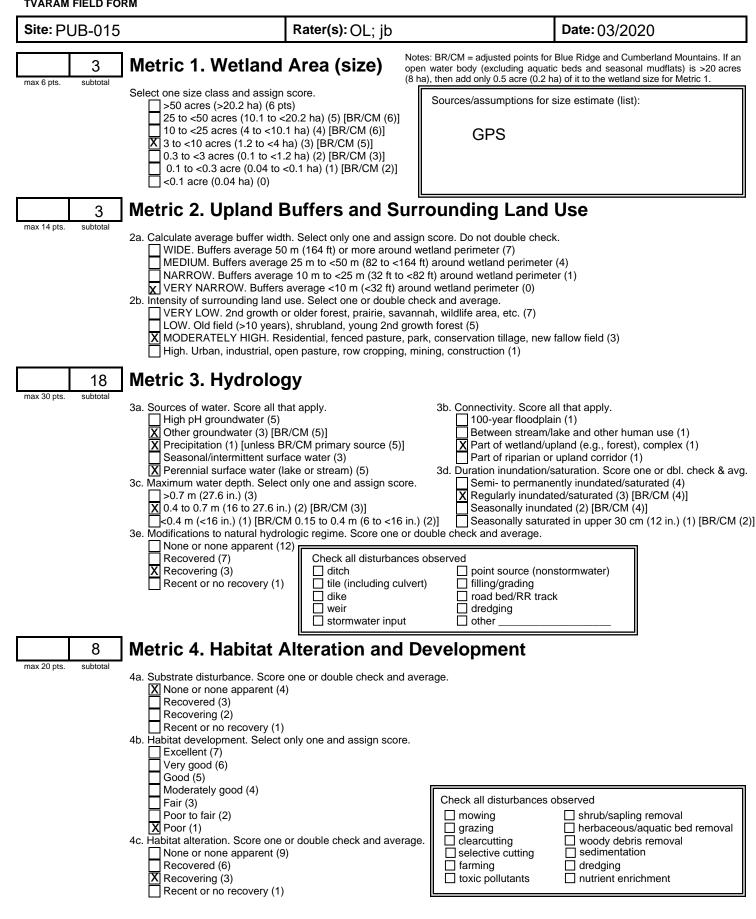


Site: PUB-014	Rater	( <b>s):</b> OH:jb	Date: 03/2020
32 ubtotal previous page			
	Metric 5. Special Wetla	nds	
nax 10 pts. subtotal	*If the documented raw score for Metric 5 i	s 30 points or higher, the site is autom	atically considered a Category 3 wetland.
	Bog, fen, wet prairie (10); acidophilic veg Assoc. forest (wetl. &/or adj. upland) incl Sensitive geologic feature such as spring Vernal pool (5); isolated, perched, or slop Island wetland >0.1 acre (0.04 ha) in res Braided channel or floodplain/terrace dej Gross morph. adapt. in >5 trees >10 in. ( Ecological community with global rank (N Known occurrence state/federal threaten [*use higher rank where mixed rank or o Superior/enhanced habitat/use: migrator	checklists, maps, resource specialist c , mossy substrate >10 sq.m, sphagnum or . >0.25 acre (0.1 ha); old growth (10); matur y/seep, sink, losing/underground stream, cav pe wetland (4); headwater wetland [1st orde ervoir, river, or perennial water >6 ft (2 m) di pressions (floodplain pool, slough, oxbow, m (25 cm) dbh: buttress, multitrunk/stool, stilter NatureServe): G1*(10), G2*(5), G3*(3) [*use ied/endangered species (10); other rare spe qualifier] [exclude records which are only "hi y songbird/waterfowl (5); in-reservoir buttonl	concurrence, data sources, references, etc). other moss (5); muck, organic soil layer (3) re >18 in. (45 cm) dbh (5) [exclude pine plantation] ve, waterfall, rock outcrop/cliff (5) or perennial or above] (3) eep (5) neander scar, etc.) (3) d, shallow roots/tip-up, or pneumatophores (3) higher rank where mixed rank or qualifier] ecies with global rank G1*(10), G2*(5), G3*(3)
1 nax 20 pts. subtotal	Metric 6. Plant Commu		
	6a. Wetland vegetation communities. Score all present using 0 to 3 scale. Aquatic bed Emergent Shrub Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	2 = Present and either compris is of moderate quality, or co	re) contiguous acre
	6b. Horizontal (plan view) interspersion. Select only one. High (5) Moderately high (4) [BR/CM (5)] Moderatel (3)[BR/CM (5)] Low (2) [BR/CM (3)] Low (1) [BR/CM (2)] None (0)	native species mod = Native species are domin nonnative &/or disturband and species diversity mo w/o presence of rare, thro high = A predominance of native	tation Quality or dominance of nonnative or disturbance tolera nant component of the vegetation, although ce tolerant native species can also be present, derate to moderately high, but generally <u>eatened or endangered species</u> e species with nonnative sp &/or disturbance or virtually absent, and high sp diversity and off
	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) X Nearly absent <5% cover (0) Absent (1)	but not always, the prese           Mudflat and Open Water Class           0 =         Absent <0.1 ha (0.25 acres)	ence of rate, threatened, or endangered species
	6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in.) Standing dead >25 cm (10 in.) dbh		mating Degree of Interspersion

(max 100 pts)

- qι igi iity
- amounts of highest quality
- 3 = Present in moderate or greater amounts and of highest quality
- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



unational Consolity and Qualit .....

Site: PUB-015	Rater(s)	:OH:jb	Date: 03/2020	
32				
subtotal previous page				
	Metric 5. Special Wetlan	de		
nax 10 pts. subtotal	Metric 5. Opecial Wetlan	43		
	*If the documented raw score for Metric 5 is 3	30 points or higher, the site is auto	matically considered a Category 3 wet	land.
'aw score*	Assoc. forest (wetl. &/or adj. upland) incl. >/ Sensitive geologic feature such as spring/su Vernal pool (5); isolated, perched, or slope Island wetland >0.1 acre (0.04 ha) in reserv Braided channel or floodplain/terrace depre Gross morph. adapt. in >5 trees >10 in. (25 Ecological community with global rank (Nat Known occurrence state/federal threatened [*use higher rank where mixed rank or qua Superior/enhanced habitat/use: migratory s	ecklists, maps, resource specialis mossy substrate >10 sq.m, sphagnum 0.25 acre (0.1 ha); old growth (10); mai eep, sink, losing/underground stream, of wetland (4); headwater wetland [1st or /oir, river, or perennial water >6 ft (2 m) essions (floodplain pool, slough, oxbow, i cm) dbh: buttress, multitrunk/stool, stil ureServe): G1*(10), G2*(5), G3*(3) [*us /endangered species (10); other rare s alifier] [exclude records which are only to iongbird/waterfowl (5); in-reservoir butty	t concurrence, data sources, reference or other moss (5); muck, organic soil layer (3 ture >18 in. (45 cm) dbh (5) [exclude pine pla cave, waterfall, rock outcrop/cliff (5) der perennial or above] (3) i deep (5) meander scar, etc.) (3) ted, shallow roots/tip-up, or pneumatophore se higher rank where mixed rank or qualifier pecies with global rank G1*(10), G2*(5), G3*	rs, etc). 3) antation] s (3) ] *(3) lesignation (3
1	Metric 6. Plant Commun			(-10)
nax 20 pts. subtotal	6a. Wetland vegetation communities.	Vegetation Community Cov		
	Score all present using 0 to 3 scale.	0 = Absent or <0.1 ha (0.25 a [For BR/CM <0.04 ha (0.	acre) contiguous acre	
	Aquatic bed Emergent	1 = Present and either comp	rises a small part of wetland's vegetation	
	Shrub Forest Mudflats	2 = Present and either comp	prises a significant part but is of low que rises a significant part of wetland's veg comprises a small part and is of high (	etation and
	X Open water <20 acres (8 ha) Moss/lichen. Other		significant part or more of wetland's v	
	6b. Horizontal (plan view) interspersion.	Narrative Description of Vec		
	Select only one.	low = Low species diversity & native species	&/or dominance of nonnative or disturba	ance tolera
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)]	mod = Native species are don nonnative &/or disturba	ninant component of the vegetation, alt ance tolerant native species can also b noderate to moderately high, but gener	e present,
	Low (1) [BR/CM (2)]	w/o presence of rare, t	hreatened or endangered species	,
	X None (0)	tolerant native sp abse	ive species with nonnative sp &/or dist nt or virtually absent, and high sp diver sence of rate, threatened, or endanger	rsity and of
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Water Cla		
	Extensive >75% cover (-5) Moderate 25-75% cover (-3)		es) [For BR/CM <0.04 ha (0.1 acre)] 2.5 acres) [BR/CM 0.04 to <0.2 ha	
	Sparse 5-25% cover (-1) X Nearly absent <5% cover (0)	(0.1 to 0.5 acre)]	to 9.9 acres) [BR/CM 0.2 to <02 ha (0	5 to 5 corr
	Absent (1)		more [BR/CM 2 ha (5 acres) or more]	
	6d. Microtopography. Score all present using 0 to 3 scale.	Hypothetical Wetland for Es	timating Degree of Interspersion	
	Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in.) Standing dead >25 cm (10 in.) dbh Amphibian breeding pools			6 8
		None Low	Low Moderate Moderate	High
		Microtopography Cover Sca 0 = Absent	lie	
			ounts or if more common of marginal q punts, but not of highest quality or in sn	
		amounts of highest quali	0 1 3	

0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

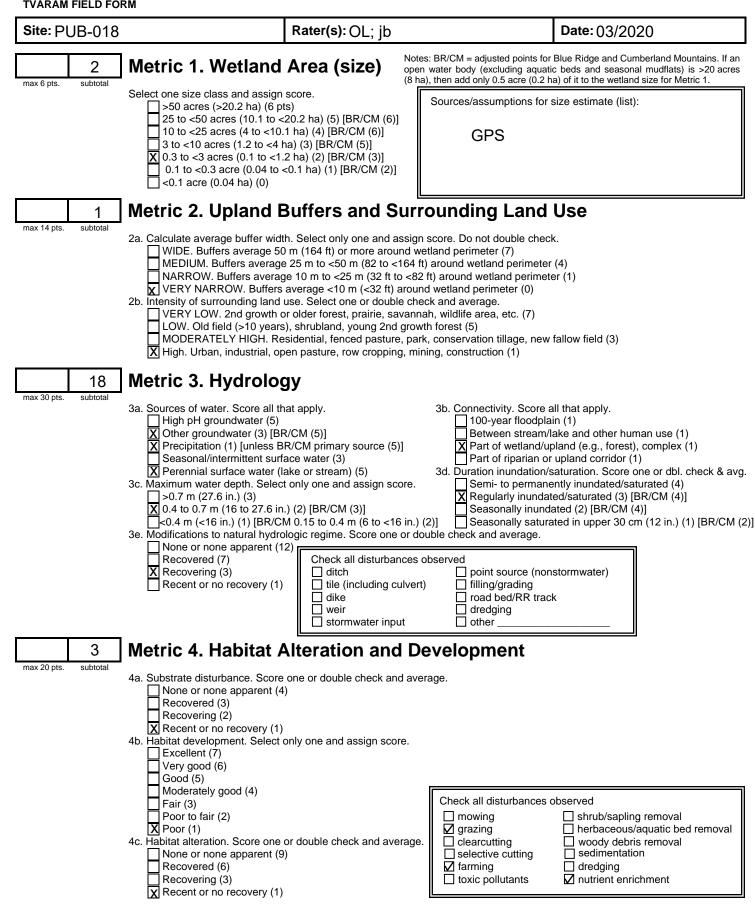
\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

33

Last Edited 2010

**GRAND TOTAL** 

(max 100 pts)

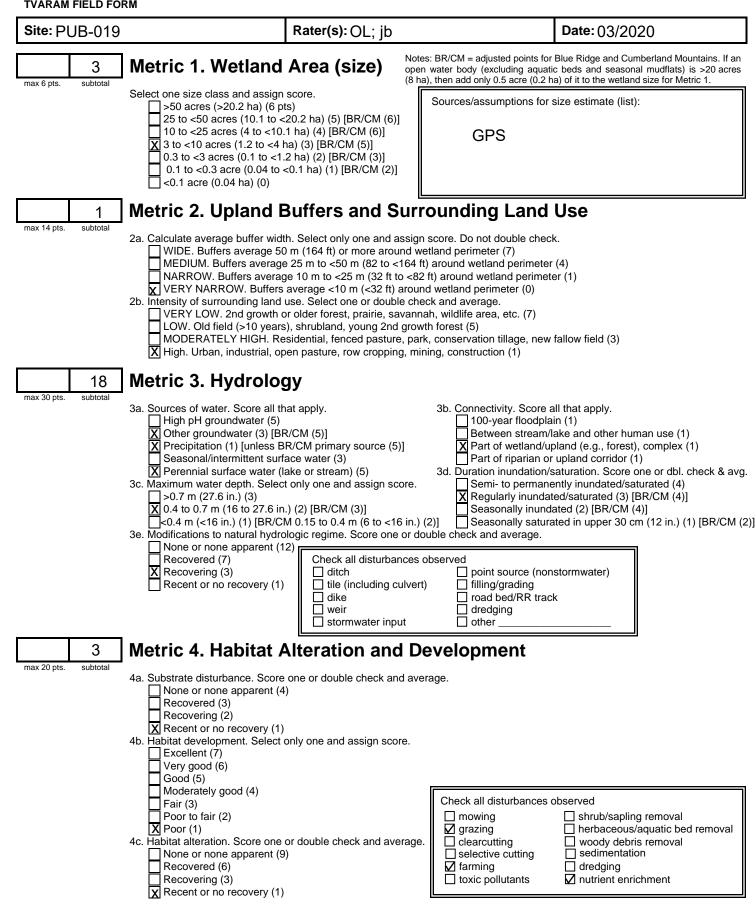


24		=	
subtotal previous page			
	Metric 5. Special We	tlands	
max 10 pts. subtotal	*If the documented raw score for Metric	c 5 is 30 points or higher, the site is	automatically considered a Category 3 wetland.
	documentation for each selection (pho Bog, fen, wet prairie (10); acidophilid Assoc. forest (wetl. &/or adj. upland) Sensitive geologic feature such as s Vernal pool (5); isolated, perched, o Island wetland >0.1 acre (0.04 ha) ir Braided channel or floodplain/terrac Gross morph. adapt. in >5 trees >10 Ecological community with global ra Known occurrence state/federal thre [*use higher rank where mixed ran] Superior/enhanced habitat/use: mig	tos, checklists, maps, resource spec c veg., mossy substrate >10 sq.m, sphag ) incl. >0.25 acre (0.1 ha); old growth (10 spring/seep, sink, losing/underground stre r slope wetland (4); headwater wetland [' n reservoir, river, or perennial water >6 ft e depressions (floodplain pool, slough, o: 0 in. (25 cm) dbh: buttress, multitrunk/stoo nk (NatureServe): G1*(10), G2*(5), G3*(5 aatened/endangered species (10); other r k or qualifier] [exclude records which are ratory songbird/waterfowl (5); in-reservoi	1st order perennial or above] (3) (2 m) deep (5) xbow, meander scar, etc.) (3) ol, 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)
max 20 pts. subtotal	6a. Wetland vegetation communities.	Vegetation Community	
	Score all present using 0 to 3 scale.	[For BR/CM <0.04 h	
	Emergent Shrub	moderate quality, or	comprises a small part of wetland's vegetation and is o comprises a significant part but is of low quality
	Forest Mudflats	is of moderate qualit	comprises a significant part of wetland's vegetation and ty, or comprises a small part and is of high quality
	Open water <20 acres (8 ha) Moss/lichen. Other	3 = Present and compris and is of high quality	ses a significant part or more of wetland's vegetation
	6b. Horizontal (plan view) interspersior Select only one. High (5)		f Vegetation Quality sity &/or dominance of nonnative or disturbance tolera
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)]	nonnative &/or dis and species divers	e dominant component of the vegetation, although turbance tolerant native species can also be present, sity moderate to moderately high, but generally
	Low (1) [BR/CM (2)] X None (0)	high = A predominance c tolerant native sp	are, threatened or endangered species of native species with nonnative sp &/or disturbance absent or virtually absent, and high sp diversity and o e presence of rate, threatened, or endangered specie:
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Wate	r Class Quality
	Extensive >75% cover (-5) Moderate 25-75% cover (-3)		5 acres) [For BR/CM <0.04 ha (0.1 acre)] 25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha
	Sparse 5-25% cover (-1) X Nearly absent <5% cover (0)	(0.1 to 0.5 acre)] 2 = Moderate 1 to <4 ha	a (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acr
	Absent (1)	3 = High 4 ha (9.9 acres	s) or more [BR/CM 2 ha (5 acres) or more]
	6d. Microtopography. Score all present using 0 to 3 scale.	Hypothetical Wetland for	or Estimating Degree of Interspersion
	Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 Standing dead >25 cm (10 in.) 6	6 in.)	
	Amphibian breeding pools	None Low Microtopography Cover	Low Moderate Hig

- 2 = Present in moderate amounts, but not of highest quality or in small
- amounts of highest quality
- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

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



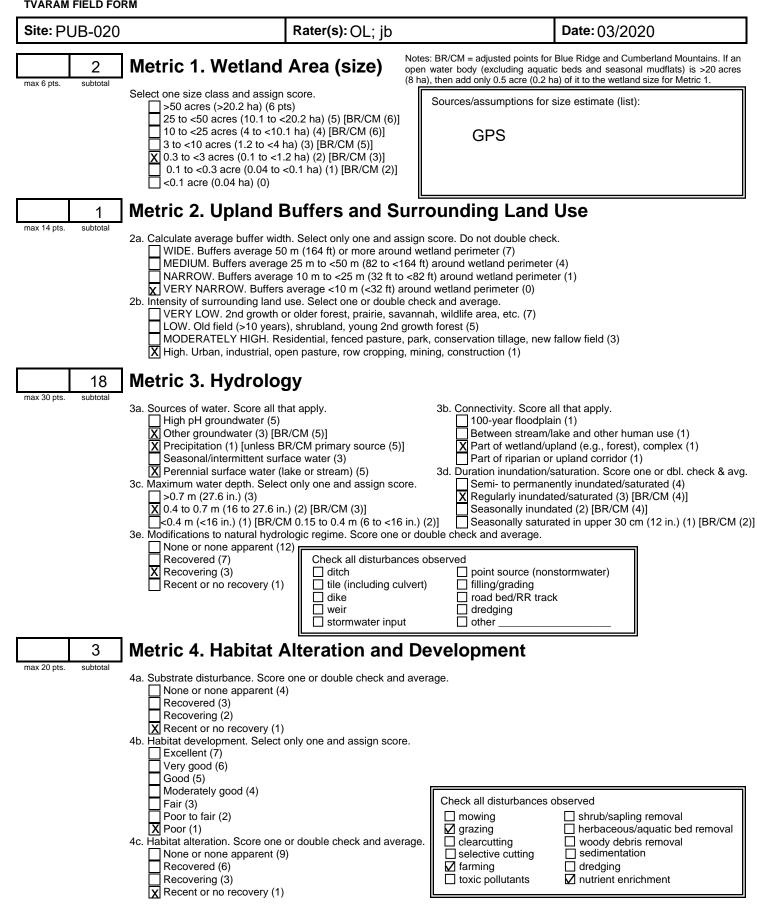
Site: PUB-019	Rater(s	):OH:jb		Date: 03/2020	
26 subtotal previous page					
	c 5. Special Wetlan	ds			
nax 10 pts. subtotal *If the doo	cumented raw score for Metric 5 is 3	30 points or higher, the site is	s automatically co	onsidered a Category 3 we	tland.
documen Bo As Se Ve Isk Br G C C Kn Su	that apply. Where multiple values a tation for each selection (photos, ch g, fen, wet prairie (10); acidophilic veg., soc. forest (wetl. &/or adj. upland) incl. > msitive geologic feature such as spring/s rnal pool (5); isolated, perched, or slope and wetland >0.1 acre (0.04 ha) in resen aided channel or floodplain/terrace depre oss morph. adapt. in >5 trees >10 in. (25 ological community with global rank (Nai own occurrence state/federal threatened use higher rank where mixed rank or qu perior/enhanced habitat/use: migratory s tt. 1 (very low quality) : <1 acre (0.4 ha)	ecklists, maps, resource spe mossy substrate >10 sq.m, spha 0.25 acre (0.1 ha); old growth (10 eep, sink, losing/underground str wetland (4); headwater wetland   voir, river, or perennial water >6 f essions (floodplain pool, slough, c is cm) dbh: buttress, multitrunk/stc ureServe): G1*(10), G2*(5), G3* //endangered species (10); other alifier] [exclude records which are congbird/waterfowl (5); in-reservo	cialist concurrence gnum or other moss D); mature >18 in. (4 eam, cave, waterfai [1st order perennial t (2 m) deep (5) oxbow, meander sca pol, stilted, shallow r (3) [*use higher ranl rare species with g e only "historic"] ir buttonbush (4); of	ce, data sources, reference s (5); muck, organic soil layer ( 45 cm) dbh (5) [exclude pine p II, rock outcrop/cliff (5) or above] (3) ar, etc.) (3) roots/tip-up, or pneumatophore k where mixed rank or qualifie lobal rank G1*(10), G2*(5), G3 ther fish/wildlife management/	es, etc). (3) lantation] es (3) r] **(3) designation (3
1 Metri	c 6. Plant Commun	ities, Interspers	sion, Micr	otopography	
Score all Ac Er St Fr Mi X O	nd vegetation communities. present using 0 to 3 scale. uatic bed nergent orub orest udflats pen water <20 acres (8 ha) pss/lichen. Other	2 = Present and either is of moderate qual	0.25 acre) contig ha (0.1 acre)] comprises a sma r comprises a sign comprises a sign ity, or comprises ises a significant	uous acre Il part of wetland's vegetat inificant part but is of low q ificant part of wetland's ve a small part and is of high part or more of wetland's v	uality getation and quality
	ontal (plan view) interspersion.	Narrative Description of	of Vegetation Qu	ality	
Select on Hi Mi Mi Mi Lo		low = Low species dive native species mod = Native species ar nonnative &/or dis and species diver w/o presence of r high = A predominance	rsity &/or domina re dominant comp sturbance toleran rsity moderate to rare, threatened co of native species	nce of nonnative or disturb ponent of the vegetation, a nt native species can also b moderately high, but gene or endangered species with nonnative sp &/or dis ly absent, and high sp dive	Ithough be present, rally turbance
Add or de Ex Mi Sp X Ne	rage of invasive plants. educt points for coverage. ttensive >75% cover (-5) oderate 25-75% cover (-3) parse 5-25% cover (-1) early absent <5% cover (0) osent (1)	Mudflat and Open Wate           0 =         Absent <0.1 ha (0.2	er Class Quality 25 acres) [For BR 1.25 to 2.5 acres) a (2.5 to 9.9 acre	CM <0.04 ha (0.1 acre)]	
Score all	topography. present using 0 to 3 scale. egetated hummocks/tussocks parse woody debris >15 cm (6 in.) anding dead >25 cm (10 in.) dbh nphibian breeding pools	Hypothetical Wetland f			
			all amounts or if n e amounts, but no	Moderate Moderate	quality

(max 100 pts)

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

  - 0- 29 = Category 1, low wetland function, condition, quality\*\*
    30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
    60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

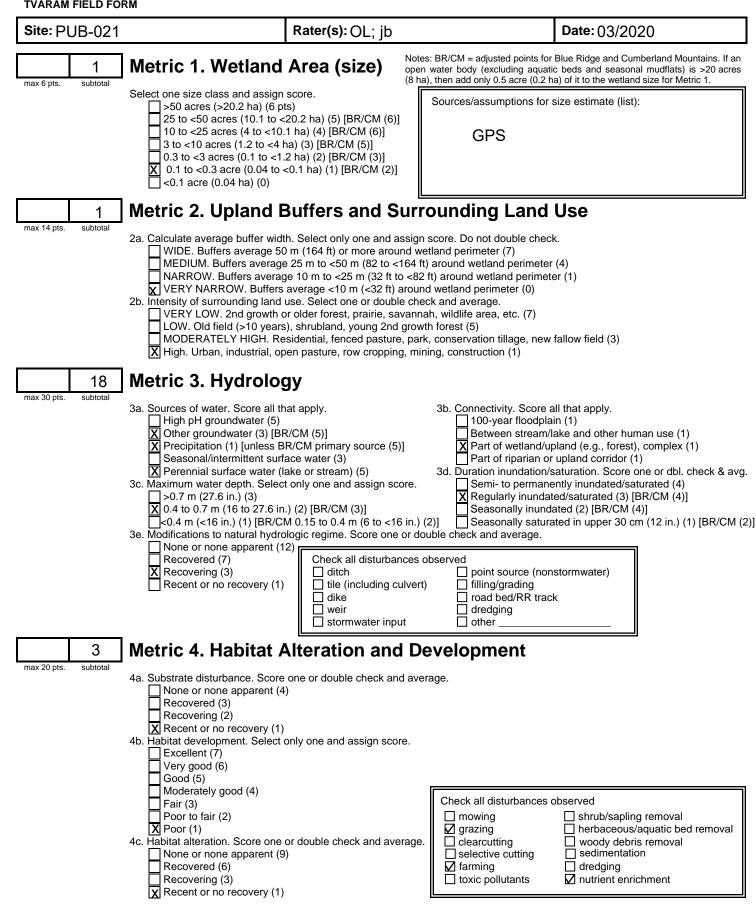


Site: PUB-020	Rater(s	): OH:jb	<b>Date:</b> 03,	/2020
25 ubtotal previous page				
	ic 5. Special Wetlan	ds		
nax 10 pts. subtotal *If the do	ocumented raw score for Metric 5 is	30 points or higher, the site is aut	tomatically considered a C	Category 3 wetland.
documer B A S V Is B G G C S	Il that apply. Where multiple values a ntation for each selection (photos, ch og, fen, wet prairie (10); acidophilic veg., ssoc. forest (wetl. &/or adj. upland) incl. > ensitive geologic feature such as spring/s ernal pool (5); isolated, perched, or slope sland wetland >0.1 acre (0.04 ha) in reser raided channel or floodplain/terrace depre foross morph. adapt. in >5 trees >10 in. (25 cological community with global rank (Na nown occurrence state/federal threatened *use higher rank where mixed rank or qu uperior/enhanced habitat/use: migratory s iat. 1 (very low quality) : <1 acre (0.4 ha) /	necklists, maps, resource speciali mossy substrate >10 sq.m, sphagnum -0.25 acre (0.1 ha); old growth (10); m seep, sink, losing/underground stream, wetland (4); headwater wetland [1st c voir, river, or perennial water >6 ft (2 n essions (floodplain pool, slough, oxbov 5 cm) dbh: buttress, multitrunk/stool, si tureServe): G1*(10), G2*(5), G3*(3) [* J/endangered species (10); other rare alifier] [exclude records which are only songbird/waterfowl (5); in-reservoir but	ist concurrence, data sourn n or other moss (5); muck, org lature >18 in. (45 cm) dbh (5) , cave, waterfall, rock outcrop, order perennial or above] (3) m) deep (5) w, meander scar, etc.) (3) tilted, shallow roots/tip-up, or use higher rank where mixed species with global rank G1*( y "historic"] ttonbush (4); other fish/wildlife	ces, references, etc). ganic soil layer (3) [exclude pine plantation] /cliff (5) pneumatophores (3) rank or qualifier] (10), G2*(5), G3*(3) e management/designation (3)
	ic 6. Plant Commun		-	
Score al A E S S S S S S S S S S S S S S S S S S	and vegetation communities. I present using 0 to 3 scale. equatic bed mergent shrub forest Audflats Open water <20 acres (8 ha) Aoss/lichen. Other	2 = Present and either com	5 acre) contiguous acre <u>0.1 acre)]</u> prises a small part of weth mprises a significant part to prises a significant part of prises a small part a	but is of low quality wetland's vegetation and and is of high quality
6b. Horiz Select o	zontal (plan view) interspersion.	Narrative Description of Ve low = Low species diversity		tive or disturbance tolera
	ligh (5) Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] ow (1) [BR/CM (2)] Ione (0)	native species mod = Native species are do nonnative &/or disturb and species diversity w/o presence of rare, high = A predominance of na tolerant native sp abs	pminant component of the bance tolerant native spec moderate to moderately h threatened or endangered ative species with nonnative sent or virtually absent, and	vegetation, although ies can also be present, iigh, but generally d species ve sp &/or disturbance d high sp diversity and oft
Add or d E S X X	erage of invasive plants. leduct points for coverage. ixtensive >75% cover (-5) doderate 25-75% cover (-3) iparse 5-25% cover (-1) learly absent <5% cover (0) ibsent (1)	$\begin{array}{r} \underline{\text{Mudflat and Open Water Cl}}\\ \underline{0 = Absent < 0.1 ha (0.25 ac}\\ 1 = Low 0.1 to <1 ha (0.25 t)\\ \underline{(0.1 to 0.5 acre)}\\ 2 = Moderate 1 to <4 ha (2.3 c)\\ 3 = High 4 ha (9.9 acres) or \end{array}$	cres) [For BR/CM <0.04 ha to 2.5 acres) [BR/CM 0.04 .5 to 9.9 acres) [BR/CM 0.	a (0.1 acre)] I to <0.2 ha 2 to <02 ha (0.5 to 5 acre
Score a	rotopography. Il present using 0 to 3 scale. /egetated hummocks/tussocks Coarse woody debris >15 cm (6 in.)	Hypothetical Wetland for E	Estimating Degree of Inte	erspersion
	standing dead <25 cm (10 in ) dbb			
	standing dead >25 cm (10 in.) dbh Imphibian breeding pools	None Low	Low Moderate	Moderate High

(max 100 pts)

- amounts of highest quality 3 = Present in moderate or greater amounts and of highest quality
- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



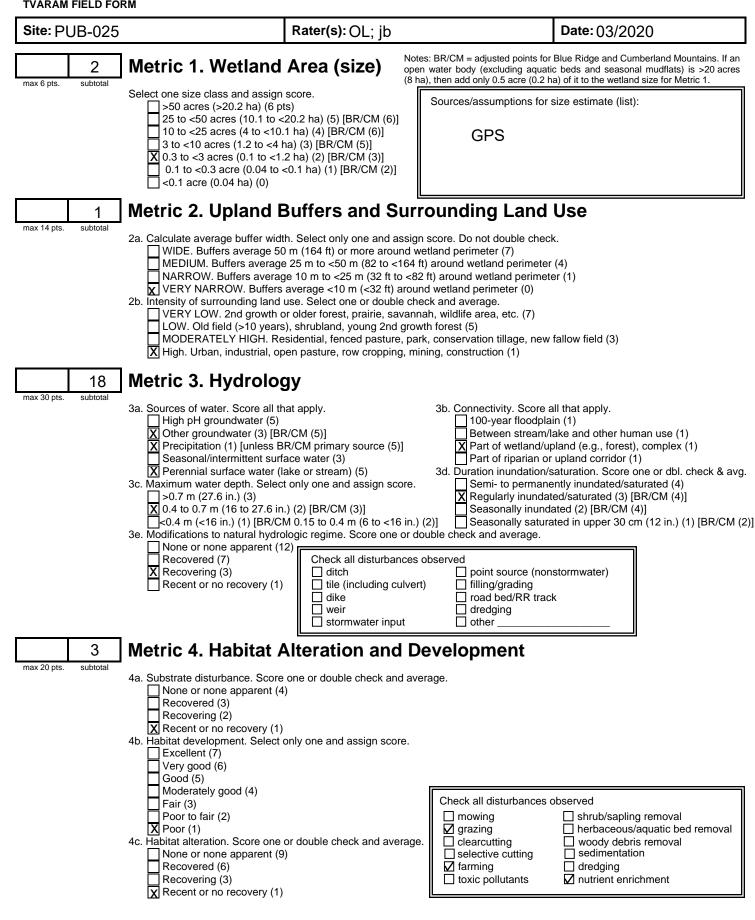
Site: PUB-021	Rater(s	s): OH:jb	Date: 03/2020
24 subtotal previous page	Matric 5 Spacial Watla	ade	
max 10 pts. subtotal	Metric 5. Special Wetlar	105	
*	If the documented raw score for Metric 5 is	30 points or higher, the site is automatic	cally considered a Category 3 wetland.
	Assoc. forest (wetl. &/or adj. upland) incl. Sensitive geologic feature such as spring/ Vernal pool (5); isolated, perched, or slope Island wetland >0.1 acre (0.04 ha) in rese Braided channel or floodplain/terrace dep Gross morph. adapt. in >5 trees >10 in. (2 Ecological community with global rank (Na Known occurrence state/federal threatene ['use higher rank where mixed rank or q Superior/enhanced habitat/use: migratory	hecklists, maps, resource specialist con , mossy substrate >10 sq.m, sphagnum or oth >0.25 acre (0.1 ha); old growth (10); mature > seep, sink, losing/underground stream, cave, e wetland (4); headwater wetland [1st order p rvoir, river, or perennial water >6 ft (2 m) dee ressions (floodplain pool, slough, oxbow, mea 55 cm) dbh: buttress, multitrunk/stool, stilted, s atureServe): G1*(10), G2*(5), G3*(3) [*use hig de/endangered species (10); other rare specie ualifier] [exclude records which are only "histo	acurrence, data sources, references, etc). her moss (5); muck, organic soil layer (3) 18 in. (45 cm) dbh (5) [exclude pine plantation] waterfall, rock outcrop/cliff (5) erennial or above] (3) p (5) inder scar, etc.) (3) shallow roots/tip-up, or pneumatophores (3) gher rank where mixed rank or qualifier] is with global rank G1*(10), G2*(5), G3*(3) hric"] sh (4); other fish/wildlife management/designation (3)
1	Metric 6. Plant Commur	nities, Interspersion, I	Microtopography
	<ul> <li>6a. Wetland vegetation communities.</li> <li>Score all present using 0 to 3 scale.</li> <li>Aquatic bed</li> <li>Emergent</li> <li>Shrub</li> <li>Forest</li> <li>Mudflats</li> <li>Open water &lt;20 acres (8 ha)</li> <li>Moss/lichen. Other</li> </ul>	2 = Present and either comprises is of moderate quality, or com	contiguous acre
	6b. Horizontal (plan view) interspersion.	Narrative Description of Vegetat	
S	Select only one. High (5) Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] None (0)	native species mod = Native species are dominar nonnative &/or disturbance and species diversity mode w/o presence of rare, threat high = A predominance of native s tolerant native sp absent or	dominance of nonnative or disturbance toleran t component of the vegetation, although tolerant native species can also be present, rate to moderately high, but generally tened or endangered species species with nonnative sp &/or disturbance virtually absent, and high sp diversity and ofte se of rate, threatened, or endangered species
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Water Class G	
,	Extensive >75% cover (-5) Moderate 25-75% cover (-3) Sparse 5-25% cover (-1) X Nearly absent <5% cover (0) Absent (1)	0 = Absent <0.1 ha (0.25 acres) [ 1 = Low 0.1 to <1 ha (0.25 to 2.5 (0.1 to 0.5 acre)]	For BR/CM <0.04 ha (0.1 acre)] acres) [BR/CM 0.04 to <0.2 ha .9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre)
	6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks	Hypothetical Wetland for Estima	ating Degree of Interspersion
	Coarse woody debris >15 cm (6 in.)		
	Standing dead >25 cm (10 in.) dbh	None Low Lo	www.Moderate Moderate High

(max 100 pts)

- 2 = Present in moderate amounts, but not of highest quality or in small
- amounts of highest quality 3 = Present in moderate or greater amounts and of highest quality

  - 0- 29 = Category 1, low wetland function, condition, quality\*\*
    30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
    60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

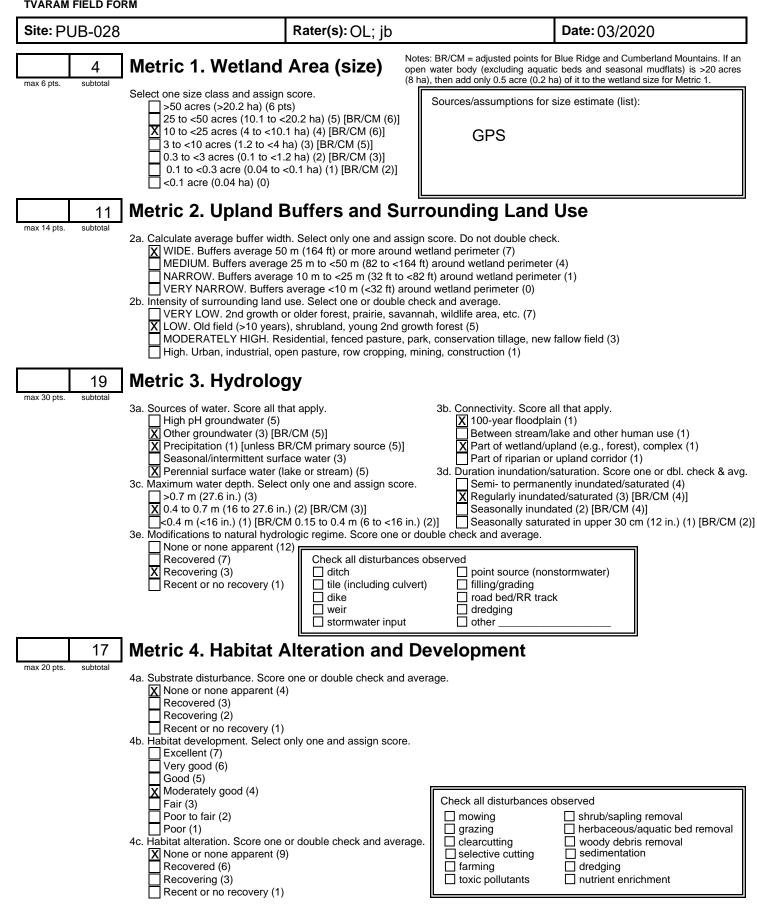


Site: PUB-025	Rater(s)	:OH:jb	Date: 03/202	20		
25 subtotal previous page						
	ric 5. Special Wetlan	ds				
nax 10 pts. subtotal *If the o	documented raw score for Metric 5 is 3	0 points or higher, the site is	automatically considered a Categ	ory 3 wetland.		
docum	all that apply. Where multiple values a entation for each selection (photos, ch Bog, fen, wet prairie (10); acidophilic veg., r Assoc. forest (wetl. &/or adj. upland) incl. >/ Sensitive geologic feature such as spring/se Vernal pool (5); isolated, perched, or slope Island wetland >0.1 acre (0.04 ha) in reserv Braided channel or floodplain/terrace depre Gross morph. adapt. in >5 trees >10 in. (25 Ecological community with global rank (Nat Known occurrence state/federal threatened [*use higher rank where mixed rank or qua Superior/enhanced habitat/use: migratory s Cat. 1 (very low quality) : <1 acre (0.4 ha) A	ecklists, maps, resource spec nossy substrate >10 sq.m, sphagi 0.25 acre (0.1 ha); old growth (10) sep, sink, losing/underground stre wetland (4); headwater wetland [1 oir, river, or perennial water >6 ft ssions (floodplain pool, slough, ox cm) dbh: buttress, multitrunk/stoo ureServe): G1*(10), G2*(5), G3*(3 (endangered species (10); other ra lifier] [exclude records which are ongbird/waterfowl (5); in-reservoir	ialist concurrence, data sources, i num or other moss (5); muck, organic s ; mature >18 in. (45 cm) dbh (5) [exclu 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 pneur ) [*use higher rank where mixed rank of are species with global rank G1*(10), C only "historic"] buttonbush (4); other fish/wildlife man	references, etc). soil layer (3) ude pine plantation] 5) matophores (3) or qualifier] G2*(5), G3*(3) lagement/designation (3)		
	ric 6. Plant Commun	ities, Interspers	ion, Microtopogra	phy		
Score	etland vegetation communities. all present using 0 to 3 scale. Aquatic bed Emergent Shrub Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	2 = Present and either constrained is of moderate quality.	.25 acre) contiguous acre	s of low quality and's vegetation and s of high quality		
6b. Ho	6b. Horizontal (plan view) interspersion. Narrative Description of Vegetation Quality					
Select	only one. High (5) Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] None (0)	<ul> <li>low = Low species diversity &amp;/or dominance of nonnative or disturbance tolerar native species</li> <li>mod = Native species are dominant component of the vegetation, although nonnative &amp;/or disturbance tolerant native species can also be present, and species diversity moderate to moderately high, but generally</li> <li>w/o presence of rare, threatened or endangered species</li> <li>high = A predominance of native species with nonnative sp &amp;/or disturbance tolerant native sp absent or virtually absent, and high sp diversity and oft but not always, the presence of rate, threatened, or endangered species</li> </ul>				
Add or	verage of invasive plants. 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)	•	1 acre)] 0.2 ha <02 ha (0.5 to 5 acre		
Score	crotopography. all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in.) Standing dead >25 cm (10 in.) dbh	Hypothetical Wetland fo	r Estimating Degree of Interspe	rsion		
	Amphibian breeding pools	None Low		Moderate High		
			amounts or if more common of n amounts, but not of highest qualit			

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

  - 0- 29 = Category 1, low wetland function, condition, quality\*\*
    30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
    60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



Site: PUB-028	Rater(	s): OH:jb	Date: 03/2020		
51 subtotal previous page					
	Metric 5. Special Wetla	nds			
nax 10 pts. subtotal	*If the documented raw score for Metric 5 is	30 points or higher, the site is auto	omatically considered a Category 3 wetland.		
aw score*	Bog, fen, wet prairie (10); acidophilic veg Assoc. forest (wetl. &/or adj. upland) incl. Sensitive geologic feature such as spring Vernal pool (5); isolated, perched, or slop Island wetland >0.1 acre (0.04 ha) in rese Braided channel or floodplain/terrace dep Gross morph. adapt. in >5 trees >10 in. (2) Ecological community with global rank (N Known occurrence state/federal threatend [*use higher rank where mixed rank or q Superior/enhanced habitat/use: migratory	checklists, maps, resource specialis , mossy substrate >10 sq.m, sphagnum >0.25 acre (0.1 ha); old growth (10); ma /seep, sink, losing/underground stream, e wetland (4); headwater wetland [1st o prvoir, river, or perennial water >6 ft (2 m ressions (floodplain pool, slough, oxbov 25 cm) dbh: buttress, multitrunk/stool, st atureServe): G1*(10), G2*(5), G3*(3) [*t ed/endangered species (10); other rare = ualifier] [exclude records which are only o songbird/waterfowl (5); in-reservoir but	st concurrence, data sources, references, etc). n or other moss (5); muck, organic soil layer (3) ature >18 in. (45 cm) dbh (5) [exclude pine plantation] cave, waterfall, rock outcrop/cliff (5) order perennial or above] (3) n) deep (5) w, meander scar, etc.) (3) titled, 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)		
1	Metric 6. Plant Commu	nities, Interspersio	n, Microtopography		
<ul> <li>subtotal</li> <li>6a. Wetland vegetation communities.</li> <li>Score all present using 0 to 3 scale.</li> <li>Aquatic bed</li> <li>Emergent</li> <li>Shrub</li> <li>Forest</li> <li>Mudflats</li> <li>Open water &lt;20 acres (8 ha)</li> <li>Moss/lichen. Other</li> </ul>		2 = Present and either com is of moderate quality, o	acre) contiguous acre		
	6b. Horizontal (plan view) interspersion.	Narrative Description of Vegetation Quality			
	Select only one.	low = Low species diversity &/or dominance of nonnative or disturbance tolera native species			
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] X None (0)	<ul> <li>mod = Native species</li> <li>mod = Native species</li> <li>mod = Native species are dominant component of the vegetation, although nonnative &amp;/or disturbance tolerant native species can also be present, and species diversity moderate to moderately high, but generally</li> <li>w/o presence of rare, threatened or endangered species</li> <li>high = A predominance of native species with nonnative sp &amp;/or disturbance tolerant native sp absent or virtually absent, and high sp diversity and oft but not always, the presence of rate, threatened, or endangered species</li> </ul>			
	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)	1 = Low 0.1 to <1 ha (0.25 t (0.1 to 0.5 acre)]	cres) [For BR/CM <0.04 ha (0.1 acre)] to 2.5 acres) [BR/CM 0.04 to <0.2 ha		
	X Nearly absent <5% cover (0) Absent (1)		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/tussocks Coarse woody debris >15 cm (6 in.) Standing dead >25 cm (10 in.) dbh Amphibian breeding pools		stimating Degree of Interspersion		
		None Low	Low Moderate High		
		Microtopography Cover Scale 0 = Absent			
			nounts or if more common of marginal quality nounts, but not of highest quality or in small		

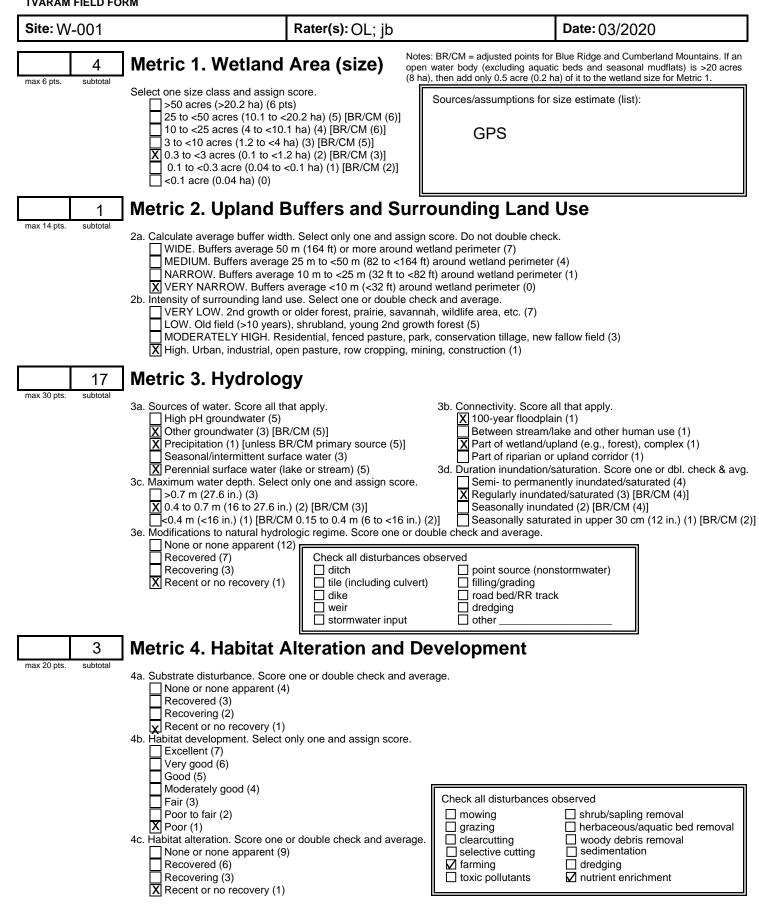
(max 100 pts)

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

  - 0- 29 = Category 1, low wetland function, condition, quality\*\*
    30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
    60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

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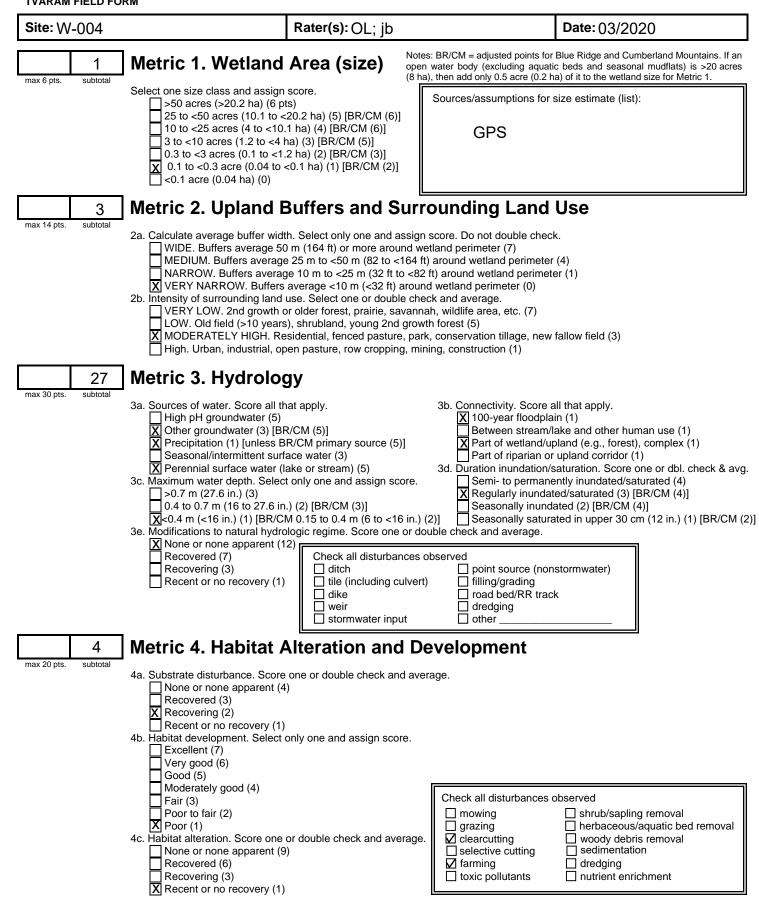


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Site: W-001	Rat	<b>er(s):</b> OH:jb	Date: 03/2020			
26						
subtotal previous page	Metric 5. Special Wet	lands				
max 10 pts. subtotal		C is 20 paints on bishon the site is a		la sa d		
raw score*	Select all that apply. Where multiple val documentation for each selection (photo Bog, fen, wet prairie (10); acidophilic Assoc. forest (wetl. &/or adj. upland) Sensitive geologic feature such as sp Vernal pool (5); isolated, perched, or Island wetland >0.1 acre (0.04 ha) in	lues apply in row, score row as singl ps, checklists, maps, resource speci veg., mossy substrate >10 sq.m, sphagn	st order perennial or above] (3) 2 m) deep (5)	s, etc). 3)		
1	Gross morph. adapt. in >5 trees >10 Ecological community with global rar Known occurrence state/federal threa [*use higher rank where mixed rank Superior/enhanced habitat/use: migr Cat. 1 (very low quality) : <1 acre (0.	in. (25 cm) dbh: buttress, multitrunk/stool k (NatureServe): G1*(10), G2*(5), G3*(3) atened/endangered species (10); other ra or qualifier] [exclude records which are o atory songbird/waterfowl (5); in-reservoir 4 ha) AND EITHER >80% cover of invasio	I, stilted, shallow roots/tip-up, or pneumatophore: ) [*use higher rank where mixed rank or qualifier rre species with global rank G1*(10), G2*(5), G3 only "historic"] buttonbush (4); other fish/wildlife management/d ves OR nonvegetated on mined/excavated land	] *(3) lesignation (3		
nax 20 pts. subtotal	J Metric 6. Plant Comm	iunities, interspersi	on, Microtopography			
	6a. Wetland vegetation communities. Score all present using 0 to 3 scale.		Vegetation Community Cover Scale           0 = Absent or <0.1 ha (0.25 acre) contiguous acre			
	Aquatic bed	[For BR/CM <0.04 ha	a (0.1 acre)]			
	Emergent Shrub X Forest Mudflats	2 = Present and either co	omprises a small part of wetland's vegetation comprises a significant part but is of low que comprises a significant part of wetland's veg or, or comprises a small part and is of high (	uality etation and		
	Open water <20 acres (8 ha) Moss/lichen. Other		3 = Present and comprises a significant part or more of wetland's vegetation			
	6b. Horizontal (plan view) interspersion					
	Select only one. High (5)	low = Low species divers	ity &/or dominance of nonnative or disturba	ance tolera		
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)]	nonnative &/or dist	<ul> <li>mod = Native species are dominant component of the vegetation, although nonnative &amp;/or disturbance tolerant native species can also be present, and species diversity moderate to moderately high, but generally</li> </ul>			
	X Low (1) [BR/CM (2)]					
	6c. Coverage of invasive plants.	tolerant native sp a	bsent or virtually absent, and high sp diver presence of rate, threatened, or endanger	rsity and of		
	Add or deduct points for coverage.	Mudflat and Open Water				
	Moderate 25-75% cover (-3)	1 = Low 0.1 to <1 ha (0.2	acres) [For BR/CM <0.04 ha (0.1 acre)] 5 to 2.5 acres) [BR/CM 0.04 to <0.2 ha			
	X Sparse 5-25% cover (-1) Nearly absent <5% cover (0) Absent (1)		(2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0 or more [BR/CM 2 ha (5 acres) or more]	.5 to 5 acre		
	6d. Microtopography. Score all present using 0 to 3 scale.	Hypothetical Wetland for	Hypothetical Wetland for Estimating Degree of Interspersion			
	Vegetated humocks/tussocks Coarse woody debris >15 cm (6 Standing dead >25 cm (10 in.) d Amphibian breeding pools	bh Shi				
		None Low Microtopography Cover	Low Moderate Moderate Scale	High		
		0 = Absent		u olity		
			amounts or if more common of marginal q amounts, but not of highest quality or in sn uality			

- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

(max 100 pts)

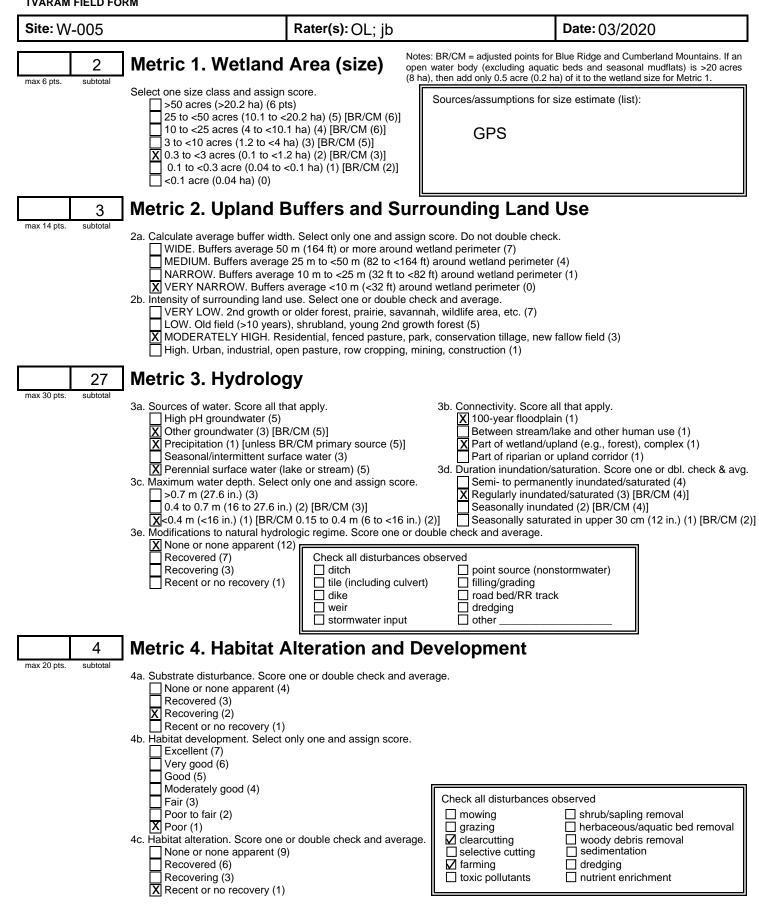


Site: W-004	Rate	<b>Rater(s)</b> : OH:jb <b>Date</b> : 03/2020		
35 subtotal previous page				
	Metric 5. Special Wetl	ands		
nax 10 pts. subtotal	*If the documented raw score for Metric	5 is 30 points or higher, the site is	automatically considered a Category 3 wetla	and.
aw score*	Select all that apply. Where multiple valu documentation for each selection (photo Bog, fen, wet prairie (10); acidophilic M Assoc. forest (wetl. &/or adj. upland) in Sensitive geologic feature such as spu Vernal pool (5); isolated, perched, or s Island wetland >0.1 acre (0.04 ha) in r Braided channel or floodplain/terrace ( Gross morph. adapt. in >5 trees >10 in Ecological community with global rank Known occurrence state/federal threat [*use higher rank where mixed rank of Superior/enhanced habitat/use: migra	ues apply in row, score row as sing s, checklists, maps, resource spec veg., mossy substrate >10 sq.m, sphagi ncl. >0.25 acre (0.1 ha); old growth (10) ing/seep, sink, losing/underground stre slope wetland (4); headwater wetland [1 reservoir, river, or perennial water >6 ft depressions (floodplain pool, slough, ox . (25 cm) dbh: buttress, multitrunk/stoc c (NatureServe): G1*(10), G2*(5), G3*(3 tened/endangered species (10); other ro or qualifier] [exclude records which are tory songbird/waterfowl (5); in-reservoir	le feature with highest point value. Provide ialist concurrence, data sources, references num or other moss (5); muck, organic soil layer (3 ; mature >18 in. (45 cm) dbh (5) [exclude pine pla 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 b) [*use higher rank where mixed rank or qualifier] are species with global rank G1*(10), G2*(5), G3* only "historic"] buttonbush (4); other fish/wildlife management/de	s, etc). ) ntation] (3) (3)
2	Metric 6. Plant Comm		ives OR nonvegetated on mined/excavated land (	-10)
nax 20 pts. subtotal	6a. Wetland vegetation communities.	Vegetation Community		
	Score all present using 0 to 3 scale.	0 = Absent or <0.1 ha (0 [For BR/CM <0.04 ha		
	X Emergent	1 = Present and either c	omprises a small part of wetland's vegetation	
	Shrub Forest Mudflats	2 = Present and either consistent of moderate qualit	comprises a significant part but is of low qu omprises a significant part of wetland's vege y, or comprises a small part and is of high q	etation and uality
	Open water <20 acres (8 ha) Moss/lichen. Other	3 = Present and compris and is of high quality	es a significant part or more of wetland's ve	getation
	6b. Horizontal (plan view) interspersion.	Narrative Description of		
	Select only one.	low = Low species divers native species	sity &/or dominance of nonnative or disturba	nce tolera
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)]	mod = Native species are nonnative &/or dist	dominant component of the vegetation, alth urbance tolerant native species can also be ity moderate to moderately high, but genera	e present,
	X Low (1) [BR/CM (2)]	w/o presence of ra	re, threatened or endangered species	
	None (0)	tolerant native sp a	f native species with nonnative sp &/or distuation of virtually absent, and high sp diverse presence of rate, threatened, or endangered	sity and of
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Water		
	Extensive >75% cover (-5) Moderate 25-75% cover (-3)		5 acres) [For BR/CM <0.04 ha (0.1 acre)] 25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha	
	X Sparse 5-25% cover (-1)	(0.1 to 0.5 acre)]	, .	<u> </u>
	Nearly absent <5% cover (0) Absent (1)		(2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.) or more [BR/CM 2 ha (5 acres) or more]	o to 5 acre
	6d. Microtopography.	Hypothetical Wetland fo	r Estimating Degree of Interspersion	_
	Score all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 i Standing dead >25 cm (10 in.) db Amphibian breeding pools	bh'		000
		None Low	Low Moderate Moderate	High
		Microtopography Cover 0 = Absent		
		1 = Present in very smal	l amounts or if more common of marginal quants, but not of highest quality or in sm	

(max 100 pts)

0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

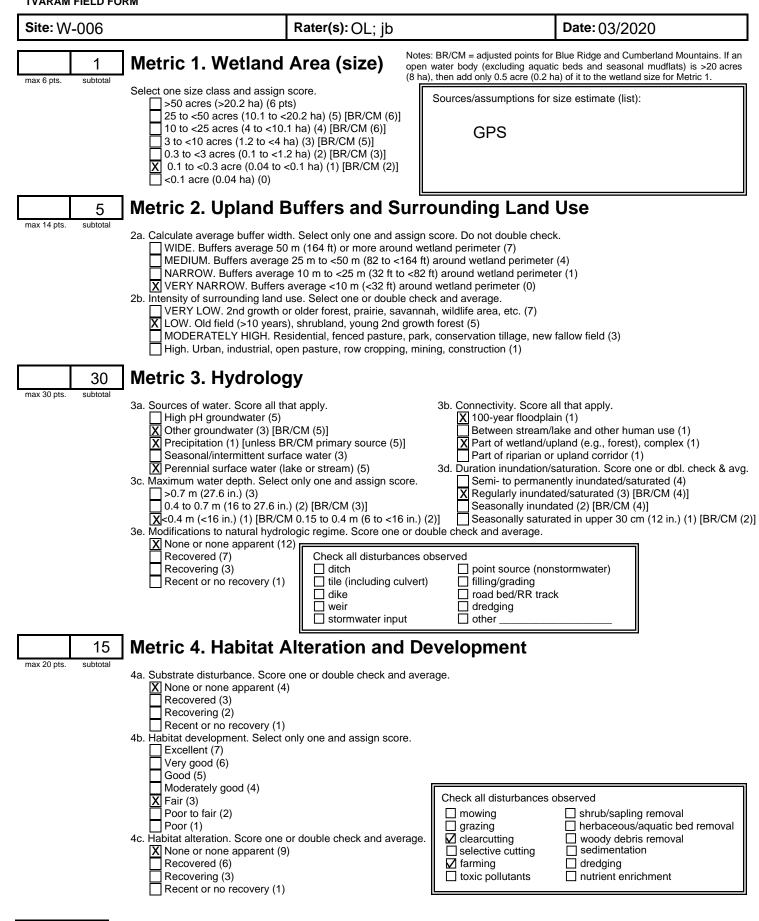


<b>Site:</b> W-005	Rater(s	s): OH:jb	Date: 03/2020	
36 subtotal previous page				
max 10 pts. subtotal	Metric 5. Special Wetlar	nds		
	*If the documented raw score for Metric 5 is	30 points or higher, the site is aut	tomatically considered a Category 3 wet	land.
raw score*	Assoc. forest (wetl. &/or adj. upland) incl. Sensitive geologic feature such as spring/ Vernal pool (5); isolated, perched, or slop Island wetland >0.1 acre (0.04 ha) in rese Braided channel or floodplain/terrace dep Gross morph. adapt. in >5 trees >10 in. (2 Ecological community with global rank (Na Known occurrence state/federal threatene [*use higher rank where mixed rank or qr Superior/enhanced habitat/use: migratory	checklists, maps, resource speciali , mossy substrate >10 sq.m, sphagnun >0.25 acre (0.1 ha); old growth (10); m /seep, sink, losing/underground stream e wetland (4); headwater wetland [1st c rvoir, river, or perennial water >6 ft (2 r ressions (floodplain pool, slough, oxbor 25 cm) dbh: buttress, multitrunk/stool, s atureServe): G1*(10), G2*(5), G3*(3) [* ad/endangered species (10); other rare ualifier] [exclude records which are only songbird/waterfowl (5); in-reservoir bu	ist concurrence, data sources, reference n or other moss (5); muck, organic soil layer (3 nature >18 in. (45 cm) dbh (5) [exclude pine pl , cave, waterfall, rock outcrop/cliff (5) order perennial or above] (3) m) deep (5) w, meander scar, etc.) (3) titled, shallow roots/tip-up, or pneumatophore tuse higher rank where mixed rank or qualifier species with global rank G1*(10), G2*(5), G3	es, etc). 3) antation] s (3) ] *(3) designation (3
2 max 20 pts. subtotal	] Metric 6. Plant Commu	nities, Interspersio	on, Microtopography	
	6a. Wetland vegetation communities. Score all present using 0 to 3 scale.	Vegetation Community Co 0 = Absent or < 0.1 ha (0.25)		
	Aquatic bed	[For BR/CM <0.04 ha (0	0.1 acre)]	
	X Emergent Shrub Forest Mudflats	<u>moderate quality, or co</u> 2 = Present and either com	prises a small part of wetland's vegetati mprises a significant part but is of low que prises a significant part of wetland's veg	uality getation and
	Open water <20 acres (8 ha) Moss/lichen. Other		or comprises a small part and is of high a significant part or more of wetland's v	
	6b. Horizontal (plan view) interspersion. Select only one. ☐ High (5)	Narrative Description of Ve low = Low species diversity native species	egetation Quality / &/or dominance of nonnative or disturb	ance tolera
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)]	nonnative &/or disture and species diversity	priminant component of the vegetation, all bance tolerant native species can also b moderate to moderately high, but gener	e present,
	X Low (1) [BR/CM (2)] None (0)	high = A predominance of na tolerant native sp abs	threatened or endangered species ative species with nonnative sp &/or dist sent or virtually absent, and high sp dive resence of rate, threatened, or endange	rsity and oft
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Water C		
	Extensive >75% cover (-5) Moderate 25-75% cover (-3)	1 = Low 0.1 to <1 ha (0.25	cres) [For BR/CM <0.04 ha (0.1 acre)] to 2.5 acres) [BR/CM 0.04 to <0.2 ha	
	X Sparse 5-25% cover (-1) Nearly absent <5% cover (0) Absent (1)	(0.1 to 0.5 acre)] 2 = Moderate 1 to <4 ha (2. 3 = High 4 ha (9.9 acres) of	.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0 r more [BR/CM 2 ha (5 acres) or more]	0.5 to 5 acre
	6d. Microtopography. Score all present using 0 to 3 scale.	Hypothetical Wetland for E	Estimating Degree of Interspersion	
	Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in.) Standing dead >25 cm (10 in.) dbh Amphibian breeding pools			
		None Low Microtopography Cover So	Low Moderate Moderate	High
		0 = Absent		
		2 = Present in moderate an	mounts or if more common of marginal on nounts, but not of highest quality or in sr	
		amounts of highest qua		

(max 100 pts)

0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



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Site: W-006	Rate	r <b>(s):</b> OH:jb	Date: 03/2020	
51 subtotal previous page	Metric 5. Special Wetla	ands		
max 10 pts. subtotal				
	*If the documented raw score for Metric 5	is 30 points or higher, the site is auto	omatically considered a Category 3 wetland.	
raw score*	Bog, fen, wet prairie (10); acidophilic ve Assoc. forest (wetl. &/or adj. upland) im Sensitive geologic feature such as sprii Vernal pool (5); isolated, perched, or sl Island wetland >0.1 acre (0.04 ha) in re Braided channel or floodplain/terrace d Gross morph. adapt. in >5 trees >10 in Ecological community with global rank Known occurrence state/federal threate [*use higher rank where mixed rank o Superior/enhanced habitat/use: migrato	, checklists, maps, resource specialis eg., mossy substrate >10 sq.m, sphagnum cl. >0.25 acre (0.1 ha); old growth (10); ma ng/seep, sink, losing/underground stream, ope wetland (4); headwater wetland [1st or eservoir, river, or perennial water >6 ft (2 m epressions (floodplain pool, slough, oxbow . (25 cm) dbh: buttress, multitrunk/stool, sti (NatureServe): G1*(10), G2*(5), G3*(3) [*u ened/endangered species (10); other rare s r qualifier] [exclude records which are only ory songbird/waterfowl (5); in-reservoir butt	st concurrence, data sources, references, etc). or other moss (5); muck, organic soil layer (3) ature >18 in. (45 cm) dbh (5) [exclude pine plantation] cave, waterfall, rock outcrop/cliff (5) rder perennial or above] (3) b) deep (5) <i>v</i> , meander scar, etc.) (3) lited, 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)	
max 20 pts. subtotal	Metric 6. Plant Commu	•		
	6a. Wetland vegetation communities. Score all present using 0 to 3 scale.	Vegetation Community Cov 0 = Absent or <0.1 ha (0.25	acre) contiguous acre	
	Aquatic bed Emergent	[For BR/CM <0.04 ha (0. 1 = Present and either comp	.1 acre)] prises a small part of wetland's vegetation and is o	
	Shrub	moderate quality, or com	nprises a significant part but is of low quality	
	X Forest Mudflats		prises a significant part of wetland's vegetation and r comprises a small part and is of high quality	
	Open water <20 acres (8 ha) Moss/lichen. Other		a significant part or more of wetland's vegetation	
	6b. Horizontal (plan view) interspersion.	Narrative Description of Ve		
	Select only one. High (5)	low = Low species diversity on native species	&/or dominance of nonnative or disturbance tolera	
	Moderately high (4) [BR/CM (5)]	mod = Native species are dor	minant component of the vegetation, although	
	Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)]		ance tolerant native species can also be present, moderate to moderately high, but generally	
	X Low (1) [BR/CM (2)]	w/o presence of rare, t	threatened or endangered species	
	None (0)	tolerant native sp abse	tive species with nonnative sp &/or disturbance ent or virtually absent, and high sp diversity and of esence of rate, threatened, or endangered species	
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Water Cla	ass Quality	
	Extensive >75% cover (-5)		res) [For BR/CM <0.04 ha (0.1 acre)] o 2.5 acres) [BR/CM 0.04 to <0.2 ha	
	$\mathbf{X}$ Sparse 5-25% cover (-1)	(0.1 to 0.5 acre)]	<i>,</i> -	
	Nearly absent <5% cover (0) Absent (1)		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/tussocks	Hypothetical Wetland for Es	stimating Degree of Interspersion	
	Coarse woody debris >15 cm (6 ir X Standing dead >25 cm (10 in.) dbl Amphibian breeding pools			
		None Low	Low Moderate Moderate Hig	
		Microtopography Cover Sca 0 = Absent		
			nounts or if more common of marginal quality ounts, but not of highest quality or in small	
			same, but not of mynost quality of in small	

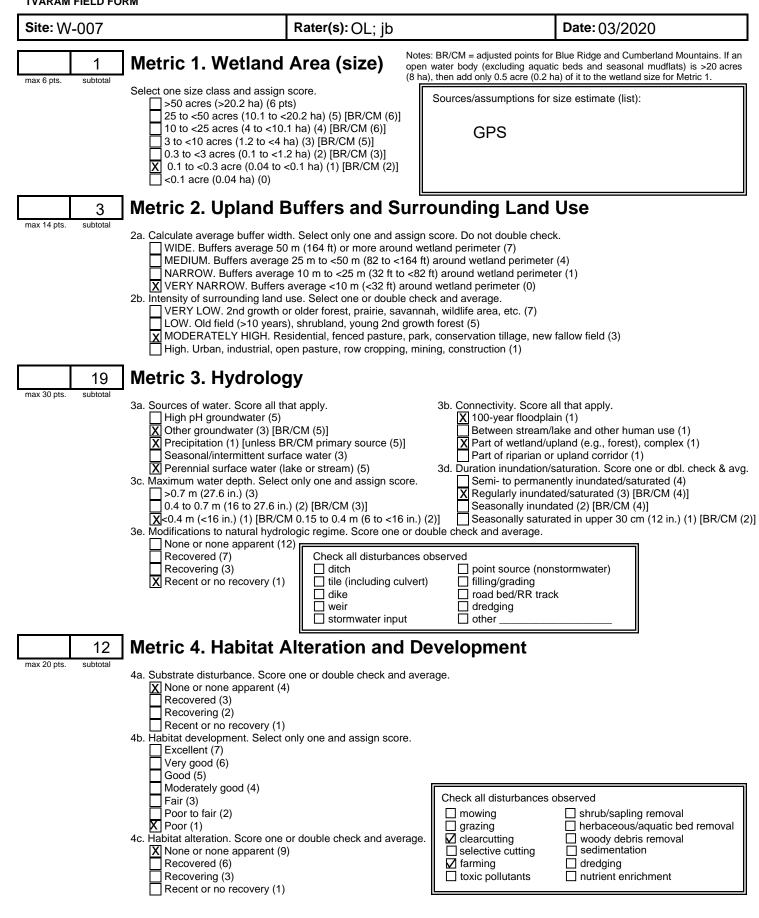
- 3 = Present in moderate or greater amounts and of highest quality
- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

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**GRAND TOTAL** 

(max 100 pts)



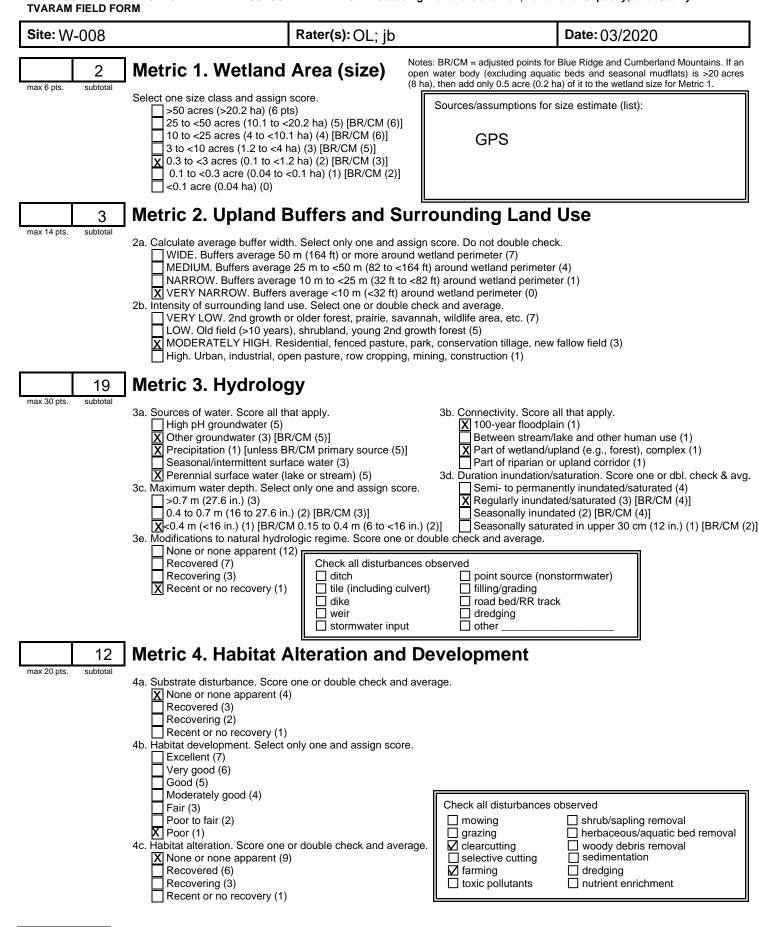
Site: W-007		<b>ter(s):</b> OH:jb	Date: 03/2020
35 subtotal previous page max 10 pts. subtotal raw score*	Select all that apply. Where multiple va documentation for each selection (phot Bog, fen, wet prairie (10); acidophilic Assoc. forest (wetl. &/or adj. upland) Sensitive geologic feature such as s Vernal pool (5); isolated, perched, o Island wetland >0.1 acre (0.04 ha) ir Braided channel or floodplain/terrace Gross morph. adapt. in >5 trees >10	c 5 is 30 points or higher, the site is alues apply in row, score row as sing tos, checklists, maps, resource spec c veg., mossy substrate >10 sq.m, sphag ) incl. >0.25 acre (0.1 ha); old growth (10 ;pring/seep, sink, losing/underground stre r slope wetland (4); headwater wetland [1 n reservoir, river, or perennial water >6 ft e depressions (floodplain pool, slough, oz 0 in. (25 cm) dbh: buttress, multitrunk/stoo	Ist order perennial or above] (3) (2 m) deep (5)
A subtotal	[*use higher rank where mixed rank         Superior/enhanced habitat/use: migit         Cat. 1 (very low quality) : <1 acre (0	k or qualifier] [exclude records which are ratory songbird/waterfowl (5); in-reservoin .4 ha) AND EITHER >80% cover of invas nunities, Interspers Vegetation Community	r buttonbush (4); other fish/wildlife management/designation (3 sives OR nonvegetated on mined/excavated land (-10) ion, Microtopography Cover Scale
	Score all present using 0 to 3 scale. Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	[For BR/CM <0.04 h 1 = Present and either c moderate quality, or 2 = Present and either c is of moderate qualit	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) interspersion Select only one. High (5) Moderately high (4) [BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] None (0)	low = Low species diver- native species ] mod = Native species are nonnative &/or dis and species divers <u>w/o presence of ra</u> high = A predominance of tolerant native space	f Vegetation Quality sity &/or dominance of nonnative or disturbance toleran 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 oft e 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)	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 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 X Standing dead >25 cm (10 in.) o Amphibian breeding pools	6 in.)	or Estimating Degree of Interspersion

(max 100 pts)

- 3 = Present in moderate or greater amounts and of highest quality
- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

TENNESSEE VALLEY AUTHORITY RAPID ASSESSMENT METHOD: Assessing Wetland Condition, Functional Capacity, and Quality

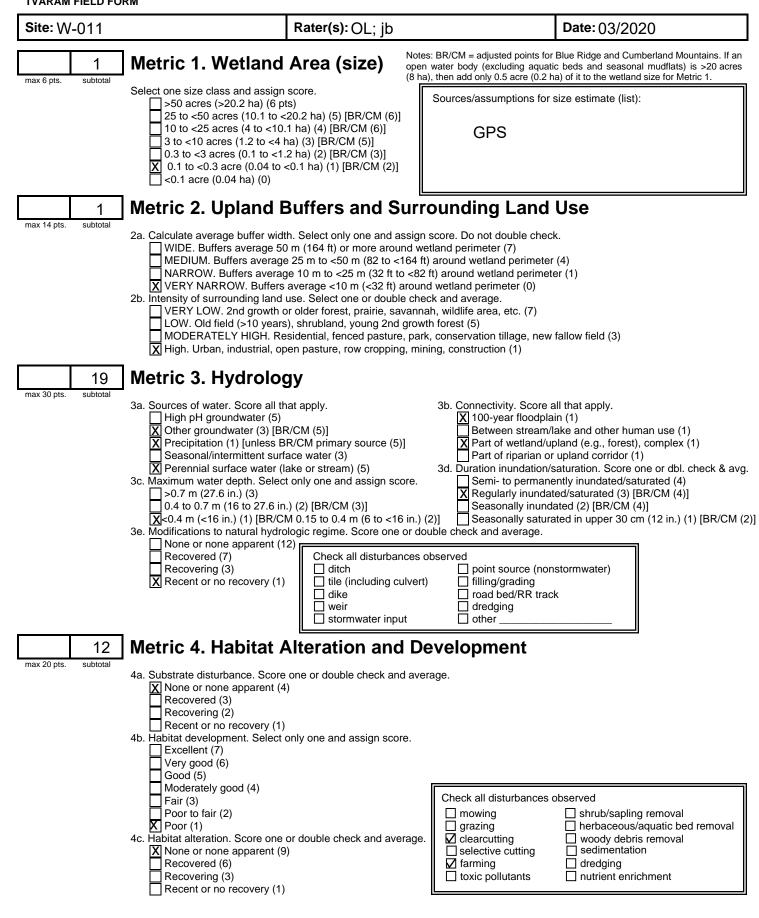


Site: W-008	te: W-008 Rater(s): OH:jb Date: 03/2020		Date: 03/2020
max 10 pts. subtotal	etric 5. Special Wetlar		matically considered a Category 3 wetland.
doc	Bog, fen, wet prairie (10); acidophilic veg. Assoc. forest (wetl. &/or adj. upland) incl. Sensitive geologic feature such as spring/ Vernal pool (5); isolated, perched, or slop Island wetland >0.1 acre (0.04 ha) in rese Braided channel or floodplain/terrace dep Gross morph. adapt. in >5 trees >10 in. (2 Ecological community with global rank (Ma Known occurrence state/federal threatene [*use higher rank where mixed rank or q Superior/enhanced habitat/use: migratory Cat. 1 (very low quality) : <1 acre (0.4 ha)	hecklists, maps, resource specialist , mossy substrate >10 sq.m, sphagnum ( >0.25 acre (0.1 ha); old growth (10); mat seep, sink, losing/underground stream, o e wetland (4); headwater wetland [1st or rvoir, river, or perennial water >6 ft (2 m) ressions (floodplain pool, slough, oxbow, 5 cm) dbh: buttress, multitrunk/stool, stil atureServe): G1*(10), G2*(5), G3*(3) [*us dd/endangered species (10); other rare sp alifier] [exclude records which are only " songbird/waterfowl (5); in-reservoir butto AND EITHER >80% cover of invasives (	t concurrence, data sources, references, etc). or other moss (5); muck, organic soil layer (3) ture >18 in. (45 cm) dbh (5) [exclude pine plantation] cave, waterfall, rock outcrop/cliff (5) der perennial or above] (3) in deep (5) , meander scar, etc.) (3) ted, shallow roots/tip-up, or pneumatophores (3) se higher rank where mixed rank or qualifier] pecies with global rank G1*(10), G2*(5), G3*(3) 'historic"] onbush (4); other fish/wildlife management/designation (3 OR nonvegetated on mined/excavated land (-10)
max 20 pts. subtotal	etric 6. Plant Commur	•	
	Wetland vegetation communities. re all present using 0 to 3 scale. Aquatic bed Emergent X Shrub Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	2 = Present and either comp is of moderate quality, or	acre) contiguous acre
	Horizontal (plan view) interspersion.	Narrative Description of Veg	<b>letation Quality</b> I/or dominance of nonnative or disturbance tolera
	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)	nonnative &/or disturba and species diversity m w/o presence of rare, th high = A predominance of nat tolerant native sp abse	ninant component of the vegetation, although ance tolerant native species can also be present, noderate to moderately high, but generally hreatened or endangered species ive species with nonnative sp &/or disturbance nt or virtually absent, and high sp diversity and off sence of rate, threatened, or endangered species
	Coverage of invasive plants. 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 acr	
	Microtopography. ore all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in.) X Standing dead >25 cm (10 in.) dbh Amphibian breeding pools	Hypothetical Wetland for Es	timating Degree of Interspersion
		Microtopography Cover Sca <u>0 = Absent</u> <u>1 = Present in very small am</u>	

(max 100 pts)

- 3 = Present in moderate or greater amounts and of highest quality
- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

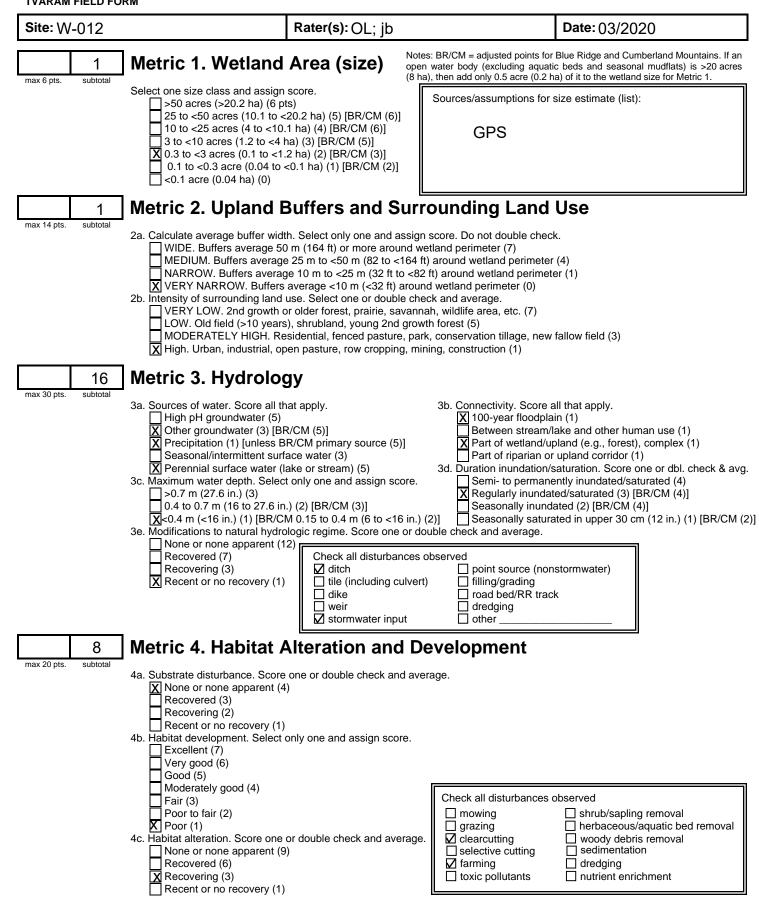


Site: W-011	Rater(s)	∺OH:jb	<b>Date:</b> 03,	/2020
33 subtotal previous page		_		
max 10 pts. subtotal	ric 5. Special Wetlan		tomatically considered a C	ategory 3 wetland.
raw score* Select docum	all that apply. Where multiple values a entation for each selection (photos, ch Bog, fen, wet prairie (10); acidophilic veg., r Assoc. forest (wetl. &/or adj. upland) incl. >/ Sensitive geologic feature such as spring/se Vernal pool (5); isolated, perched, or slope Island wetland >0.1 acre (0.04 ha) in reserv Braided channel or floodplain/terrace depre Gross morph. adapt. in >5 trees >10 in. (25 Ecological community with global rank (Nat Known occurrence state/federal threatened [*use higher rank where mixed rank or qua Superior/enhanced habitat/use: migratory s Cat. 1 (very low quality) : <1 acre (0.4 ha) A	pply in row, score row as single ecklists, maps, resource specia nossy substrate >10 sq.m, sphagnu 0.25 acre (0.1 ha); old growth (10); n eep, sink, losing/underground strean wetland (4); headwater wetland [1st roir, river, or perennial water >6 ft (2 ssions (floodplain pool, slough, oxbo cm) dbh: buttress, multitrunk/stool, a ureServe): G1*(10), G2*(5), G3*(3) [ /endangered species (10); other rare alifier] [exclude records which are on ongbird/waterfowl (5); in-reservoir bu	feature with highest point y list concurrence, data sour m or other moss (5); muck, org nature >18 in. (45 cm) dbh (5) n, cave, waterfall, rock outcrop, order perennial or above] (3) m) deep (5) ww, meander scar, etc.) (3) stilted, shallow roots/tip-up, or *use higher rank where mixed a species with global rank G1*( ly "historic"] uttonbush (4); other fish/wildlife	value. Provide ces, references, etc). anic soil layer (3) [exclude pine plantation] cliff (5) pneumatophores (3) rank or qualifier] 10), G2*(5), G3*(3)
3 Met	ric 6. Plant Commun	ities, Interspersio	on, Microtopog	Iraphy
Score	etland vegetation communities. all present using 0 to 3 scale. Aquatic bed Emergent Shrub Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	2 = Present and either con	5 acre) contiguous acre 0.1 acre)] pprises a small part of weth omprises a significant part to pprises a significant part of or comprises a small part a	out is of low quality wetland's vegetation and and is of high quality
	rizontal (plan view) interspersion. only one. High (5)	Narrative Description of V low = Low species diversity native species		tive or disturbance tolera
X	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] None (0)	mod = Native species are d nonnative &/or distur and species diversity w/o presence of rare high = A predominance of n tolerant native sp ab	bance tolerant native spec moderate to moderately h , threatened or endangered	ies can also be present, igh, but generally <u>d species</u> re sp &/or disturbance d high sp diversity and of
Add or	verage of invasive plants. 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 C           0 =         Absent <0.1 ha (0.25 at 1 = Low 0.1 to <1 ha (0.25 (0.1 to 0.5 acre))]	to 2.5 acres) [BR/CM <0.04 ha to 2.5 acres) [BR/CM 0.04 2.5 to 9.9 acres) [BR/CM 0.	to <0.2 ha 2 to <02 ha (0.5 to 5 acre
Score	crotopography. all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in.) Standing dead >25 cm (10 in.) dbh Amphibian breeding pools	Hypothetical Wetland for I	Estimating Degree of Inte	rspersion
	, imprimitant procounty pools	None Low	Low Moderate	Moderate High

(max 100 pts)

- 3 = Present in moderate or greater amounts and of highest quality
- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

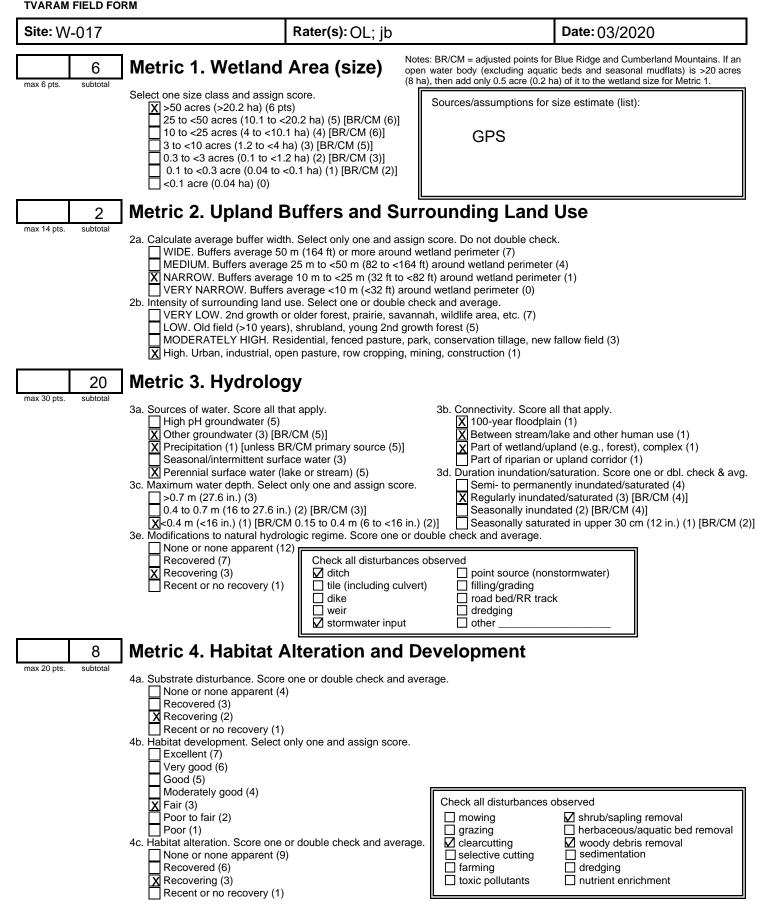


Site: W-012	Rater(s): OH:jb	Date: 03/2020
raw score* subtotal *If the docume documentation Bog, fen Sensitive	apply. Where multiple values apply in row, score row for each selection (photos, checklists, maps, resour wet prairie (10); acidophilic veg., mossy substrate >10 sq.r	rce specialist concurrence, data sources, references, etc). m, sphagnum or other moss (5); muck, organic soil layer (3) owth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] ound stream, cave, waterfall, rock outcrop/cliff (5)
Braided Gross m Ecologic Known c [*use hi Superior Cat. 1 (v	al community with global rank (NatureServe): G1*(10), G2*( ccurrence state/federal threatened/endangered species (10 gher rank where mixed rank or qualifier] [exclude records w enhanced habitat/use: migratory songbird/waterfowl (5); in- ery low quality) : <1 acre (0.4 ha) AND EITHER >80% cove	slough, oxbow, meander scar, etc.) (3) trunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) (5), G3*(3) [*use higher rank where mixed rank or qualifier] ); other rare species with global rank G1*(10), G2*(5), G3*(3) /hich are only "historic"] reservoir buttonbush (4); other fish/wildlife management/designation (3 r of invasives OR nonvegetated on mined/excavated land (-10)
max 20 pts. subtotal 6a. Wetland ve Score all prese Aquatic Emerge Shrub X Forest Mudflat	nt using 0 to 3 scale. bed nt 1 = Present and moderate qu 2 = Present and is of moderate	munity Cover Scale 0.1 ha (0.25 acre) contiguous acre <0.04 ha (0.1 acre)] either comprises a small part of wetland's vegetation and is o lality, or comprises a significant part but is of low quality either comprises a significant part of wetland's vegetation and te quality, or comprises a small part and is of high quality
Moss/line     6b. Horizontal     Select only one     High (5     Modera     Modera     Modera     Modera	chen. Other      and is of high         (plan view) interspersion.       Narrative Description         a.       low = Low species         tely high (4) [BR/CM (5)]       mod = Native species         tely low (2) [BR/CM (3)]       nonnative	ption of Vegetation Quality es diversity &/or dominance of nonnative or disturbance tolera cies ecies are dominant component of the vegetation, although &/or disturbance tolerant native species can also be present, es diversity moderate to moderately high, but generally
☐ None (0 6c. Coverage o Add or deduct ☐ Extensi ☐ Modera X Sparse ☐ Nearly :	high = A predominitolerant na         bit not alw         of invasive plants.         points for coverage.         we >75% cover (-5)         0 = Absent <0.1	to <4 ha (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre
Vegeta Coarse X Standin	raphy. ent using 0 to 3 scale. ed hummocks/tussocks woody debris >15 cm (6 in.) g dead >25 cm (10 in.) dbh ian preeding pools	19 acres) or more [BR/CM 2 ha (5 acres) or more] tland for Estimating Degree of Interspersion
	<u>Microtopography</u> <u>0 = Absent</u> <u>1 = Present in ve</u> 2 = Present in m	

(max 100 pts)

- 3 = Present in moderate or greater amounts and of highest quality
- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

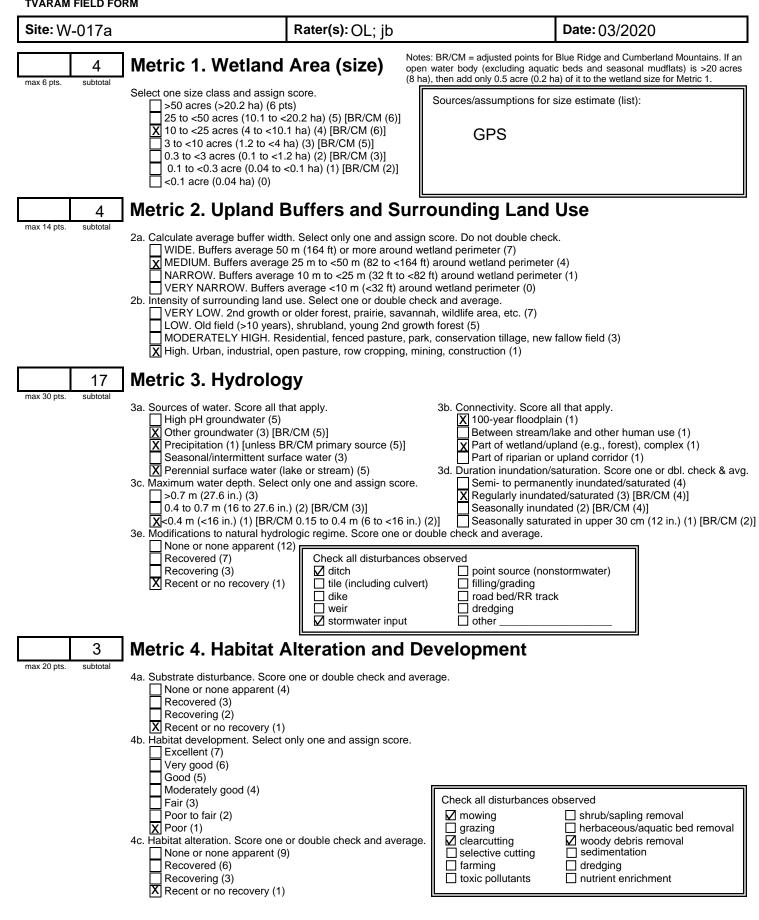


Site: W-017	Rater(s	):OH:jb		Date: 03/2020	
max 10 pts. subtotal	ic 5. Special Wetlan		automatically con	nsidered a Category 3 wetla	ind.
documer As Se Ve Isi Br G Ca	I that apply. Where multiple values a tation for each selection (photos, ch g, fen, wet prairie (10); acidophilic veg., ssoc. forest (wetl. &/or adj. upland) incl. > ensitive geologic feature such as spring/s ernal pool (5); isolated, perched, or slope and wetland >0.1 acre (0.04 ha) in reser aided channel or floodplain/terrace depre ross morph. adapt. in >5 trees >10 in. (25 cological community with global rank (Na hown occurrence state/federal threatened "use higher rank where mixed rank or qu perior/enhanced habitat/use: migratory s at. 1 (very low quality) : <1 acre (0.4 ha) /	necklists, maps, resource spec mossy substrate >10 sq.m, sphag 0.25 acre (0.1 ha); old growth (10 seep, sink, losing/underground stre wetland (4); headwater wetland [' voir, river, or perennial water >6 ft essions (floodplain pool, slough, o 5 cm) dbh: buttress, multitrunk/sto tureServe): G1*(10), G2*(5), G3*(1 J/endangered species (10); other i alifier] [exclude records which are songbird/waterfowl (5); in-reservoi	cialist concurrence jnum or other moss ( ); mature >18 in. (45 sam, cave, waterfall, 1st order perennial o (2 m) deep (5) xbow, meander scar ol, stilted, shallow ro 3) [*use higher rank rare species with glo only "historic"] r buttonbush (4); oth	e, data sources, references (5); muck, organic soil layer (3) 5 cm) dbh (5) [exclude pine plar rock outcrop/cliff (5) or above] (3) r, etc.) (3) ots/tip-up, or pneumatophores where mixed rank or qualifier] abal rank G1*(10), G2*(5), G3*(5) er fish/wildlife management/des	(3) (3) signation (3
max 20 pts. subtotal	ic 6. Plant Commun and vegetation communities.	ities, Interspers		otopography	
Score all p Aqu Em Shi X For Mu Op	present using 0 to 3 scale. quatic bed mergent hrub prest udflats pen water <20 acres (8 ha) oss/lichen. Other	2 = Present and either c is of moderate quality.	a (0.1 acre)] comprises a small comprises a sign comprises a signifi ty, or comprises a ses a significant p	ous acre part of wetland's vegetation ificant part but is of low qua icant part of wetland's vege small part and is of high qu art or more of wetland's veg	ality tation and uality
Select or H M	ontal (plan view) interspersion. Ily one. igh (5) oderately high (4) [BR/CM (5)] oderate (3)[BR/CM (5)]	native species mod = Native species are	sity &/or dominan	<b>lity</b> ce of nonnative or disturbar ponent of the vegetation, alth native species can also be	ough
	oderately low (2) [BR/CM (3)] ow (1) [BR/CM (2)] one (0)	w/o presence of ra high = A predominance of tolerant native sp	are, threatened or of native species w absent or virtually	noderately high, but genera endangered species vith nonnative sp &/or distur absent, and high sp divers e, threatened, or endangere	rbance ity and of
Add or de E: M X N	rage of invasive plants. educt points for coverage. xtensive >75% cover (-5) oderate 25-75% cover (-3) parse 5-25% cover (-1) early absent <5% cover (0) bsent (1)	Mudflat and Open Wate           0 =         Absent <0.1 ha (0.2	5 acres) [For BR/0 25 to 2.5 acres) [E a (2.5 to 9.9 acres)	BR/CM 0.04 to <0.2 ha	to 5 acre
Score al X C S	otopography. I present using 0 to 3 scale. egetated hummocks/tussocks oarse woody debris >15 cm (6 in.) tanding dead >25 cm (10 in.) dbh mphibian breeding pools	Hypothetical Wetland fo			
			Il amounts or if mo	Moderate Moderate	

(max 100 pts)

- 3 = Present in moderate or greater amounts and of highest quality
- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

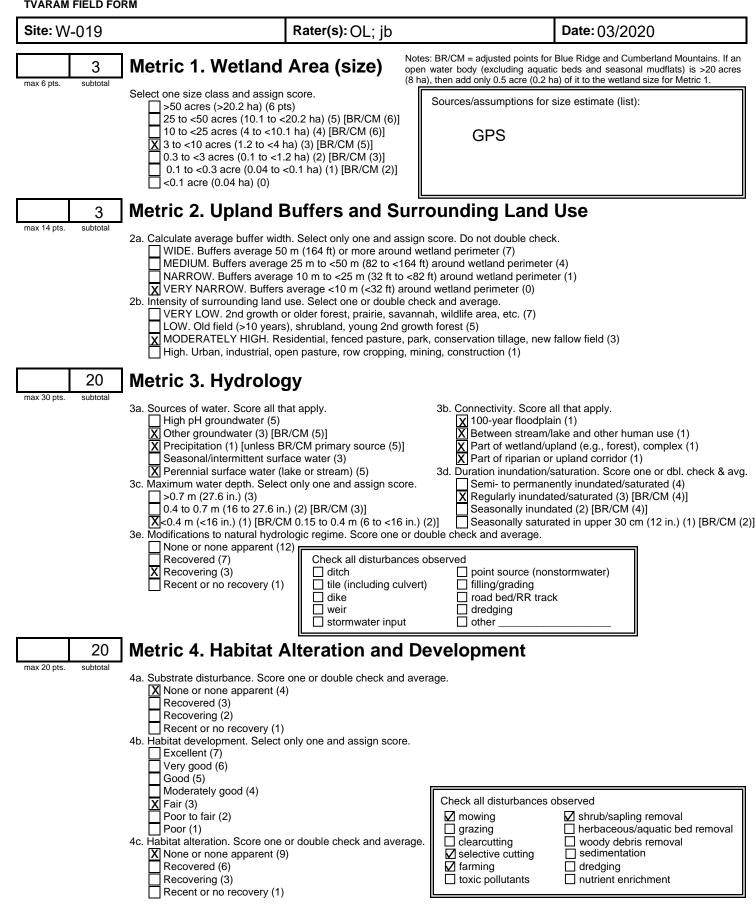


<b>Site:</b> W-017a	Rater(s): OH:jb Date: 03/2020		
28			
subtotal previous page			
	Metric 5. Special Wetla	ande	
nax 10 pts. subtotal			
	*If the documented raw score for Metric 5	is 30 points or higher, the site is au	omatically considered a Category 3 wetland.
raw score*	Bog, fen, wet prairie (10); acidophilic ve Assoc. forest (wetl. &/or adj. upland) ind Sensitive geologic feature such as sprin Vernal pool (5); isolated, perched, or sl Island wetland >0.1 acre (0.04 ha) in re Braided channel or floodplain/terrace d Gross morph. adapt. in >5 trees >10 in. Ecological community with global rank Known occurrence state/federal threate [*use higher rank where mixed rank of	a, checklists, maps, resource special ag., mossy substrate >10 sq.m, sphagnur cl. >0.25 acre (0.1 ha); old growth (10); m ng/seep, sink, losing/underground stream ope wetland (4); headwater wetland [1st of servoir, river, or perennial water >6 ft (2 r epressions (floodplain pool, slough, oxbo . (25 cm) dbh: buttress, multirunk/stool, s (NatureServe): G1*(10), G2*(5), G3*(3) [* ned/endangered species (10); other rare r qualifier] [exclude records which are only	st concurrence, data sources, references, etc). n or other moss (5); muck, organic soil layer (3) ature >18 in. (45 cm) dbh (5) [exclude pine plantation] , cave, waterfall, rock outcrop/cliff (5) order perennial or above] (3) n) deep (5) w, meander scar, etc.) (3) tilted, 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"]
0	Cat. 1 (very low quality) : <1 acre (0.4 h	na) AND EITHER >80% cover of invasive	ttonbush (4); other fish/wildlife management/designatio s OR nonvegetated on mined/excavated land (-10)
nax 20 pts. subtotal	Metric 6. Plant Commu	•	
	6a. Wetland vegetation communities. Score all present using 0 to 3 scale.	Vegetation Community Co 0 = Absent or <0.1 ha (0.25	
	Aquatic bed	[For BR/CM <0.04 ha (	0.1 acre)] prises a small part of wetland's vegetation and i
	X Emergent Shrub		mprises a significant part but is of low quality
	Forest		prises a significant part of wetland's vegetation
	Mudflats Open water <20 acres (8 ha)		or comprises a small part and is of high quality a significant part or more of wetland's vegetatio
	Moss/lichen. Other	and is of high quality	
	6b. Horizontal (plan view) interspersion.	Narrative Description of Ve	
	Select only one. High (5)	low = Low species diversity native species	&/or dominance of nonnative or disturbance tole
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)]	nonnative &/or distur	minant component of the vegetation, although bance tolerant native species can also be preser moderate to moderately high, but generally
	X Low (1) [BR/CM (2)]	w/o presence of rare, threatened or endangered specie	threatened or endangered species
	None (0)	tolerant native sp abs	ative species with nonnative sp &/or disturbance ent or virtually absent, and high sp diversity and esence of rate, threatened, or endangered spec
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Water C	
	Extensive >75% cover (-5) X Moderate 25-75% cover (-3)		cres) [For BR/CM <0.04 ha (0.1 acre)] to 2.5 acres) [BR/CM 0.04 to <0.2 ha
	Sparse 5-25% cover (-1)	(0.1 to 0.5 acre)]	
	Nearly absent <5% cover (0) Absent (1)		5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 a r more [BR/CM 2 ha (5 acres) or more]
	6d. Microtopography.	Hypothetical Wetland for E	stimating Degree of Interspersion
	Score all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in Standing dead >25 cm (10 in.) dbł	.)	
			-
	Amphibian breeding pools	None Low	Low Moderate Moderate H
	Amphibian breeding pools	None Low <u>Microtopography Cover So</u> 0 = Absent	

(max 100 pts)

0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

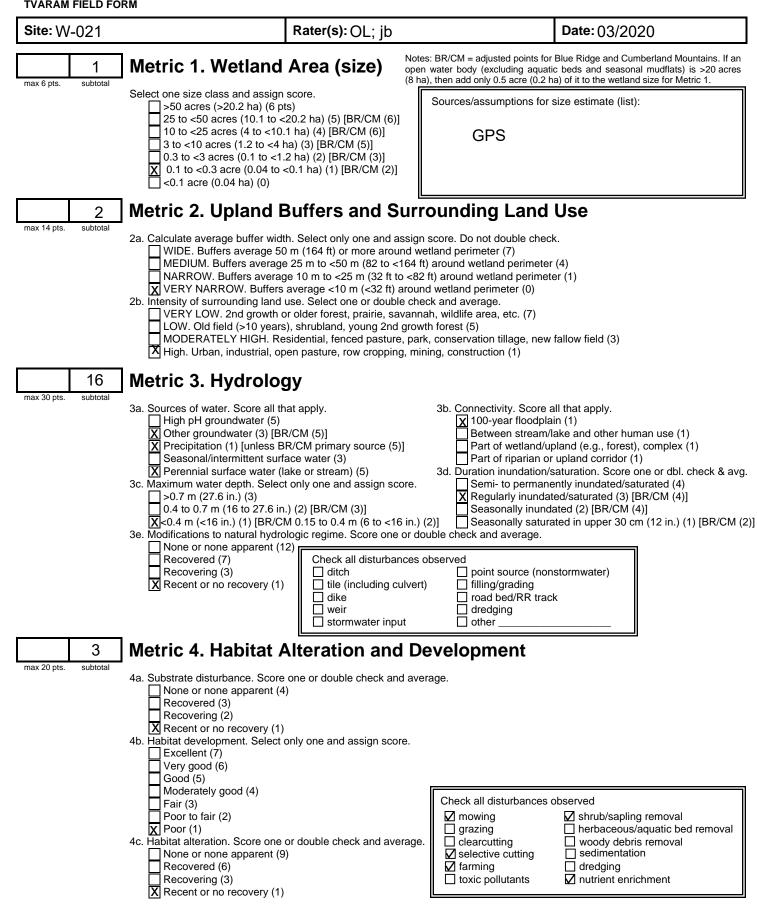


Site: W-019	Rater(s): OH:jb Date:		Date: 03/2020
16			
U ubtotal previous page			
	Matria E Spacial Water	ndo	
nax 10 pts. subtotal	Metric 5. Special Wetla		
	*If the documented raw score for Metric 5	is 30 points or higher, the site is a	utomatically considered a Category 3 wetland.
aw score*	Bog, fen, wet prairie (10); acidophilic ve Assoc. forest (wetl. &/or adj. upland) inc Sensitive geologic feature such as sprin Vernal pool (5); isolated, perched, or slo Island wetland >0.1 acre (0.04 ha) in re Braided channel or floodplain/terrace de Gross morph. adapt. in >5 trees >10 in. Ecological community with global rank ( Known occurrence state/federal threate [*use higher rank where mixed rank or	, checklists, maps, resource specia g., mossy substrate >10 sq.m, sphagnu I. >0.25 acre (0.1 ha); old growth (10); g/seep, sink, losing/underground streat ope wetland (4); headwater wetland [1s servoir, river, or perennial water >6 ft (2 opressions (floodplain pool, slough, oxb (25 cm) dbh: buttress, multitrunk/stool, NatureServe): G1*(10), G2*(5), G3*(3) ned/endangered species (10); other rau qualifier] [exclude records which are on	alist concurrence, data sources, references, etc). um or other moss (5); muck, organic soil layer (3) mature >18 in. (45 cm) dbh (5) [exclude pine plantation] m, cave, waterfall, rock outcrop/cliff (5) t order perennial or above] (3) e 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)
0		a) AND EITHER >80% cover of invasiv	es OR nonvegetated on mined/excavated land (-10)
nax 20 pts. subtotal	■ 6a. Wetland vegetation communities.	Vegetation Community C	
	Score all present using 0 to 3 scale.	0 = Absent or < 0.1 ha (0.2)	25 acre) contiguous acre
	Aquatic bed Emergent	[For BR/CM <0.04 ha 1 = Present and either co	(0.1 acre)) nprises a small part of wetland's vegetation and is o
	Shrub X Forest Mudflats	2 = Present and either co	omprises a significant part but is of low quality mprises a significant part of wetland's vegetation and or comprises a small part and is of high quality
	Open water <20 acres (8 ha) Moss/lichen. Other		s a significant part or more of wetland's vegetation
	6b. Horizontal (plan view) interspersion.	Narrative Description of	
	Select only one. High (5)	low = Low species diversi native species	ty &/or dominance of nonnative or disturbance tolera
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)]	mod = Native species are o nonnative &/or distu	dominant component of the vegetation, although rbance tolerant native species can also be present, y moderate to moderately high, but generally
	Moderately low (2) [BR/CM (3)]	w/o presence of rare	e, threatened or endangered species
	None (0)	tolerant native sp at	native species with nonnative sp &/or disturbance osent or virtually absent, and high sp diversity and of presence of rate, threatened, or endangered species
	6c. Coverage of invasive plants. Add <u>or</u> deduct points for coverage.	Mudflat and Open Water	
	Extensive >75% cover (-5) X Moderate 25-75% cover (-3)		acres) [For BR/CM <0.04 ha (0.1 acre)] 5 to 2.5 acres) [BR/CM 0.04 to <0.2 ha
	Sparse 5-25% cover (-1) Nearly absent <5% cover (0)	(0.1 to 0.5 acre)]	
	Absent (1)		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.	Hypothetical Wetland for	Estimating Degree of Interspersion
	Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in Standing dead >25 cm (10 in.) dbh Amphibian breeding pools		
		None Low	Low Moderate Higi
		Microtopography Cover S 0 = Absent	
		1 - Drecent in yery small	amounts or if more common of marginal quality

(max 100 pts)

- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

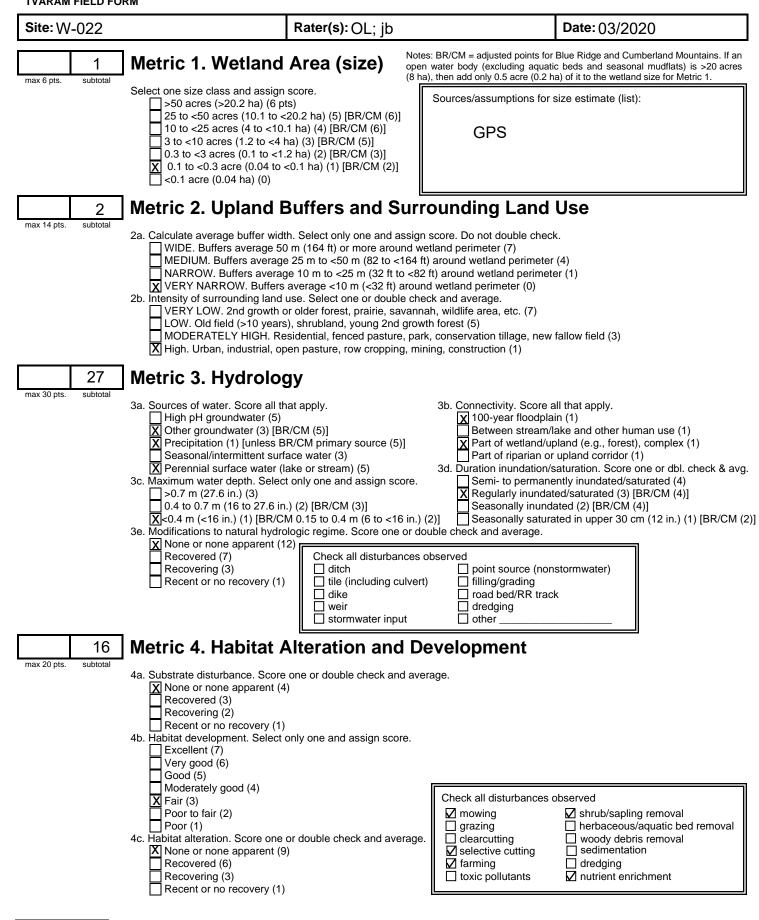


Site: W-021	Rater(s): OH:jb		Date: 03/2020
23 subtotal previous page	Special Wetlands		
raw score* subtotal *If the documentation Bog, fer Assoc. f Sensitiv Vernal p Island w Braided Gross m Ecologic	<b>5. Special Wetlands</b> Inted raw score for Metric 5 is 30 points of apply. Where multiple values apply in row of for each selection (photos, checklists, n , wet prairie (10); acidophilic veg., mossy subs porest (wetl. &/or adj. upland) incl. >0.25 acre (( e geologic feature such as spring/seep, sink, lc ool (5); isolated, perched, or slope wetland (4) etland >0.1 acre (0.04 ha) in reservoir, river, o channel or floodplain/terrace depressions (floo iorph. adapt. in >5 trees >10 in. (25 cm) dbh: b ial community with global rank (NatureServe): pocurrence state/federal threatened/endangere	v, score row as single feature with naps, resource specialist concurre trate >10 sq.m, sphagnum or other m 0.1 ha); old growth (10); mature >18 in sing/underground stream, cave, wate ; headwater wetland [1st order perenn r perennial water >6 ft (2 m) deep (5) dplain pool, slough, oxbow, meander uttress, multitrunk/stool, stilted, shallo G1*(10), G2*(5), G3*(3) [*use higher r	h highest point value. Provide ence, data sources, references, etc). oss (5); muck, organic soil layer (3) h. (45 cm) dbh (5) [exclude pine plantation] irfall, rock outcrop/cliff (5) hial or above] (3) scar, etc.) (3) w roots/tip-up, or pneumatophores (3) rank where mixed rank or qualifier]
[*use h Superio Cat. 1 (\	igher rank where mixed rank or qualifier] [exclu	ide records which are only "historic"] terfowl (5); in-reservoir buttonbush (4) R >80% cover of invasives OR nonveg	; other fish/wildlife management/designation (3 getated on mined/excavated land (-10)
6a. Wetland vo Score all preso Aquatio Emerge Shrub Forest Mudfla Open v	ent using 0 to 3 scale. 0 = A 1 = F 2 = F 2 = F 2 = F 2 = F 3 = F	noderate quality, or comprises a signature of the second s	tiguous acre mall part of wetland's vegetation and is of significant part but is of low quality gnificant part of wetland's vegetation and es a small part and is of high quality int part or more of wetland's vegetation
Select only on High (5 Modera Modera Modera	e. low = ) ately high (4) [BR/CM (5)] mod = ate (3)[BR/CM (5)] ately low (2) [BR/CM (3)] ) [BR/CM (2)]	native species Native species are dominant con nonnative &/or disturbance toler and species diversity moderate w/o presence of rare, threatened A predominance of native speci- tolerant native sp absent or virtu	nance of nonnative or disturbance tolera mponent of the vegetation, although rant native species can also be present, to moderately high, but generally
Add or deduct Extens Modera X Sparse	$v_{e} > 75\%$ cover (-5) $\underline{0} = A$ $ate 25-75\%$ cover (-3) $1 = L$ $5-25\%$ cover (-1)       () $absent < 5\%$ cover (0) $\underline{2} = M$	at and Open Water Class Quali bsent <0.1 ha (0.25 acres) [For B ow 0.1 to <1 ha (0.25 to 2.5 acre 0.1 to 0.5 acre)] Moderate 1 to <4 ha (2.5 to 9.9 acres) digh 4 ha (9.9 acres) or more [BR	BR/CM <0.04 ha (0.1 acre)] es) [BR/CM 0.04 to <0.2 ha cres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre
Vegeta Coarse Standir	graphy. Hypor ent using 0 to 3 scale. ted hummocks/tussocks woody debris >15 cm (6 in.) ng dead >25 cm (10 in.) dbh oian breeding pools	thetical Wetland for Estimating	Degree of Interspersion
	$\begin{array}{c} 0 = -A \\ 1 = -F \\ 2 = -F \end{array}$	topography Cover Scale Absent Present in very small amounts or i	if more common of marginal quality t not of highest quality or in small

(max 100 pts)

- 3 = Present in moderate or greater amounts and of highest quality
- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

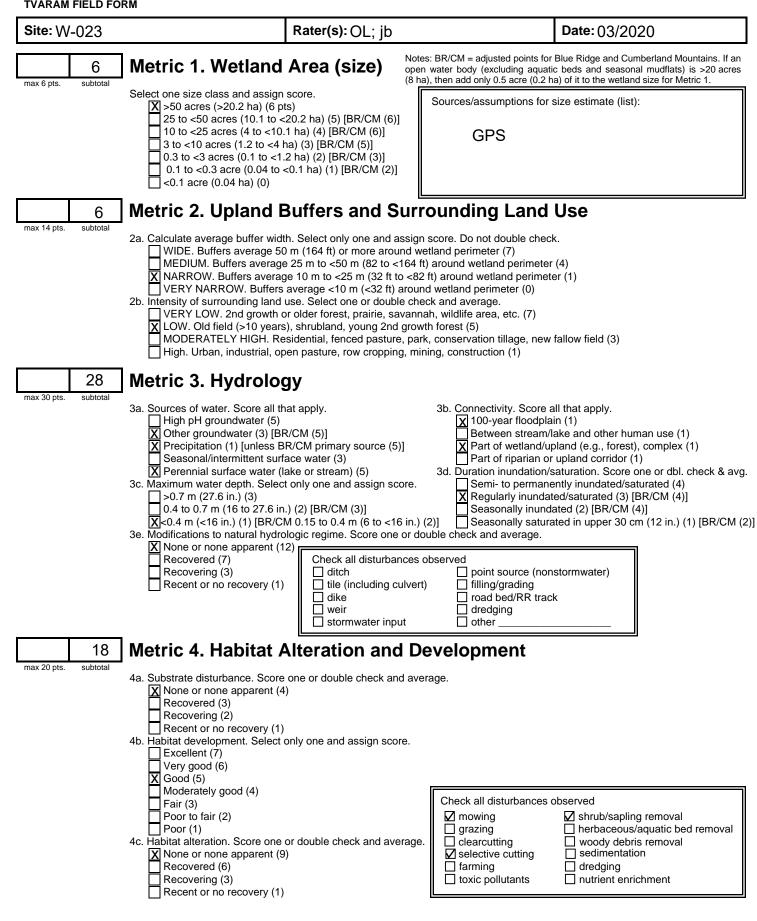


Site: W-022	Ra	iter(s): OH:jb	Date: 03/2020
46 subtotal previous page max 10 pts. subtotal raw score*	Select all that apply. Where multiple v documentation for each selection (pho Bog, fen, wet prairie (10); acidophil Assoc. forest (wetl. &/or adj. upland Sensitive geologic feature such as Vernal pool (5); isolated, perched, o Island wetland >0.1 acre (0.04 ha) i Braided channel or floodplain/terrad Gross morph. adapt. in >5 trees >1	ic 5 is 30 points or higher, the site is alues apply in row, score row as sing toos, checklists, maps, resource spec ic veg., mossy substrate >10 sq.m, sphag b) incl. >0.25 acre (0.1 ha); old growth (10 spring/seep, sink, losing/underground stra or slope wetland (4); headwater wetland [ in reservoir, river, or perennial water >6 ff ce depressions (floodplain pool, slough, o 0 in. (25 cm) dbh: buttress, multitrunk/sto	(2 m) deep (5)
A subtotal	Known occurrence state/federal thr [*use higher rank where mixed ran Superior/enhanced habitat/use: mig Cat. 1 (very low quality) : <1 acre (0	eatened/endangered species (10); other is or qualifier] [exclude records which are gratory songbird/waterfowl (5); in-reservoi 0.4 ha) AND EITHER >80% cover of invase nunities, Interspers Vegetation Community	rare species with global rank G1*(10), G2*(5), G3*(3) only "historic"] ir buttonbush (4); other fish/wildlife management/designation (3 sives OR nonvegetated on mined/excavated land (-10)
	Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	[For BR/CM <0.04 h]         1 =       Present and either of moderate quality, or         2 =       Present and either of is of moderate quality	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) interspersio Select only one. High (5) Moderately high (4) [BR/CM (5 Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] None (0)	low =       Low species divernative species         native species       nonnative species are nonnative &/or dis         and species diversion       w/o presence of rationance of toolerant native species	f Vegetation Quality rsity &/or dominance of nonnative or disturbance tolera 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 off e 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 Wate           0 =         Absent <0.1 ha (0.2	
	6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm ( X Standing dead >25 cm (10 in.) Amphibian breeding pools	s 6 in.)	or Estimating Degree of Interspersion
		2 = Present in moderate amounts of highest	Il amounts or if more common of marginal quality a amounts, but not of highest quality or in small

(max 100 pts)

- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



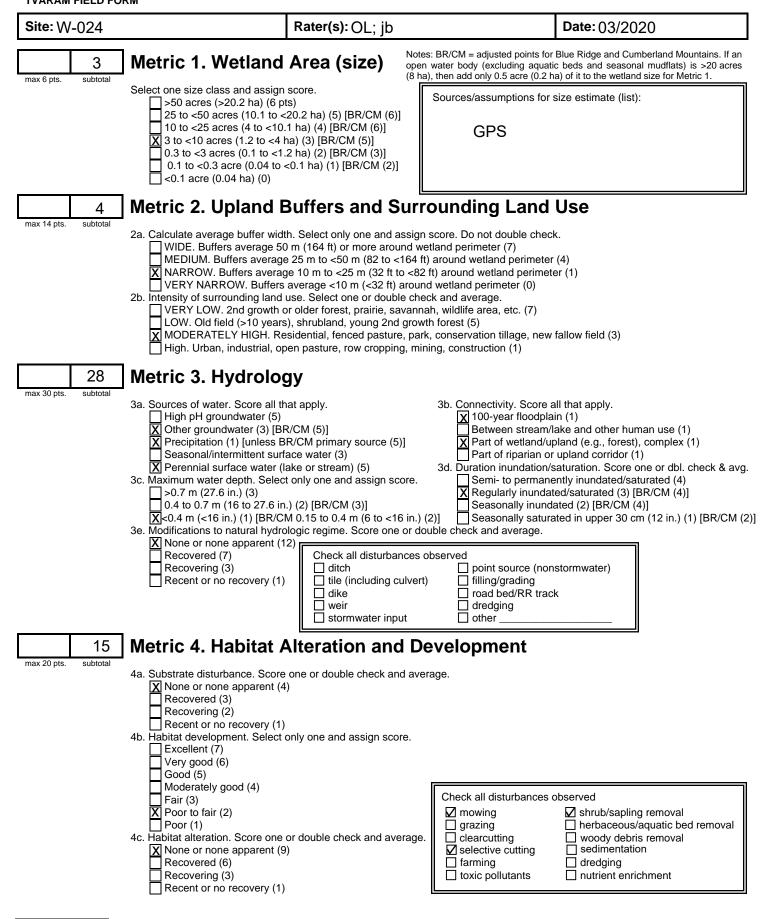
Site: W-023	Rate	r <b>(s):</b> OH:jb	Date: 03/2020
58 subtotal previous page			
max 10 pts. subtotal	Aetric 5. Special Wetla	ands	
raw score* S	elect all that apply. Where multiple value ocumentation for each selection (photos Bog, fen, wet prairie (10); acidophilic ve Assoc. forest (wetl. &/or adj. upland) im Sensitive geologic feature such as sprii Vernal pool (5); isolated, perched, or sl Island wetland >0.1 acre (0.04 ha) in re Braided channel or floodplain/terrace d Gross morph. adapt. in >5 trees >10 in Ecological community with global rank Known occurrence state/federal threated	es apply in row, score row as single fi , checklists, maps, resource specialis eg., mossy substrate >10 sq.m, sphagnum cl. >0.25 acre (0.1 ha); old growth (10); ma ng/seep, sink, losing/underground stream, ope wetland (4); headwater wetland [1st o eservoir, river, or perennial water >6 ft (2 m epressions (floodplain pool, slough, oxbow . (25 cm) dbh: buttress, multitrunk/stool, st (NatureServe): G1*(10), G2*(5), G3*(3) [*t	rder perennial or above] (3) n) deep (5) w, 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)
7	Superior/enhanced habitat/use: migrate	ory songbird/waterfowl (5); in-reservoir but na) AND EITHER >80% cover of invasives	tonbush ( $\tilde{4}$ ); other fish/wildlife management/designation (3 OR nonvegetated on mined/excavated land (-10)
max 20 pts. subtotal	a. Wetland vegetation communities.	Vegetation Community Cov	
S	core all present using 0 to 3 scale. Aquatic bed Emergent Shrub X Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	2 = Present and either comp is of moderate quality, o	
	b. Horizontal (plan view) interspersion. elect only one.	Narrative Description of Ve	getation Quality &/or dominance of nonnative or disturbance tolera
	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)	nonnative &/or disturb and species diversity u w/o presence of rare, high = A predominance of na tolerant native sp abse	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 of esence of rate, threatened, or endangered species
	c. Coverage of invasive plants. dd 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 t (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 acree more [BR/CM 2 ha (5 acres) or more]
	d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 ir Standing dead >25 cm (10 in.) dbł Amphibian breeding pools	.)	stimating Degree of Interspersion
		LOW	Low Moderate High

(max 100 pts)

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

0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

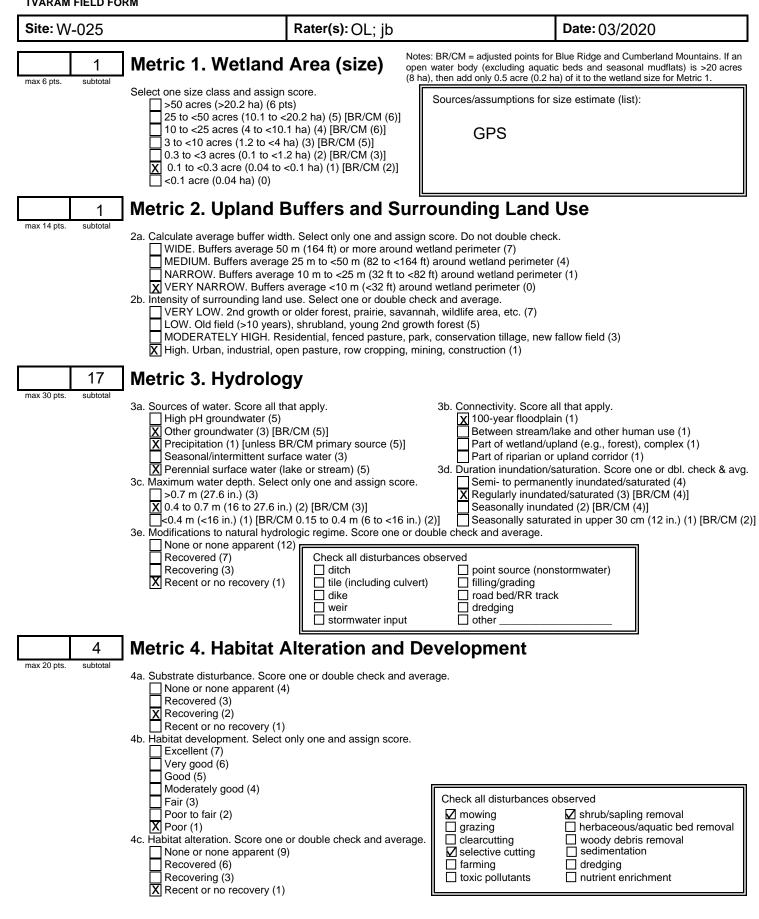


Site: W-024	Rat	er(s): OH:jb	Date: 03/2020
50 subtotal previous page			
	Metric 5. Special Wet	lands	
max 10 pts. subtotal	*If the documented raw score for Metric	5 is 30 points or higher, the site is	automatically considered a Category 3 wetland.
raw score*	documentation for each selection (phot Bog, fen, wet prairie (10); acidophilic Assoc. forest (wetl. &/or adj. upland) Sensitive geologic feature such as s Vernal pool (5); isolated, perched, or Island wetland >0.1 acre (0.04 ha) ir Braided channel or floodplain/terrace Gross morph. adapt. in >5 trees >10 Ecological community with global rau Known occurrence state/federal thre [*use higher rank where mixed rank Superior/enhanced habitat/use: migr	os, checklists, maps, resource spec veg., mossy substrate >10 sq.m, sphag incl. >0.25 acre (0.1 ha); old growth (10 pring/seep, sink, losing/underground stre- slope wetland (4); headwater wetland [ reservoir, river, or perennial water >6 ft e depressions (floodplain pool, slough, o in. (25 cm) dbh: buttress, multitrunk/sto- nk (NatureServe): G1*(10), G2*(5), G3*(; atened/endangered species (10); other is or qualifier] [exclude records which are atory songbird/waterfowl (5); in-reservoi	<ul> <li>(2 m) deep (5)</li> <li>xbow, meander scar, etc.) (3)</li> <li>ol, stilted, shallow roots/tip-up, or pneumatophores (3)</li> <li>3) [*use higher rank where mixed rank or qualifier]</li> <li>rare species with global rank G1*(10), G2*(5), G3*(3)</li> </ul>
max 20 pts. subtotal		•	sion, Microtopography
	6a. Wetland vegetation communities. Score all present using 0 to 3 scale.	Vegetation Community 0 = Absent or <0.1 ha (0	Cover Scale 0.25 acre) contiguous acre
	Aquatic bed	[For BR/CM <0.04 h	na (0.1 acre)]
	X Emergent Shrub		comprises a small part of wetland's vegetation and is of comprises a significant part but is of low quality
	Forest	2 = Present and either of	comprises a significant part of wetland's vegetation and
	Mudflats Open water <20 acres (8 ha)		ty, or comprises a small part and is of high quality ses a significant part or more of wetland's vegetation
	Moss/lichen. Other	and is of high quality	
	6b. Horizontal (plan view) interspersion		
	Select only one.	low = Low species diver native species	sity &/or dominance of nonnative or disturbance tolera
	Moderately high (4) [BR/CM (5)]	mod = Native species are	e dominant component of the vegetation, although
	Moderate (3)[BR/CM (5)] X Moderately low (2) [BR/CM (3)]		sturbance tolerant native species can also be present, sity moderate to moderately high, but generally
	Low (1) [BR/CM (2)]	•	are, threatened or endangered species
	None (0)		of native species with nonnative sp &/or disturbance absent or virtually absent, and high sp diversity and oft
			e presence of rate, threatened, or endangered species
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Wate	r Class Quality
	Extensive >75% cover (-5)	0 = Absent < 0.1 ha (0.2	5 acres) [For BR/CM < 0.04 ha (0.1 acre)]
	Moderate 25-75% cover (-3)	1 = Low 0.1 to <1 ha (0. (0.1 to 0.5 acre)]	25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha
	Nearly absent <5% cover (0)	2 = Moderate 1 to <4 ha	a (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre
	Absent (1)	<u>3 = High 4 ha (9.9 acres</u>	s) or more [BR/CM 2 ha (5 acres) or more]
	6d. Microtopography. Score all present using 0 to 3 scale.	Hypothetical Wetland for	or Estimating Degree of Interspersion
	Vegetated hummocks/tussocks	in.)	
	Standing dead >25 cm (10 in.) c		
	Amphibian breeding pools	None Low	Low Moderate High
		Microtopography Cover	r Scale
		0 = Absent 1 = Present in verv sma	Il amounts or if more common of marginal quality
		2 = Present in moderate	e amounts, but not of highest quality or in small
		amounts of highest	quality or greater amounts and of highest quality

(max 100 pts)

- 3 = Present in moderate or greater amounts and of highest quality
- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



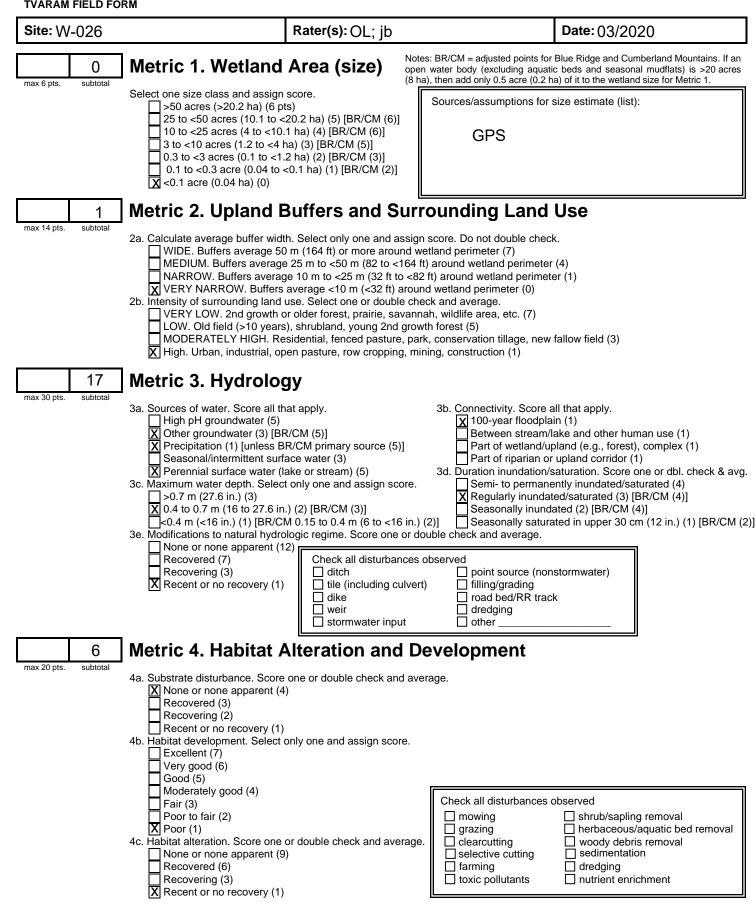
Eurotional Canadity and Qualit .....

Site: W-025	Rater	( <b>s):</b> OH:jb	Date: 03/2	2020
23 subtotal previous page				
max 10 pts. subtotal	Metric 5. Special Wetla	inds		
nax to pis. Subiolai	*If the documented raw score for Metric 5 i	is 30 points or higher, the site is a	utomatically considered a Cat	tegory 3 wetland.
raw score*	Select all that apply. Where multiple values documentation for each selection (photos, Bog, fen, wet prairie (10); acidophilic veg Assoc. forest (wetl. &/or adj. upland) incl Sensitive geologic feature such as spring Vernal pool (5); isolated, perched, or slop Island wetland >0.1 acre (0.04 ha) in res Braided channel or floodplain/terrace de Gross morph. adapt. in >5 trees >10 in. ( Ecological community with global rank (N Known occurrence state/federal threater [*use higher rank where mixed rank or G Superior/enhanced habitat/use: migrator Cat. 1 (very low quality) : <1 acre (0.4 ha	checklists, maps, resource speci- g., mossy substrate >10 sq.m, sphagn I. >0.25 acre (0.1 ha); old growth (10); g/seep, sink, losing/underground streat pe wetland (4); headwater wetland [1s servoir, river, or perennial water >6 ft (2 pressions (floodplain pool, slough, oxt (25 cm) dbh: buttress, multitrunk/stool NatureServe): G1*(10), G2*(5), G3*(3) ned/endangered species (10); other ra qualifier] [exclude records which are o ry songbird/waterfowl (5); in-reservoir b	alist concurrence, data source um or other moss (5); muck, orgar mature >18 in. (45 cm) dbh (5) [ex m, cave, waterfall, rock outcrop/cl t order perennial or above] (3) 2 m) deep (5) 500w, meander scar, etc.) (3) , stilted, shallow roots/tip-up, or pn [*use higher rank where mixed ra re species with global rank G1*(10 nly "historic"] buttonbush (4); other fish/wildlife m	es, references, etc). hic soil layer (3) xclude pine plantation] iff (5) heumatophores (3) nk or qualifier] b), G2*(5), G3*(3) hanagement/designation (3)
1	] Metric 6. Plant Commu	nities, Interspersi	on, Microtopogr	aphy
nax 20 pts. subtotal	6a. Wetland vegetation communities. Score all present using 0 to 3 scale. Aquatic bed X Emergent	Vegetation Community C 0 = Absent or <0.1 ha (0.1 For BR/CM <0.04 ha 1 = Present and either co	25 acre) contiguous acre	nd's vegetation and is o
	Shrub Forest Mudflats Open water <20 acres (8 ha)	2 = Present and either co is of moderate quality	comprises a significant part but mprises a significant part of w , or comprises a small part an es a significant part or more of	<u>it is of low quality</u> retland's vegetation and id is of high quality
	Moss/lichen. Other	and is of high quality	s a significant part of more of	
	6b. Horizontal (plan view) interspersion.	Narrative Description of		
	Select only one. High (5)	native species	ty &/or dominance of nonnativ	
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)]	nonnative &/or distu and species diversi	dominant component of the ve irbance tolerant native specie ty moderate to moderately hig	s can also be present, h, but generally
	Low (1) [BR/CM (2)]	high = A predominance of tolerant native sp al	e, threatened or endangered s native species with nonnative osent or virtually absent, and h presence of rate, threatened,	sp &/or disturbance high sp diversity and of
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Water		
	Extensive >75% cover (-5) Moderate 25-75% cover (-3)		acres) [For BR/CM <0.04 ha ( 5 to 2.5 acres) [BR/CM 0.04 to	
	Sparse 5-25% cover (-1) X Nearly absent <5% cover (0)	(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 acre
	Absent (1)		or more [BR/CM 2 ha (5 acres	
	6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks	Hypothetical Wetland for	Estimating Degree of Inters	spersion
	Coarse woody debris >15 cm (6 in.) Standing dead >25 cm (10 in.) dbh Amphibian breeding pools		Low Moderate	Moderate High
		Microtopography Cover		
		0 = Absent	amounts or if more common o	of marginal quality
			amounts, but not of highest qu	

(max 100 pts)

- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

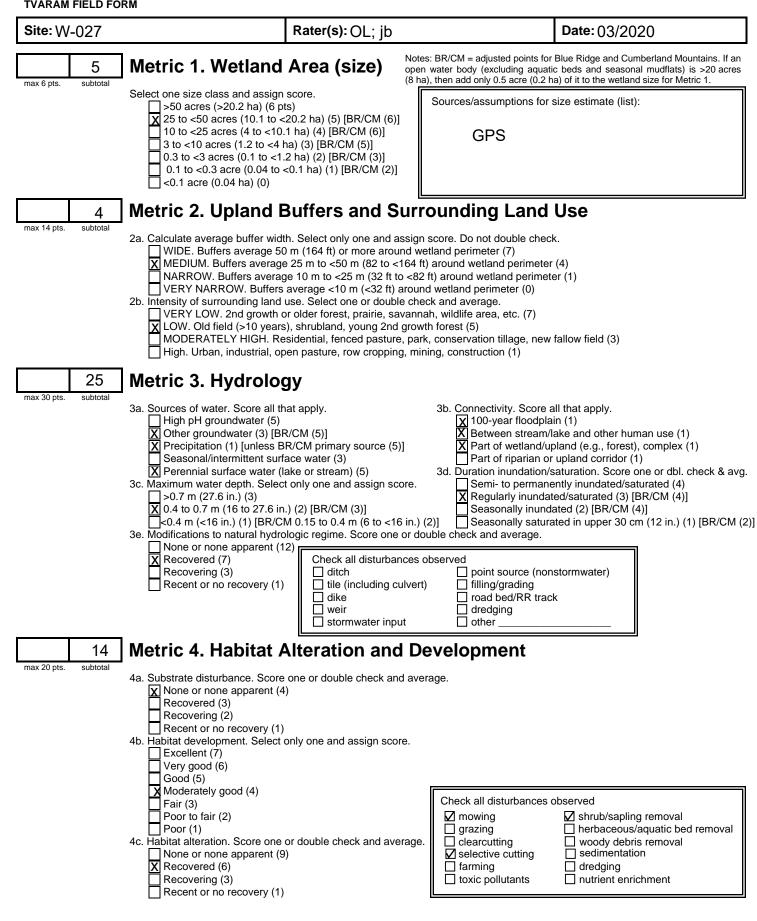


Site: W-026	Rater	<b>:(s):</b> OH:jb	Date	<b>∋:</b> 03/2020	
24					
subtotal previous page					
	Metric 5. Special Wetla	ands			
nax 10 pts. subtotal					
aw score*	*If the documented raw score for Metric 5 Select all that apply. Where multiple value	1 0 /	,	8,	nd.
	documentation for each selection (photos Bog, fen, wet prairie (10); acidophilic ve Assoc. forest (wetl. &/or adj. upland) inc Sensitive geologic feature such as sprir Vernal pool (5); isolated, perched, or sk Island wetland >0.1 acre (0.04 ha) in re Braided channel or floodplain/terrace de Gross morph. adapt. in >5 trees >10 in. Ecological community with global rank (	, checklists, maps, resource spec eg., mossy substrate >10 sq.m, sphagr cl. >0.25 acre (0.1 ha); old growth (10) hg/seep, sink, losing/underground strea ope wetland (4); headwater wetland [1 servoir, river, or perennial water >6 ft ( epressions (floodplain pool, slough, ox (25 cm) dbh: buttress, multitrunk/stoo	ialist concurrence, data num or other moss (5); mu ; mature >18 in. (45 cm) c am, cave, waterfall, rock c st order perennial or abov (2 m) deep (5) bow, meander scar, etc.) I, stilted, shallow roots/tip	a sources, references, uck, organic soil layer (3) dbh (5) [exclude pine plan butcrop/cliff (5) /e] (3) -up, or pneumatophores (	tation]
	Known occurrence state/federal threate [*use higher rank where mixed rank or Superior/enhanced habitat/use: migrato Cat. 1 (very low quality) : <1 acre (0.4 h	ned/endangered species (10); other ra qualifier] [exclude records which are o bry songbird/waterfowl (5); in-reservoir	are species with global ran only "historic"] buttonbush (4); other fish	nk G1*(10), G2*(5), G3*(3 //wildlife management/des	signation (3
1	Metric 6. Plant Commu	unities, Interspers	ion, Microto	pography	
nax 20 pts. subtotal	6a. Wetland vegetation communities.	Vegetation Community (			
	Score all present using 0 to 3 scale.	0 = Absent or <0.1 ha (0. [For BR/CM <0.04 ha	· •	cre	
	X Emergent	1 = Present and either co	omprises a small part of		
	Shrub Forest Mudflats	<ul> <li>moderate quality, or comprises a significant part but is of low quality</li> <li>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</li> </ul>			
	Open water <20 acres (8 ha) Moss/lichen. Other	3 = Present and compris and is of high quality		more of wetland's veg	getation
	6b. Horizontal (plan view) interspersion.	Narrative Description of			
	Select only one. High (5)	low = Low species divers native species	ity &/or dominance of	nonnative or disturban	nce tolera
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)]	mod = Native species are nonnative &/or dist	dominant component urbance tolerant native ity moderate to moderate	e species can also be	present,
	Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)]	w/o presence of ra	re, threatened or enda	ingered species	
	<b>X</b> None (0)		native species with no bsent or virtually abse presence of rate, thre	ent, and high sp diversi	ity and of
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Water			
	Extensive >75% cover (-5) Moderate 25-75% cover (-3)	0 = Absent <0.1 ha (0.25 1 = Low 0.1 to <1 ha (0.25			
	Sparse 5-25% cover (-1)	(0.1 to 0.5 acre)]	, ,		to E corr
	X Nearly absent <5% cover (0) Absent (1)	$\frac{2}{3} = \frac{\text{Moderate 1 to <4 ha}}{\text{High 4 ha (9.9 acres)}}$			
	6d. Microtopography. Sco <u>re</u> all present using 0 to 3 scale.	Hypothetical Wetland fo	r Estimating Degree	of Interspersion	
	Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in Standing dead >25 cm (10 in.) dbh Amphibian breeding pools				00
		None Low		lerate Moderate	Higl
		Microtopography Cover 0 = Absent			
		<u>1 = Present in very small</u>		ommon of marginal qua ghest quality or in sma	

(max 100 pts)

0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



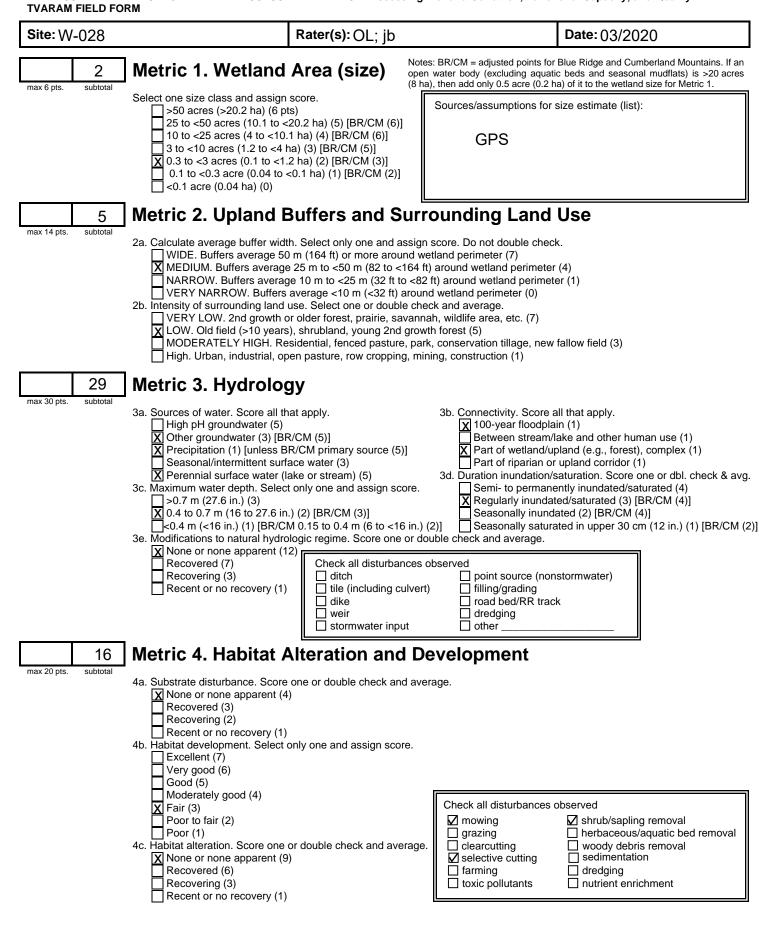
Site: W-027	Rater(s): OH:jb	Date: 03/2020
48 subtotal previous page		
max 10 pts.       subtotal         *If the documer         raw score*       Select all that a documentation         Bog, fen,         Assoc. fo         Sensitive         Vernal po         Island we         Braided of         Cross mo         Ecologica         Known or         [*use hig         Superior/	pply. Where multiple values apply in row, score row for each selection (photos, checklists, maps, resou wet prairie (10); acidophilic veg., mossy substrate >10 sq. rest (wetl. &/or adj. upland) incl. >0.25 acre (0.1 ha); old g geologic feature such as spring/seep, sink, losing/undergi ol (5); isolated, perched, or slope wetland (4); headwater tland >0.1 acre (0.04 ha) in reservoir, river, or perennial w hannel or floodplain/terrace depressions (floodplain pool, rph. adapt. in >5 trees >10 in. (25 cm) dbh: buttress, multi l community with global rank (NatureServe): G1*(10), G2* scurrence state/federal threatened/endangered species (11 pher rank where mixed rank or qualifier] [exclude records v enhanced habitat/use: migratory songbird/waterfowl (5); in	wetland [1st order perennial or above] (3) ater >6 ft (2 m) deep (5) slough, oxbow, meander scar, etc.) (3) itrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) (5), G3*(3) [*use higher rank where mixed rank or qualifier] 0); other rare species with global rank G1*(10), G2*(5), G3*(3) which are only "historic"] -reservoir buttonbush (4); other fish/wildlife management/designation (3)
	Plant Communities, Inters	er of invasives OR nonvegetated on mined/excavated land (-10) Persion, Microtopography
6a. Wetland ve Score all prese Aquatic Emerge Shrub X Forest Mudflats Open w	nt using 0 to 3 scale.       0 = Absent or <	munity Cover Scale         0.1 ha (0.25 acre) contiguous acre         <0.04 ha (0.1 acre)]
6b. Horizontal ( Select only one High (5) Moderat X Moderat Low (1)	plan view) interspersion. ely high (4) [BR/CM (5)] el (3)[BR/CM (5)] ely low (2) [BR/CM (3)] [BR/CM (2)] ) high = A predom tolerant ma but not alw	iption of Vegetation Quality es diversity &/or dominance of nonnative or disturbance tolera
Add or deduct p Extensiv Moderat Sparse	me >75% cover (-5)     0 = Absent <0.1       e 25-75% cover (-3)     1 = Low 0.1 to        5-25% cover (-1)     (0.1 to 0.5 a)       bsent <5% cover (0)	en 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)] to <4 ha (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acre 9.9 acres) or more [BR/CM 2 ha (5 acres) or more]
Vegetat X Coarse Standing	nt using 0 to 3 scale. ed hummocks/tussocks woody debris >15 cm (6 in.) g dead >25 cm (10 in.) dbh an breeding pools	etland for Estimating Degree of Interspersion

(max 100 pts)

- 3 = Present in moderate or greater amounts and of highest quality
- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

TENNESSEE VALLEY AUTHORITY RAPID ASSESSMENT METHOD: Assessing Wetland Condition, Functional Capacity, and Quality

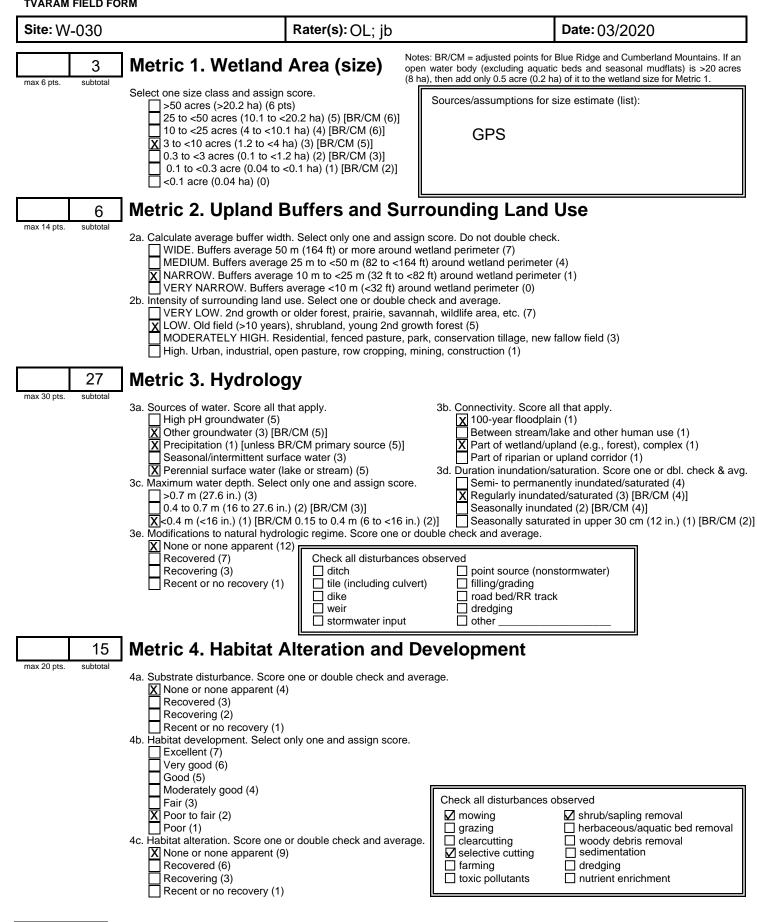


Site: W-028	Rater(s)	):OH:jb		Date: 03/2020	
52 subtotal previous page					
max 10 pts. subtotal	5. Special Wetlan		s automatically co	onsidered a Category 3	wetland.
documentatio Bog, fe Assoc. Sensitiv Vernal Island v Braidec Gross r Ecologi Known [*use l	apply. Where multiple values a n for each selection (photos, ch n, wet prairie (10); acidophilic veg., r forest (wetl. &/or adj. upland) incl. >/ /e geologic feature such as spring/sr pool (5); isolated, perched, or slope wetland >0.1 acre (0.04 ha) in reserv. d channel or floodplain/terrace depre norph. adapt. in >5 trees >10 in. (25 cal community with global rank (Nat occurrence state/federal threatened higher rank where mixed rank or qua or/enhanced habitat/use: migratory s very low quality) : <1 acre (0.4 ha) A	ecklists, maps, resource spe mossy substrate >10 sq.m, spha 0.25 acre (0.1 ha); old growth (1 eep, sink, losing/underground sti wetland (4); headwater wetland /oir, river, or perennial water >6 l essions (floodplain pool, slough, d is om) dbh: buttress, multitrunk/sti rureServe): G1*(10), G2*(5), G3* l/endangered species (10); other lafifer] [exclude records which are songbird/waterfowl (5); in-reserved	ecialist concurren agnum or other mos 0); mature >18 in. (- ream, cave, waterfa [1st order perennial ft (2 m) deep (5) oxbow, meander sc ool, stilted, shallow *(3) [*use higher ran r rare species with g e only "historic"] bir buttonbush (4); o	ce, data sources, refere s (5); muck, organic soil lay 45 cm) dbh (5) [exclude pin III, rock outcrop/cliff (5) I or above] (3) ar, etc.) (3) roots/tip-up, or pneumatoph k where mixed rank or qual lobal rank G1*(10), G2*(5), ther fish/wildlife manageme	nces, etc). er (3) e plantation] nores (3) ifier] G3*(3) ent/designation (3
3 Metric (	6. Plant Commun	ities, Interspers	sion, Micı	rotopography	/
Score all pres Aquati Emerg Shrub X Forest Mudfla Open	lent	2 = Present and either	(0.25 acre) contig ha (0.1 acre)] comprises a sma or comprises a sign comprises a sign lity, or comprises rises a significant	Il part of wetland's vege nificant part but is of lov ificant part of wetland's a small part and is of hi	v quality vegetation anc gh quality
<u> </u>	l (plan view) interspersion. ne.	Narrative Description of low = Low species dive native species	of Vegetation Qu		urbance tolera
Moder Moder X Moder	ately high (4) [BR/CM (5)] ate (3)[BR/CM (5)] ately low (2) [BR/CM (3)] ) [BR/CM (2)]	mod = Native species au nonnative &/or di and species dive <u>w/o presence of u</u> high = A predominance tolerant native sp	isturbance tolerar ersity moderate to rare, threatened of of native species absent or virtual	nt native species can als moderately high, but ge or endangered species	o be present, enerally disturbance liversity and of
Add or deduc Extens Moder X Sparse	of invasive plants. t points for coverage. sive >75% cover (-5) ate 25-75% cover (-3) e 5-25% cover (-1) absent <5% cover (0) t (1)	Mudflat and Open Wate           0 =         Absent <0.1 ha (0.1	25 acres) [For BR 0.25 to 2.5 acres) na (2.5 to 9.9 acre	C/CM <0.04 ha (0.1 acre [BR/CM 0.04 to <0.2 ha (s) [BR/CM 0.2 to <02 ha	a a (0.5 to 5 acre
Absen					
☐ Absen 6d. Microtopo Score all pres ☐ Vegeta ☑ Coarse ☐ Standi	ography. sent using 0 to 3 scale. ated hummocks/tussocks e woody debris >15 cm (6 in.) ng dead >25 cm (10 in.) dbh bian breeding pools	Hypothetical Wetland f	for Estimating D	egree of Interspersion	

(max 100 pts)

- 3 = Present in moderate or greater amounts and of highest quality
- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

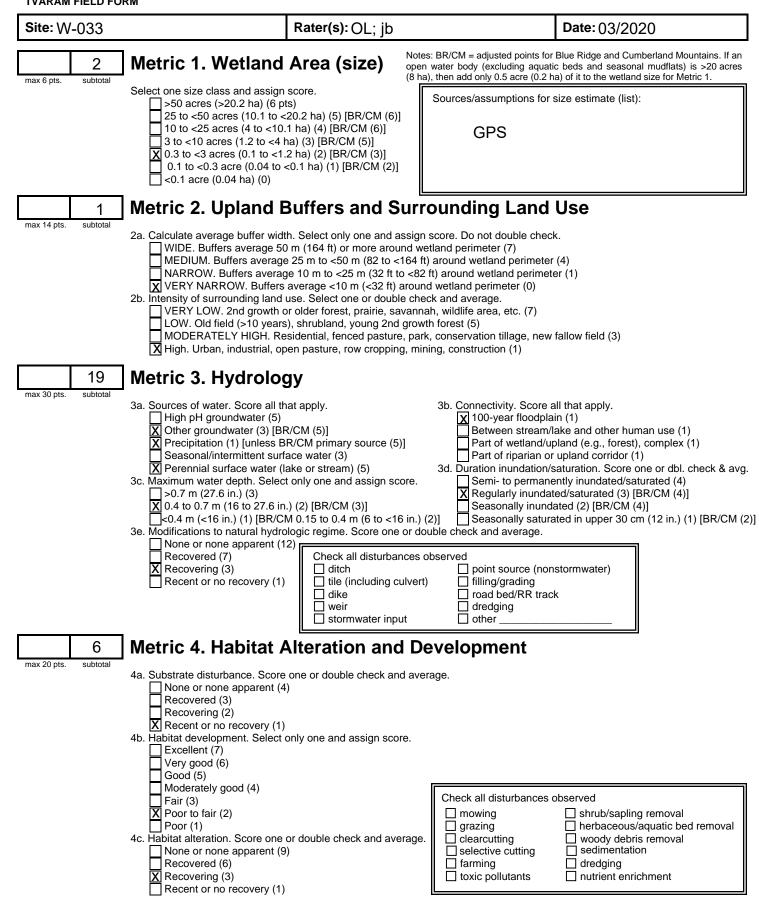


<b>Site:</b> W-030	Rate	<b>:(s):</b> OH:jb	Date: 03/2020		
51 subtotal previous page					
max 10 pts. subtotal	Metric 5. Special Wetla	ands			
nax ropis. Subiotal	*If the documented raw score for Metric 5	is 30 points or higher, the site is a	automatically considered a Category 3 wetland.		
raw score*	documentation for each selection (photos Bog, fen, wet prairie (10); acidophilic ve Assoc. forest (wetl. &/or adj. upland) in Sensitive geologic feature such as spri Vernal pool (5); isolated, perched, or sl Island wetland >0.1 acre (0.04 ha) in re Braided channel or floodplain/terrace d Gross morph. adapt. in >5 trees >10 in Ecological community with global rank Known occurrence state/federal threate [*use higher rank where mixed rank o Superior/enhanced habitat/use: migrate	values apply in row, score row as single feature with highest point value. Provide notos, checklists, maps, resource specialist concurrence, data sources, references, etc). iilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) nd) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] a 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) ace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) 10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] rreatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) ank or qualifier] [exclude records which are only "historic"] igratory 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)			
3	Metric 6. Plant Comm	unities, Interspersi	on, Microtopography		
max 20 pts. subtotal	6a. Wetland vegetation communities.	Vegetation Community C			
	Score all present using 0 to 3 scale.	0 = Absent or <0.1 ha (0 [For BR/CM <0.04 ha	, <b>e</b>		
	Emergent		mprises a small part of wetland's vegetation and is o		
	Shrub X Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	2 = Present and either co is of moderate quality	comprises a significant part but is of low quality omprises a significant part of wetland's vegetation and a or comprises a small part and is of high quality es a significant part or more of wetland's vegetation		
	6b. Horizontal (plan view) interspersion.	Narrative Description of	Vogotation Quality		
	Select only one.		ity &/or dominance of nonnative or disturbance tolera		
	High (5) Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)]	nonnative &/or distu	dominant component of the vegetation, although urbance tolerant native species can also be present, ty moderate to moderately high, but generally		
	Low (1) [BR/CM (2)]	high = A predominance of tolerant native sp a	e, threatened or endangered species native species with nonnative sp &/or disturbance bsent or virtually absent, and high sp diversity and of presence of rate, threatened, or endangered species		
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Water	Class Quality		
	Extensive >75% cover (-5)	0 = Absent < 0.1 ha (0.25	acres) [For BR/CM <0.04 ha (0.1 acre)]		
	Moderate 25-75% cover (-3) X Sparse 5-25% cover (-1)	1 = Low 0.1 to <1 ha (0.2 (0.1 to 0.5 acre)]	5 to 2.5 acres) [BR/CM 0.04 to <0.2 ha		
	Nearly absent <5% cover (0) Absent (1)		(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/tussocks X Coarse woody debris >15 cm (6 ir Standing dead >25 cm (10 in.) dbl	.)	Estimating Degree of Interspersion		
	Amphibian breeding pools	None Low	Low Moderate Moderate High		
		None Low <u>Microtopography Cover</u> 0 = Absent			

(max 100 pts)

- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

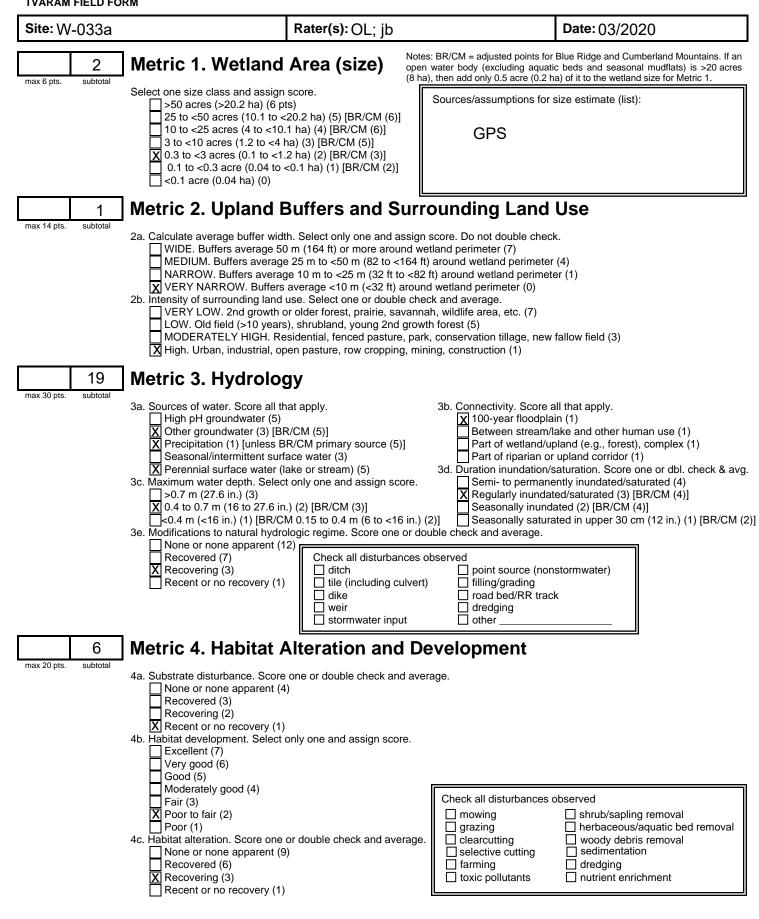


Site: W-03	3 Rater	<b>(s):</b> OH:jb	Date: 03/2020
27 subtotal previous page	]		
max 10 pts. subtot	Metric 5. Special Wetla	ands	
	*If the documented raw score for Metric 5	is 30 points or higher, the site is	s automatically considered a Category 3 wetland.
raw score*	documentation for each selection (photos Bog, fen, wet prairie (10); acidophilic ve Assoc. forest (wetl. &/or adj. upland) ind Sensitive geologic feature such as sprir Vernal pool (5); isolated, perched, or sk Island wetland >0.1 acre (0.04 ha) in re Braided channel or floodplain/terrace d Gross morph. adapt. in >5 trees >10 in. Ecological community with global rank t Known occurrence state/federal threate [*use higher rank where mixed rank on Superior/enhanced habitat/use: migrato	, checklists, maps, resource spe g., mossy substrate >10 sq.m, sphare sl. >0.25 acre (0.1 ha); old growth (10 ng/seep, sink, losing/underground str ope wetland (4); headwater wetland [ servoir, river, or perennial water >6 f epressions (floodplain pool, slough, c (25 cm) dbh: buttress, multitrunk/stc NatureServe): G1*(10), G2*(5), G3*( ned/endangered species (10); other qualifier] [exclude records which are ry songbird/waterfowl (5); in-reservo	t (2 m) deep (5) bxbow, meander scar, etc.) (3) bol, 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)
max 20 pts. subtot		inities, Interspers	sion, Microtopography
	6a. Wetland vegetation communities. Score all present using 0 to 3 scale. Aquatic bed Emergent Shrub Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	[For BR/CM <0.04] 1 = Present and either of moderate quality, of 2 = Present and either of is of moderate qual	0.25 acre) contiguous acre ha (0.1 acre)] comprises a small part of wetland's vegetation and is o 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) interspersion.	Narrative Description of	of Vegetation Quality
	Select only one. High (5)		rsity &/or dominance of nonnative or disturbance tolera
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] None (0)	mod = Native species ar nonnative &/or dis and species diver w/o presence of r high = A predominance tolerant native sp	re 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 of he 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 Wate           0 =         Absent <0.1 ha (0.2	
	6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in Standing dead >25 cm (10 in.) dbł	.)	For Estimating Degree of Interspersion
	Amphibian breeding pools	None Low	Low Moderate High
			all amounts or if more common of marginal quality e amounts, but not of highest quality or in small

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

  - 0- 29 = Category 1, low wetland function, condition, quality\*\*
    30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
    60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



Site:	W-033a	Rater(s	): OH:jb	Date: 03/	2020	
07						
27						
subtotal pi	evious page		_			
		Metric 5. Special Wetlar	nds			
nax 10 pt	s. subtotal	*If the documented raw score for Metric 5 is	30 points or higher, the site is	automatically considered a Ca	ategory 3 wetland	h
aw score	Ļ	Select all that apply. Where multiple values a documentation for each selection (photos, cl Bog, fen, wet prairie (10); acidophilic veg., Assoc. forest (wetl. &/or adj. upland) incl. > Sensitive geologic feature such as spring/s Vernal pool (5); isolated, perched, or slope Island wetland >0.1 acre (0.04 ha) in reser Braided channel or floodplain/terrace depr Gross morph. adapt. in >5 trees >10 in. (2: Ecological community with global rank (Na Known occurrence state/federal threatenee [*use higher rank where mixed rank or qu Superior/enhanced habitat/use: migratory Cat. 1 (very low quality) : <1 acre (0.4 ha)	apply in row, score row as sin necklists, maps, resource spe mossy substrate >10 sq.m, spha 0.25 acre (0.1 ha); old growth (10 seep, sink, losing/underground str wetland (4); headwater wetland   voir, river, or perennial water >6 f essions (floodplain pool, slough, c 5 cm) dbh: buttress, multitrunk/stc tureServe): G1*(10), G2*(5), G3* d/endangered species (10); other lalifier] [exclude records which are songbird/waterfowl (5); in-reservo	gle feature with highest point v cialist concurrence, data source gnum or other moss (5); muck, orga )); mature >18 in. (45 cm) dbh (5) [ eam, cave, waterfall, rock outcrop/o 1st order perennial or above] (3) t (2 m) deep (5) oxbow, meander scar, etc.) (3) ool, stilted, shallow roots/tip-up, or p (3) [*use higher rank where mixed r rare species with global rank G1*(1 e only "historic"] ir buttonbush (4); other fish/wildlife	alue. Provide es, references, e anic soil layer (3) exclude pine planta cliff (5) neumatophores (3) ank or qualifier] 0), G2*(5), G3*(3) management/desig	etc). ation] ) gnation (3
	2	Metric 6. Plant Commur	nities, Interspers	sion, Microtopog	raphy	
nax 20 pt	s. 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	[For BR/CM <0.04] 1 = Present and either moderate quality, o 2 = Present and either is of moderate qual	0.25 acre) contiguous acre na (0.1 acre)] comprises a small part of wetla r comprises a significant part b comprises a significant part of v ity, or comprises a small part a ses a significant part or more of	ut is of low qualit wetland's vegeta nd is of high qua	ty ition and ility
		6b. Horizontal (plan view) interspersion.	Narrative Description of			
		Select only one. High (5)	low = Low species dive native species	rsity &/or dominance of nonnat	ive or disturbanc	e tolera
		Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] X Low (1) [BR/CM (2)] None (0)	mod = Native species ar nonnative &/or dis and species diver <u>w/o presence of r</u> high = A predominance tolerant native sp	e dominant component of the v sturbance tolerant native specie sity moderate to moderately hi are, threatened or endangered of native species with nonnative absent or virtually absent, and e presence of rate, threatened	es can also be pi gh, but generally <u>species</u> e sp &/or disturb high sp diversity	ance
		6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Wate		,	
		Extensive >75% cover (-5) Moderate 25-75% cover (-3) Sparse 5-25% cover (-1) Nearly absent <5% cover (0)	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	25 acres) [For BR/CM <0.04 ha .25 to 2.5 acres) [BR/CM 0.04 a (2.5 to 9.9 acres) [BR/CM 0.2	to <0.2 ha to <02 ha (0.5 to	o 5 acre
		Absent (1)		s) or more [BR/CM 2 ha (5 acre		
		6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in.) Standing dead >25 cm (10 in.) dbh Amphibian breeding pools	Hypothetical Wetland f	or Estimating Degree of Inter	Approximation Service Approximation Moderate	High
			Microtopography Cove			
				all amounts or if more common e amounts, but not of highest q quality		

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

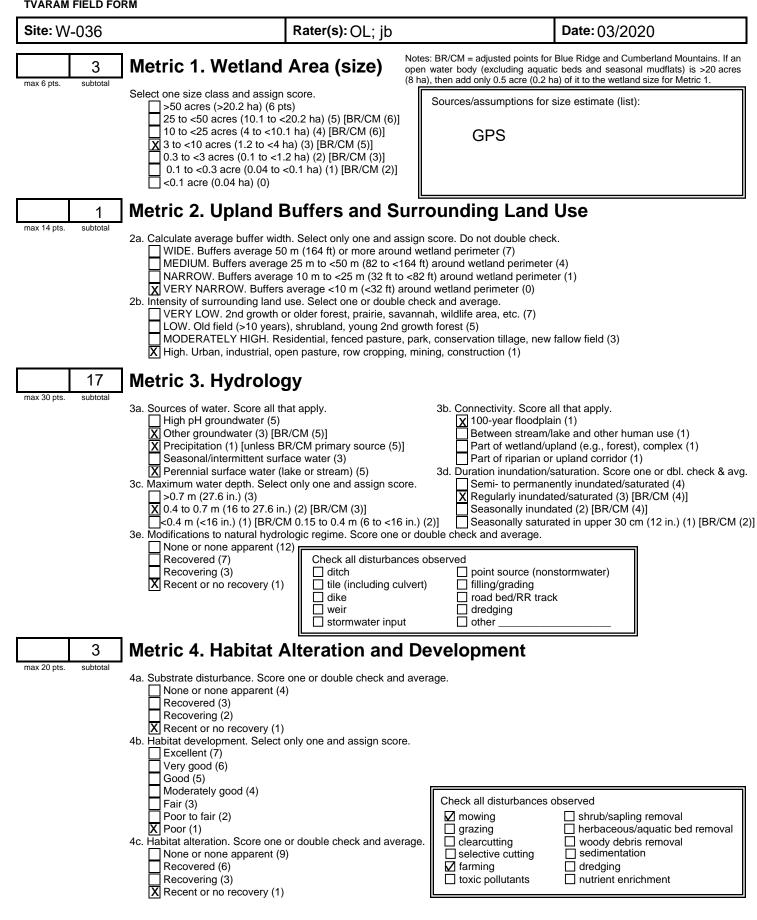
  - 0- 29 = Category 1, low wetland function, condition, quality\*\*
    30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
    60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

29

**GRAND TOTAL** 

(max 100 pts)



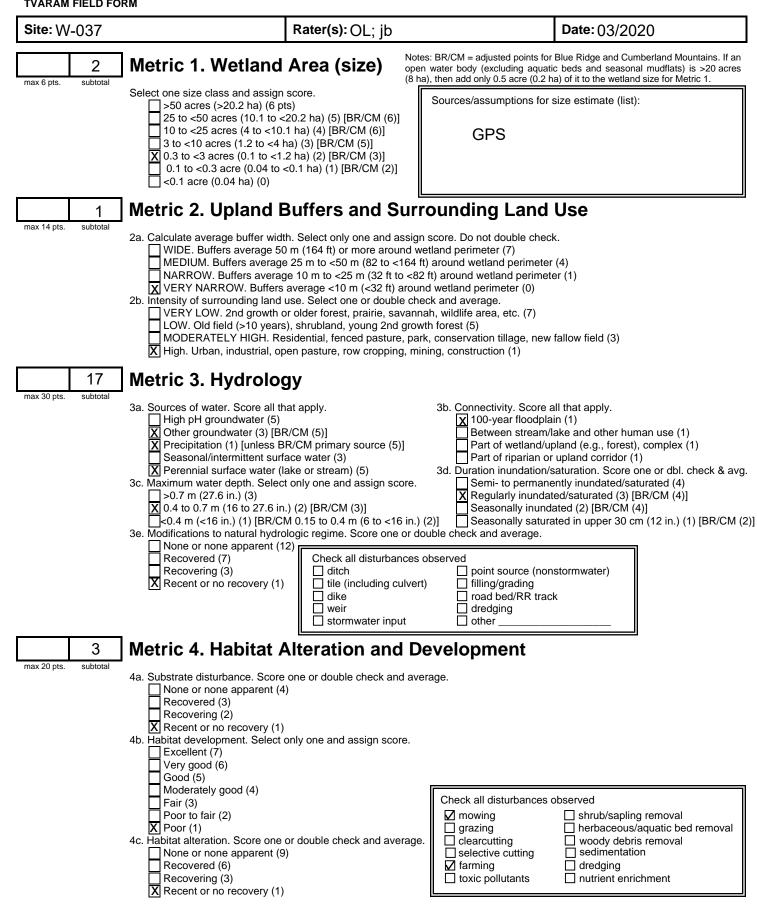
TENNESSEE VALLEY AUTHORITY RAPID ASSESSMENT METHOD: Assessing Wetland Condition, Functional Capacity, and Quality

<b>Site:</b> W-036	R	Rater(s): OH:jb	Date: 03/2020		
24 subtotal previous page	<b>-</b>				
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	automatically considered a Category 3 we	tland.	
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/terr Gross morph. adapt. in >5 trees s Ecological community with global Known occurrence state/federal t [*use higher rank where mixed r Superior/enhanced habitat/use: n Cat. 1 (very low quality) : <1 acre	t apply. Where multiple values apply in row, score row as single feature with highest point value. Provide on for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). en, 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] ive 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) pical community with global rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] or 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 (very low quality) : <1 acre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)			
nax 20 pts. subtotal	-	•	ion, Microtopography		
	6a. Wetland vegetation communities Score all present using 0 to 3 scale.		Cover Scale 0.25 acre) contiguous acre		
	Aquatic bed	[For BR/CM <0.04 h	a (0.1 acre)]		
	X Emergent		comprises a small part of wetland's vegetat		
	Shrub Forest		comprises a significant part but is of low q comprises a significant part of wetland's ve		
	Mudflats	is of moderate quali	ty, or comprises a small part and is of high	quality	
	Open water <20 acres (8 ha) Moss/lichen. Other	3 = Present and compri and is of high quality	ses a significant part or more of wetland's v /	egetation/	
	6b. Horizontal (plan view) interspers	sion. Narrative Description o	f Vegetation Quality		
	Select only one.	low = Low species diver	sity &/or dominance of nonnative or disturb	ance tolera	
	High (5)	(5) mad – Native species	a dominant companent of the vegetation of	though	
	Moderately high (4) [BR/CM Moderate (3)[BR/CM (5)]		e dominant component of the vegetation, a sturbance tolerant native species can also b	-	
	Moderately low (2) [BR/CM (3		sity moderate to moderately high, but gene	rally	
	Low (1) [BR/CM (2)] X None (0)		are, threatened or endangered species of native species with nonnative sp &/or dis	turbance	
		tolerant native sp	absent or virtually absent, and high sp dive	rsity and of	
	6c. Coverage of invasive plants.	but not always, th	e presence of rate, threatened, or endange	red species	
	Add or deduct points for coverage.	Mudflat and Open Wate			
	Extensive >75% cover (-5) Moderate 25-75% cover (-3)		5 acres) [For BR/CM <0.04 ha (0.1 acre)] 25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha		
	X Sparse 5-25% cover (-1)	(0.1 to 0.5 acre)]			
	Nearly absent <5% cover (0)		a (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0	).5 to 5 acre	
	Absent (1)		s) or more [BR/CM 2 ha (5 acres) or more]		
	6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussoc	cks	or Estimating Degree of Interspersion		
	Standing dead >25 cm (10 in Amphibian breeding pools	n.) dbh		<u> </u>	
			Low Moderate Moderate	Higl	
		<u>Microtopography Cove</u> 0 = Absent			
			Il amounts or if more common of marginal amounts, but not of highest quality or in s		

- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

(max 100 pts)

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

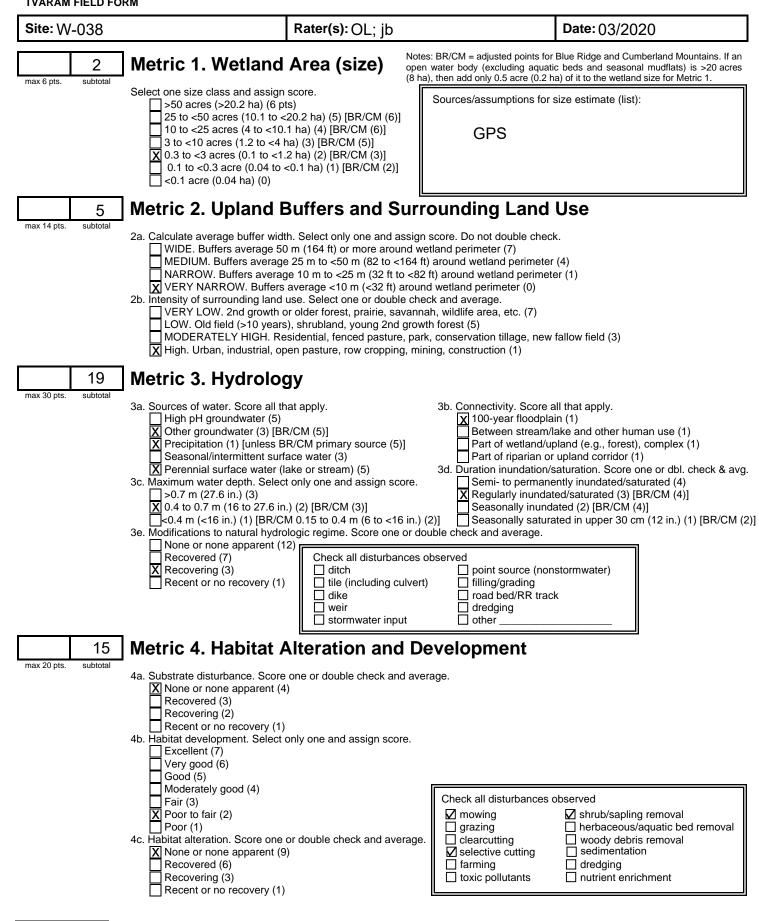


Site: W-037	Ra	t <b>er(s):</b> OH:jb	Date: 03/2020
23 subtotal previous page			
max 10 pts. subtotal	Metric 5. Special Wet	tlands	
	*If the documented raw score for Metri	c 5 is 30 points or higher, the site is a	utomatically considered a Category 3 wetland.
raw score⁺	documentation for each selection (pho Bog, fen, wet prairie (10); acidophilid Assoc. forest (wetl. &/or adj. upland) Sensitive geologic feature such as s Vernal pool (5); isolated, perched, o Island wetland >0.1 acre (0.04 ha) ir Braided channel or floodplain/terrac Gross morph. adapt. in >5 trees >10 Ecological community with global ra Known occurrence state/federal thre [*use higher rank where mixed ran] Superior/enhanced habitat/use: mig	tos, checklists, maps, resource special c veg., mossy substrate >10 sq.m, sphagnu i ncl. >0.25 acre (0.1 ha); old growth (10); pring/seep, sink, losing/underground streat r slope wetland (4); headwater wetland [1s n reservoir, river, or perennial water >6 ft (2 e depressions (floodplain pool, slough, oxt 0 in. (25 cm) dbh: buttress, multitrunk/stool, nk (NatureServe): G1*(10), G2*(5), G3*(3) eatened/endangered species (10); other ra k or qualifier] [exclude records which are o ratory songbird/waterfowl (5); in-reservoir b	at order perennial or above] (3) 2 m) deep (5) bow, 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 Com	nunities, Interspersi	on, Microtopography
·	6a. Wetland vegetation communities. Score all present using 0 to 3 scale.	<u>Vegetation Community C</u> 0 = Absent or < 0.1 ha (0.2)	
	Aquatic bed	[For BR/CM <0.04 ha	(0.1 acre)]
	X Emergent Shrub		mprises a small part of wetland's vegetation and is of
	Forest		comprises a significant part but is of low quality mprises a significant part of wetland's vegetation and
	Mudflats	is of moderate quality	, or comprises a small part and is of high quality
	Open water <20 acres (8 ha) Moss/lichen. Other	3 = Present and comprise and is of high quality	es a significant part or more of wetland's vegetation
	6b. Horizontal (plan view) interspersior		
	Select only one.	low = Low species diversi native species	ty &/or dominance of nonnative or disturbance tolera
	Moderately high (4) [BR/CM (5)		dominant component of the vegetation, although
	Moderate (3)[BR/CM (5)]		urbance tolerant native species can also be present, ty moderate to moderately high, but generally
	Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)]	•	e, threatened or endangered species
	X None (0)	high = A predominance of	native species with nonnative sp &/or disturbance
			osent or virtually absent, and high sp diversity and of presence of rate, threatened, or endangered species
	6c. Coverage of invasive plants.	-	· ·
	Add or deduct points for coverage.	Mudflat and Open Water 0 = Absent <0.1 ha (0.25	acres) [For BR/CM < 0.04 ha (0.1 acre)]
	Moderate 25-75% cover (-3)		5 to 2.5 acres) [BR/CM 0.04 to <0.2 ha
	X Sparse 5-25% cover (-1) Nearly absent <5% cover (0)	(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 acre
	Absent (1)	3 = High 4 ha (9.9 acres)	or more [BR/CM 2 ha (5 acres) or more]
	6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks		Estimating Degree of Interspersion
	Coarse woody debris >15 cm (6	Sin.)	
	Standing dead >25 cm (10 in.) Amphibian breeding pools	dbh None Low	Low Moderate High
		Microtopography Cover S	
		0 = Absent	
			amounts or if more common of marginal quality amounts, but not of highest quality or in small
		amounts of highest gu	

(max 100 pts)

- 3 = Present in moderate or greater amounts and of highest quality
- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



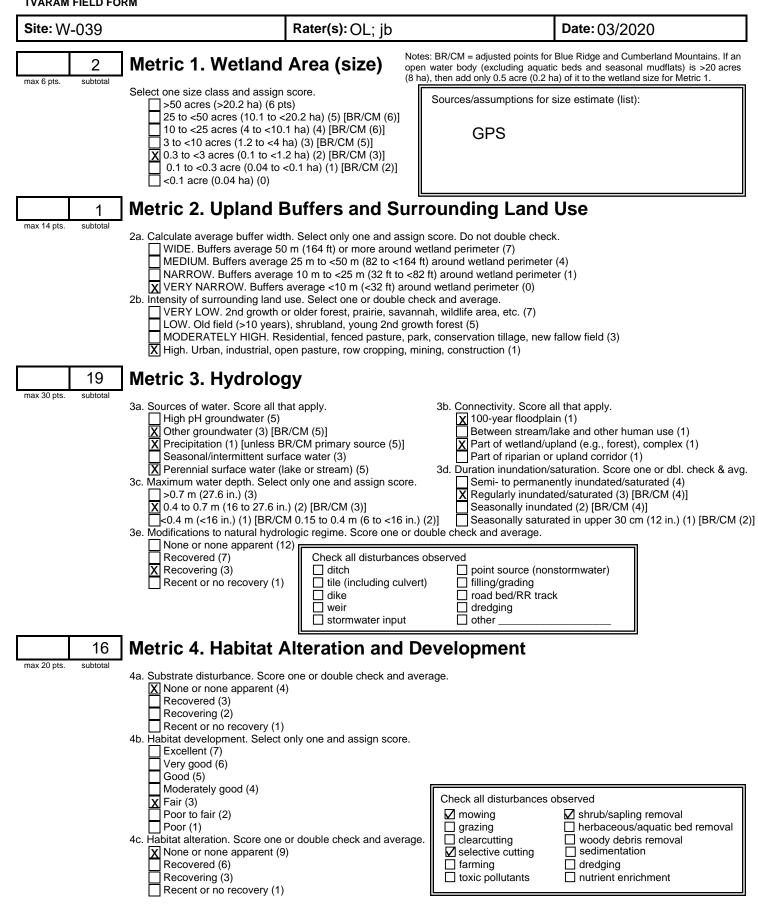
TENNESSEE VALLEY AUTHORITY DADID ASSESSMENT METHOD. easing Watland Condition Functional Conscitute and Quality

Site: W-038	R	ater(s): OH:jb	Date: 03/2020		
41					
	] Metric 5. Special W	etlands			
nax 10 pts. subtotal	*If the documented raw score for Me	tric 5 is 30 points or higher, the site is	automatically considered a Category 3 wetland.		
aw score*	documentation for each selection (pl Bog, fen, wet prairie (10); acidoph 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/terr 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 Cat. 1 (very low quality) : <1 acre	e values apply in row, score row as single feature with highest point value. Provide shotos, checklists, maps, resource specialist concurrence, data sources, references, etc). obilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) and) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) d, or slope wetland (4); headwater wetland [1st order perennial or above] (3) a) in reservoir, river, or perennial water >6 ft (2 m) deep (5) rrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) al rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) rank or qualifier] [exclude records which are only "historic"] migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3 e (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)			
nax 20 pts. subtotal	-	•	ion, Microtopography		
	6a. Wetland vegetation communities Score all present using 0 to 3 scale.		Cover Scale 0.25 acre) contiguous acre		
	Aquatic bed	[For BR/CM <0.04 h	a (0.1 acre)]		
	Emergent Shrub		comprises a small part of wetland's vegetation and is o comprises a significant part but is of low quality		
	X Forest		comprises a significant part of wetland's vegetation and		
	Mudflats	is of moderate qualit	ty, or comprises a small part and is of high quality		
	Open water <20 acres (8 ha) Moss/lichen. Other	3 = Present and comprise and is of high quality	ses a significant part or more of wetland's vegetation /		
	6b. Horizontal (plan view) interspers	ion. Narrative Description of	f Vegetation Quality		
	Select only one.	low = Low species divers	sity &/or dominance of nonnative or disturbance tolera		
	High (5) Moderately high (4) [BR/CM (	(5)1 mod – Native species	e dominant component of the vegetation, although		
	Moderate (3)[BR/CM (5)]		turbance tolerant native species can also be present,		
	Moderately low (2) [BR/CM (3)		sity moderate to moderately high, but generally		
	Low (1) [BR/CM (2)] X None (0)		are, threatened or endangered species of native species with nonnative sp &/or disturbance		
		tolerant native sp a	absent or virtually absent, and high sp diversity and of		
	6c. Coverage of invasive plants.	but not always, the	e presence of rate, threatened, or endangered species		
	Add or deduct points for coverage.	Mudflat and Open Wate			
	Extensive >75% cover (-5) Moderate 25-75% cover (-3)		5 acres) [For BR/CM <0.04 ha (0.1 acre)] 25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha		
	Sparse 5-25% cover (-1)	(0.1 to 0.5 acre)]			
	X Nearly absent <5% cover (0) Absent (1)		( <u>2.5 to 9.9 acres) [BR/CM 0.2 to &lt;02 ha (0.5 to 5 acres)</u> or more [BR/CM 2 ha (5 acres) or more]		
	6d. Microtopography.	Hypothetical Wetland fo	or Estimating Degree of Interspersion		
	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	ks n (6 in.) .) dbh			
		None Low	Low Moderate Moderate High		
		Microtopography Cover 0 = Absent			
		1 = Present in very smal	Il amounts or if more common of marginal quality		
			amounts, but not of highest quality or in small		

(max 100 pts)

- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



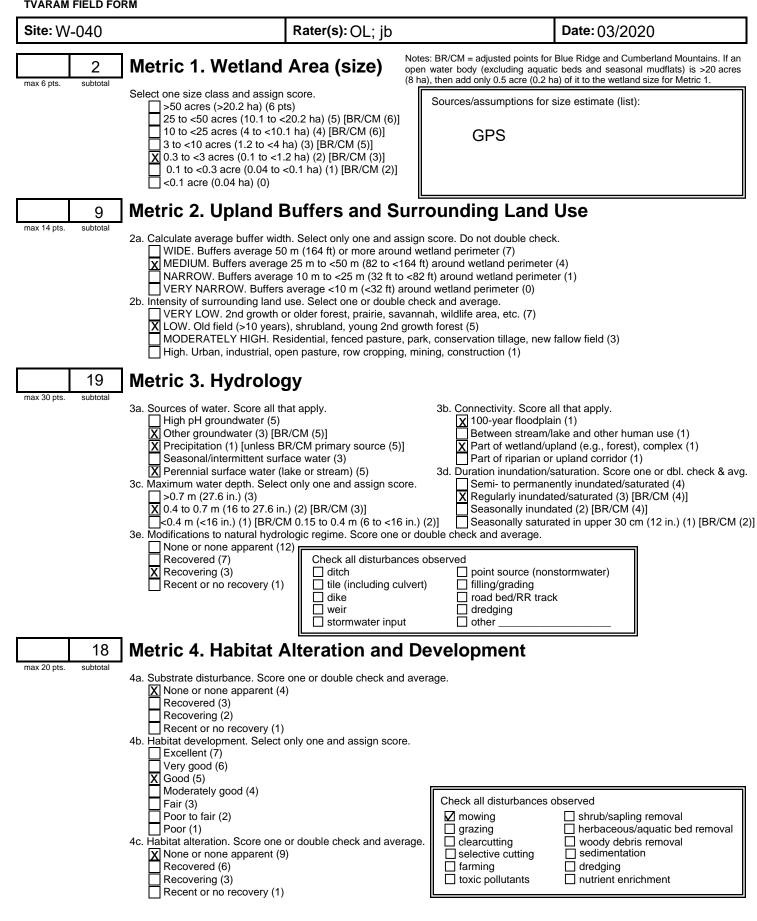
aing Watland Condition Europtional Consolity and Quality TENNEGOEE • • CECOMENIT

<b>Site:</b> W-039	Rater(s	s): OH:jb	Date: 03/2020				
38							
subtotal previous page							
	] Metric 5. Special Wetlar	nds					
nax 10 pts. subtotal	*If the documented raw score for Metric 5 is	*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 (photos, c Bog, fen, wet prairie (10); acidophilic veg. Assoc. forest (wetl. &/or adj. upland) incl. Sensitive geologic feature such as spring/ Vernal pool (5); isolated, perched, or slop Island wetland >0.1 acre (0.04 ha) in rese Braided channel or floodplain/terrace dep Gross morph. adapt. in >5 trees >10 in. (2 Ecological community with global rank (Na Known occurrence state/federal threatene [*use higher rank where mixed rank or q	ric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland. values apply in row, score row as single feature with highest point value. Provide otos, checklists, maps, resource specialist concurrence, data sources, references, etc). lic 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) uce depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) 10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) rank (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) ink or qualifier] [exclude records which are only "historic"] igratory 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 Commu		-	a ( 10)			
nax 20 pts. subtotal	6a. Wetland vegetation communities. Score all present using 0 to 3 scale. Aquatic bed Emergent Shrub X Forest	2 = Present and either co	25 acre) contiguous acre (0.1 acre)] proprises a small part of wetland's vegeta comprises a significant part but is of low of proprises a significant part of wetland's ve	quality egetation and			
	Mudflats Open water <20 acres (8 ha) Moss/lichen. Other		v, or comprises a small part and is of high es a significant part or more of wetland's				
	6b. Horizontal (plan view) interspersion. Select only one. UHigh (5)	native species	ity &/or dominance of nonnative or distur				
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)]	nonnative &/or distr and species diversi	dominant component of the vegetation, a urbance tolerant native species can also ty moderate to moderately high, but gene e, threatened or endangered species	be present,			
	6c. Coverage of invasive plants.	high = A predominance of tolerant native sp a	native species with nonnative sp &/or dis bsent or virtually absent, and high sp div presence of rate, threatened, or endang	ersity and of			
	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 (0.2 (0.1 to 0.5 acre)] 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 ( or more [BR/CM 2 ha (5 acres) or more]				
	6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in.)	Hypothetical Wetland for	Estimating Degree of Interspersion				
	Standing dead >25 cm (10 in.) dbh	None Low	Low Moderate Moderate	e High			
		$\frac{\text{Microtopography Cover}}{0 = \text{Absent}}$		auglit :			
		2 = Present in moderate amounts of highest q	amounts or if more common of marginal amounts, but not of highest quality or in s uality or greater amounts and of highest quality	small			

(max 100 pts)

0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



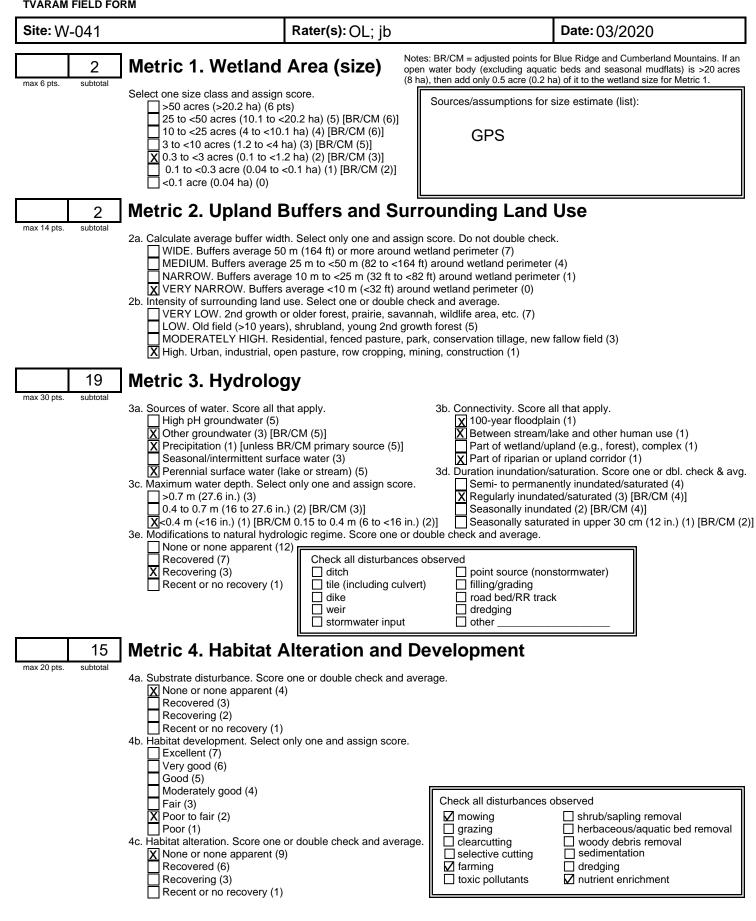
TENNEGOEE sing Wetland Condition Eurotianal Consolity and Quality ACCECCMENT

Site: W-040	Rater(s	s): OH:jb		Date: 03/2020	
18					
subtotal previous page					
	Metric 5. Special Wetlar	nds			
nax 10 pts. subtotal			ia automatically a	ensidered a Category 2 wat	and
aw score*	Select all that apply. Where multiple values documentation for each selection (photos, c Bog, fen, wet prairie (10); acidophilic veg., Assoc. forest (wetl. &/or adj. upland) incl. : Sensitive geologic feature such as spring/ Vernal pool (5); isolated, perched, or slope Island wetland >0.1 acre (0.04 ha) in rese Braided channel or floodplain/terrace depr Gross morph. adapt. in >5 trees >10 in. (2 Ecological community with global rank (Na Known occurrence state/federal threatene [*use higher rank where mixed rank or qu	for Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland. hultiple 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] 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) olain/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) h 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	Metric 6. Plant Commur		-		(-10)
nax 20 pts. subtotal	<ul> <li>6a. Wetland vegetation communities.</li> <li>Score all present using 0 to 3 scale.</li> <li>Aquatic bed</li> <li>Emergent</li> </ul>	Vegetation Communit 0 = Absent or <0.1 ha [For BR/CM <0.04	y Cover Scale (0.25 acre) conti ha (0.1 acre)]		on and is o
	Shrub X Forest Mudflats Open water <20 acres (8 ha)	2 = Present and either is of moderate qua 3 = Present and comp	or comprises a si comprises a signality, or comprises rises a significan	gnificant part but is of low qu nificant part of wetland's veg s a small part and is of high o t part or more of wetland's ve	ality etation and quality
	Moss/lichen. Other	and is of high qual			
	6b. Horizontal (plan view) interspersion. Select only one. High (5) Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] None (0)	native species mod = Native species a nonnative &/or d and species dive w/o presence of high = A predominance tolerant native sp	ersity &/or domina- are dominant com listurbance tolera ersity moderate to rare, threatened of native species p absent or virtua	ance of nonnative or disturbation ponent of the vegetation, alt nt native species can also be moderately high, but gener or endangered species s with nonnative sp &/or distuilly absent, and high sp diver	hough e present, ally urbance sity and off
	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 Wat           0 =         Absent <0.1 ha (0.	ter Class Quality 25 acres) [For Bl 0.25 to 2.5 acres na (2.5 to 9.9 acre	ate, threatened, or endanger / R/CM <0.04 ha (0.1 acre)] ) [BR/CM 0.04 to <0.2 ha es) [BR/CM 0.2 to <02 ha (0 CM 2 ha (5 acres) or more]	
	6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in.) Standing dead >25 cm (10 in.) dbh Amphibian breeding pools		for Estimating I	Degree of Interspersion	000
			nall amounts or if	Moderate Moderate more common of marginal q not of highest quality or in sn	

(max 100 pts)

0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

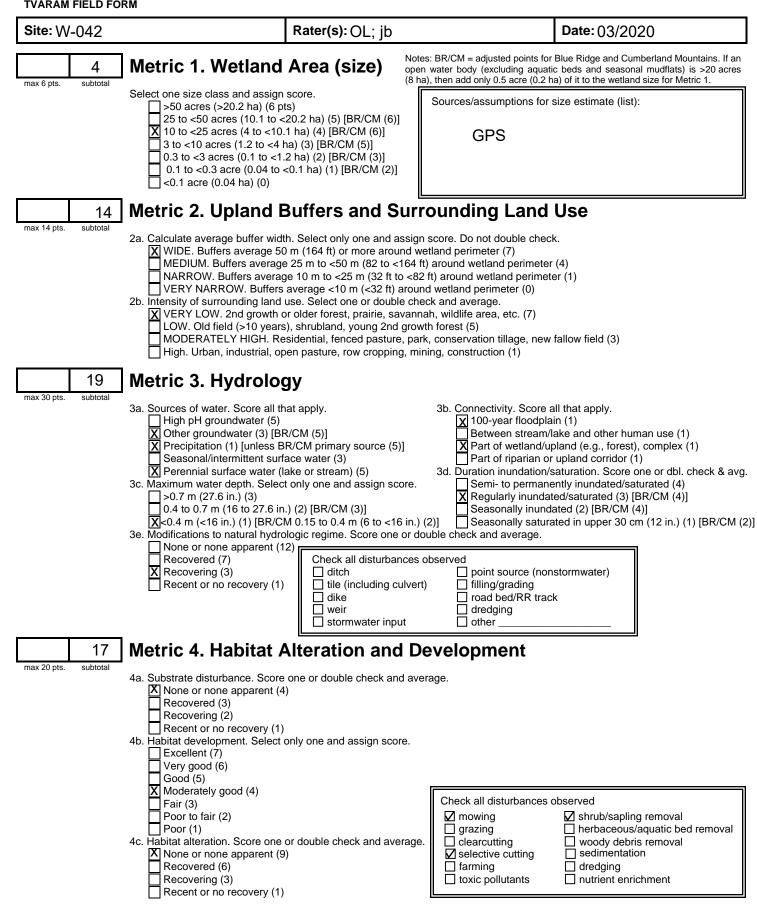


<b>Site:</b> W-041	Rat	er(s): OH:jb	Date: 03/2020		
38 subtotal previous page					
max 10 pts. subtotal	Metric 5. Special Wet	lands			
	*If the documented raw score for Metric	5 is 30 points or higher, the site is	automatically considered a Category 3 wetland	d.	
raw score*	documentation for each selection (phot Bog, fen, wet prairie (10); acidophilic Assoc. forest (wetl. &/or adj. upland) Sensitive geologic feature such as sp Vernal pool (5); isolated, perched, or Island wetland >0.1 acre (0.04 ha) in Braided channel or floodplain/terrace Gross morph. adapt. in >5 trees >10 Ecological community with global rar Known occurrence state/federal three [*use higher rank where mixed rank Superior/enhanced habitat/use: migr	<ul> <li>values apply in row, score row as single feature with highest point value. Provide hotos, checklists, maps, resource specialist concurrence, data sources, references, etc).</li> <li>hilic veg., mossy substrate &gt;10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) and) incl. &gt;0.25 acre (0.1 ha); old growth (10); mature &gt;18 in. (45 cm) dbh (5) [exclude pine plantation] as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) d, or slope wetland (4); headwater wetland [1st order perennial or above] (3)</li> <li>a) in reservoir, river, or perennial water &gt;6 ft (2 m) deep (5)</li> <li>race depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3)</li> <li>&gt;10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3)</li> <li>I rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier]</li> <li>threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3)</li> <li>rank or qualifier] [exclude records which are only "historic"]</li> <li>nigratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3)</li> <li>e (0.4 ha) AND EITHER &gt;80% cover of invasives OR nonvegetated on mined/excavated land (-10)</li> </ul>			
3	] Metric 6. Plant Comm	nunities, Interspers	ion, Microtopography		
max 20 pts. subtotal	6a. Wetland vegetation communities. Score all present using 0 to 3 scale.	Vegetation Community	Cover Scale 0.25 acre) contiguous acre		
	Aquatic bed	[For BR/CM <0.04 h	a (0.1 acre)]		
	Emergent Shrub		omprises a small part of wetland's vegetation a comprises a significant part but is of low qualit		
	X Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	2 = Present and either of is of moderate qualities	omprises a significant part of wetland's vegeta y, or comprises a small part and is of high qua ses a significant part or more of wetland's vege	ation and ality	
	6b. Horizontal (plan view) interspersion	. Narrative Description o	Vegetation Quality		
	Select only one.	low = Low species diver	sity &/or dominance of nonnative or disturbance	e tolera	
	High (5) Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)]	nonnative &/or dis and species divers	e dominant component of the vegetation, althout turbance tolerant native species can also be p sity moderate to moderately high, but generally are, threatened or endangered species	resent,	
	6c. Coverage of invasive plants.	high = A predominance o tolerant native sp	f native species with nonnative sp &/or disturb absent or virtually absent, and high sp diversity e presence of rate, threatened, or endangered	y and of	
	Add or deduct points for coverage.	Mudflat and Open Wate			
	Extensive >75% cover (-5) Moderate 25-75% cover (-3)		5 acres) [For BR/CM <0.04 ha (0.1 acre)] 25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha		
	X Sparse 5-25% cover (-1)	(0.1 to 0.5 acre)]		- <b>F</b> -	
	Nearly absent <5% cover (0) Absent (1)		(2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 t ) or more [BR/CM 2 ha (5 acres) or more]	<u>.0 5 acre</u>	
	6d. Microtopography. Score all present using 0 to 3 scale.	Hypothetical Wetland for	or Estimating Degree of Interspersion		
	Vegetated hummocks/tussocks X Coarse woody debris >15 cm (6 Standing dead >25 cm (10 in.) d Amphibian breeding pools				
		Microtopography Cover	Low Moderate Moderate	Higl	
		0 = Absent		1.4.	
			Il amounts or if more common of marginal qual amounts, but not of highest quality or in small		

(max 100 pts)

- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



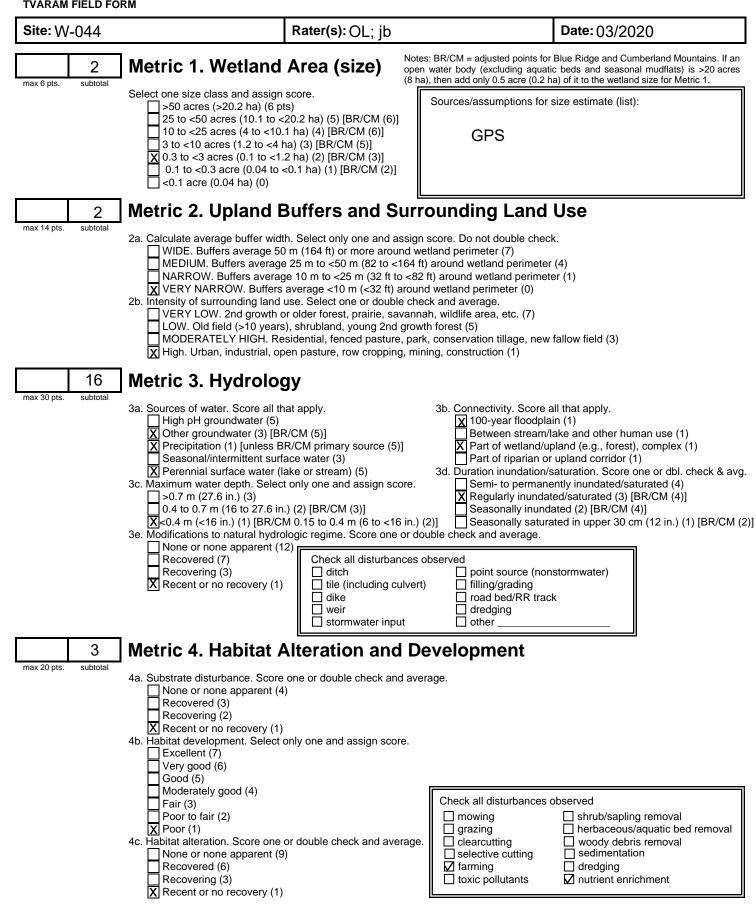
Site: W-042	Rater(s): OH:jb	Date: 03/2020
raw score* subtotal *If the docum	t apply. Where multiple values apply in row, score row	e site is automatically considered a Category 3 wetland. v as single feature with highest point value. Provide rce specialist concurrence, data sources, references, etc).
Assoc Sensit Vernal Island Braide Gross Ecolog Knowr [*use Superi Cat. 1	ve geologic feature such as spring/seep, sink, losing/undergr pool (5); isolated, perched, or slope wetland (4); headwater v wetland >0.1 acre (0.04 ha) in reservoir, river, or perennial wa d channel or floodplain/terrace depressions (floodplain pool, s morph. adapt. in >5 trees >10 in. (25 cm) dbh: buttress, multi ical community with global rank (NatureServe): G1*(10), G2* occurrence state/federal threatened/endangered species (10 higher rank where mixed rank or qualifier] [exclude records w or/enhanced habitat/use: migratory songbird/waterfowl (5); in (very low quality) : <1 acre (0.4 ha) AND EITHER >80% cove	rowth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] ound stream, cave, waterfall, rock outcrop/cliff (5) wetland [1st order perennial or above] (3) ater >6 ft (2 m) deep (5) slough, oxbow, meander scar, etc.) (3) trunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) (5), G3*(3) [*use higher rank where mixed rank or qualifier] D); other rare species with global rank G1*(10), G2*(5), G3*(3) which are only "historic"] -reservoir buttonbush (4); other fish/wildlife management/designation (3 er of invasives OR nonvegetated on mined/excavated land (-10)
max 20 pts. subtotal	6. Plant Communities, Inters vegetation communities. Vegetation Com	persion, Microtopography
Score all pre Aquai Emer Shrub X Fores Mudfl Open	sent using 0 to 3 scale. ic bed gent t t t t t t t t t t t t t	0.1 ha (0.25 acre) contiguous acre <0.04 ha (0.1 acre)] either comprises a small part of wetland's vegetation and is of uality, or comprises a significant part but is of low quality either comprises a significant part of wetland's vegetation and te quality, or comprises a small part and is of high quality comprises a significant part or more of wetland's vegetation
6b. Horizonta Select only o	ne. low = Low specie	ption of Vegetation Quality es diversity &/or dominance of nonnative or disturbance tolera
Mode X Mode	rate (3)[BR/CM (5)] nonnative rately low (2) [BR/CM (3)] and specie 1) [BR/CM (2)] <u>w/o preser</u> (0) high = A predomi tolerant na	ecies are dominant component of the vegetation, although &/or disturbance tolerant native species can also be present, es diversity moderate to moderately high, but generally <u>nce of rare, threatened or endangered species</u> inance of native species with nonnative sp &/or disturbance ative sp absent or virtually absent, and high sp diversity and off vays, the presence of rate, threatened, or endangered species
Add or dedu Exten Mode X Spars	sive >75% cover (-5)     0 = Absent <0.1	An Water Class Quality ha (0.25 acres) [For BR/CM <0.04 ha (0.1 acre)] 11 ha (0.25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha cre)] to <4 ha (2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 acres) .9 acres) or more [BR/CM 2 ha (5 acres) or more]
│ Vegel Ⅹ Coars Ⅹ Stanc	esent using 0 to 3 scale. ated hummocks/tussocks the woody debris >15 cm (6 in.) ing dead >25 cm (10 in.) dbh ibian breeding pools	etland for Estimating Degree of Interspersion
	<u>Microtopograph</u> <u>0 = Absent</u>	.ow Low Moderate Moderate Higi y Cover Scale ery small amounts or if more common of marginal quality

(max 100 pts)

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

  - 0- 29 = Category 1, low wetland function, condition, quality\*\*
    30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
    60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

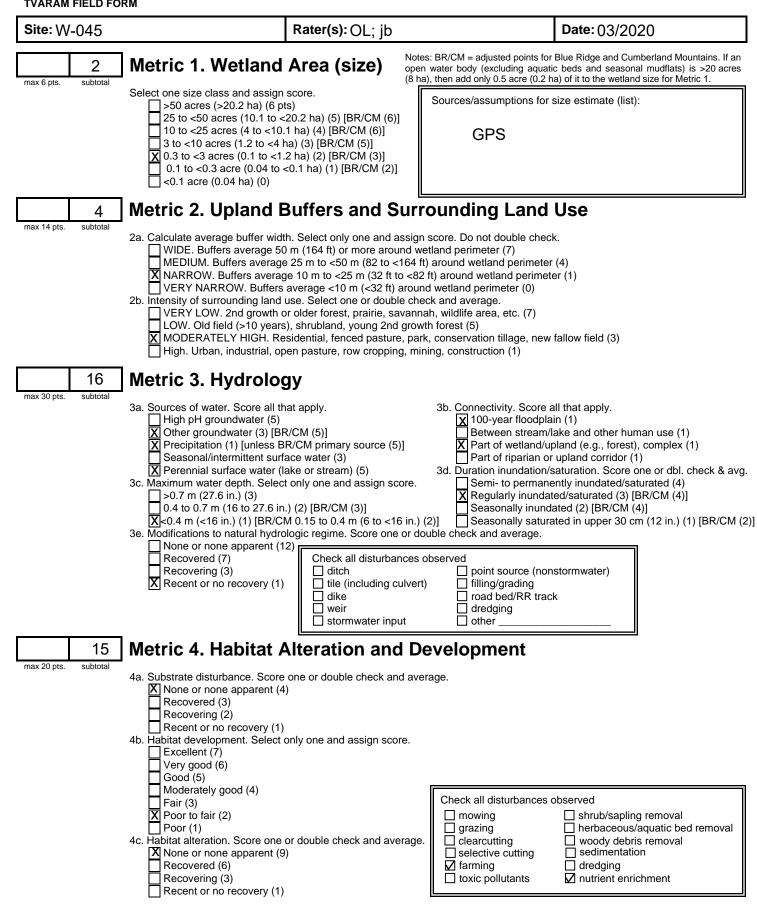


TENNEGOEE asing Watland Condition Functional Conspirute and Quality A COLORMENT M

Site: W-044	Rater(s	Rater(s): OH:jb Date: 03/2020			
24 ubtotal previous page	_				
nax 10 pts. subtotal	Metric 5. Special Wetlar	nds			
	*If the documented raw score for Metric 5 is	30 points or higher, the site	is automatically of	considered a Category 3 w	etland.
aw score*	documentation for each selection (photos, c Bog, fen, wet prairie (10); acidophilic veg. Assoc. forest (wetl. &/or adj. upland) incl. Sensitive geologic feature such as spring/ Vernal pool (5); isolated, perched, or slop Island wetland >0.1 acre (0.04 ha) in rese Braided channel or floodplain/terrace depi Gross morph. adapt. in >5 trees >10 in. (2 Ecological community with global rank (Na Known occurrence state/federal threatene [*use higher rank where mixed rank or qr Superior/enhanced habitat/use: migratory Cat. 1 (very low quality) : <1 acre (0.4 ha)	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) 0 in. (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] eatened/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/designatio 0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)			ces, etc). r (3) plantation] res (3) er] 53*(3) t/designation (3
nax 20 pts. subtotal	Metric 6. Plant Commun	nities, Interspei	rsion, Mic	rotopography	
	6a. Wetland vegetation communities. Score all present using 0 to 3 scale.	Vegetation Communi 0 = Absent or <0.1 ha		guous acre	
	Aquatic bed	$\frac{[For BR/CM < 0.04]}{1 - Present and either}$		all part of wetland's vegeta	ation and is o
	Shrub Forest Mudflats	2 = Present and eithe	or comprises a sig	gnificant part but is of low nificant part of wetland's ve s a small part and is of high	quality egetation and
	Open water <20 acres (8 ha) Moss/lichen. Other	3 = Present and comp and is of high qua		t part or more of wetland's	vegetation
	6b. Horizontal (plan view) interspersion.	Narrative Description			
	Select only one. High (5)	low = Low species div native species	versity &/or domin	ance of nonnative or distu	rbance tolera
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)]	nonnative &/or	disturbance tolera	nponent of the vegetation, nt native species can also o moderately high, but gen	be present,
	Low (1) [BR/CM (2)]	high = A predominance tolerant native s	e of native specie sp absent or virtua	or endangered species s with nonnative sp &/or di Illy absent, and high sp div ate, threatened, or endang	versity and oft
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Wa			
	<ul> <li>Extensive &gt;75% cover (-5)</li> <li>Moderate 25-75% cover (-3)</li> <li>Sparse 5-25% cover (-1)</li> </ul>	0 = Absent < 0.1 ha (0	.25 acres) [For B	R/CM <0.04 ha (0.1 acre)] ) [BR/CM 0.04 to <0.2 ha	
	Nearly absent <5% cover (0) Absent (1)	2 = Moderate 1 to <4		es) [BR/CM 0.2 to <02 ha CM 2 ha (5 acres) or more	
	6d. Microtopography. Score all present using 0 to 3 scale.	Hypothetical Wetlanc	I for Estimating I	Degree of Interspersion	
	Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in.) Standing dead >25 cm (10 in.) dbh Amphibian breeding pools				
		None Low	Low	Moderate Moderat	e High
		<u>Microtopography Cov</u> 0 = Absent	ver Scale		
					l quality

0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

(max 100 pts) \*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

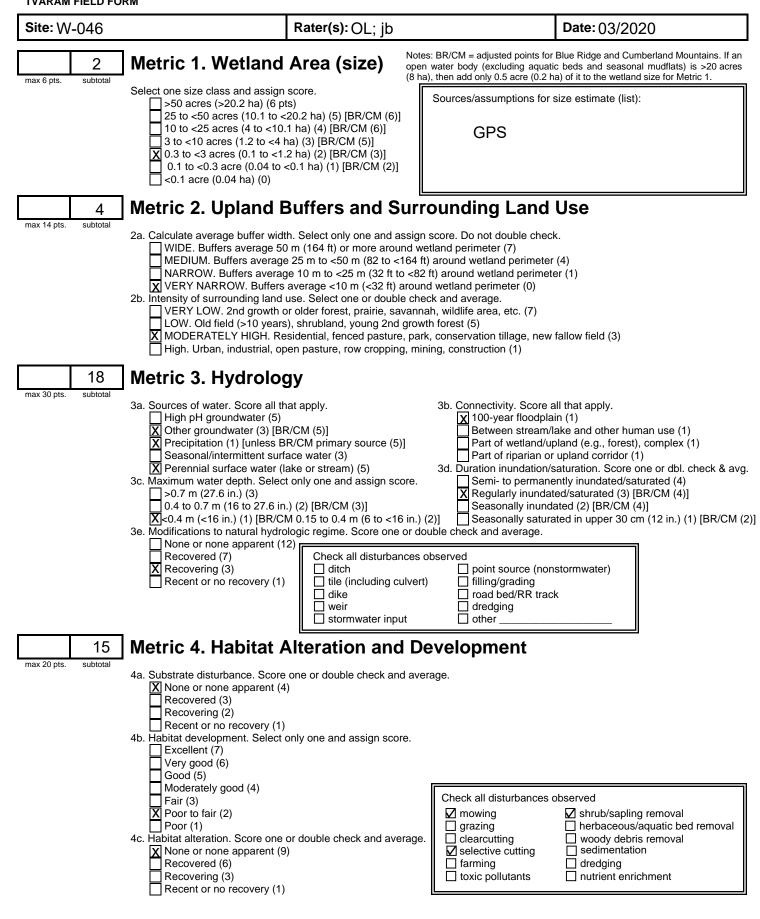


<b>Site:</b> W-045	Rater(s): OH:jb         Date: 03/2020			2020	
35 subtotal previous page					
max 10 pts. subtotal	Metric 5. Special Wetla	ands			
	*If the documented raw score for Metric 5	is 30 points or higher, the site is a	automatically considered a C	ategory 3 wetland.	
raw score*	documentation for each selection (photos Bog, fen, wet prairie (10); acidophilic ve Assoc. forest (wetl. &/or adj. upland) in Sensitive geologic feature such as spri Vernal pool (5); isolated, perched, or sl Island wetland >0.1 acre (0.04 ha) in re Braided channel or floodplain/terrace d Gross morph. adapt. in >5 trees >10 in Ecological community with global rank Known occurrence state/federal threate [*use higher rank where mixed rank o Superior/enhanced habitat/use: migrate	Metric 5 is 30 points or higher, the site is automatically considered a Category 3 wetland. ble values apply in row, score row as single feature with highest point value. Provide (photos, checklists, maps, resource specialist concurrence, data sources, references, etc). ophilic veg., mossy substrate >10 sq.m, sphagnum or other moss (5); muck, organic soil layer (3) pland) incl. >0.25 acre (0.1 ha); old growth (10); mature >18 in. (45 cm) dbh (5) [exclude pine plantation] h as spring/seep, sink, losing/underground stream, cave, waterfall, rock outcrop/cliff (5) hed, or slope wetland (4); headwater wetland [1st order perennial or above] (3) ha) in reservoir, river, or perennial water >6 ft (2 m) deep (5) terrace depressions (floodplain pool, slough, oxbow, meander scar, etc.) (3) iss >10 in. (25 cm) dbh: buttress, multitrunk/stool, stilted, shallow roots/tip-up, or pneumatophores (3) bal rank (NatureServe): G1*(10), G2*(5), G3*(3) [*use higher rank where mixed rank or qualifier] al threatened/endangered species (10); other rare species with global rank G1*(10), G2*(5), G3*(3) d' rank or qualifier] [exclude records which are only "historic"] :: migratory songbird/waterfowl (5); in-reservoir buttonbush (4); other fish/wildlife management/designation (3) tre (0.4 ha) AND EITHER >80% cover of invasives OR nonvegetated on mined/excavated land (-10)			
3	Metric 6. Plant Comm	unities, Interspersi	on, Microtopog	Iraphy	
nax 20 pts. subtotal	6a. Wetland vegetation communities.	Vegetation Community C			
	Score all present using 0 to 3 scale.	0 = Absent or <0.1 ha (0.3 [For BR/CM <0.04 ha			
	Emergent	1 = Present and either co	mprises a small part of wetla		
	Shrub X Forest Mudflats	2 = Present and either co	comprises a significant part b omprises a significant part of a or comprises a small part a	wetland's vegetation and	
	Open water <20 acres (8 ha) Moss/lichen. Other	3 = Present and comprise and is of high quality	es a significant part or more	of wetland's vegetation	
	6b. Horizontal (plan view) interspersion.	Narrative Description of			
	Select only one. High (5)	low = Low species diversi native species	ity &/or dominance of nonnat	tive or disturbance tolera	
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] X Moderately low (2) [BR/CM (3)]	mod = Native species are nonnative &/or distu	dominant component of the urbance tolerant native speci ty moderate to moderately h	ies can also be present,	
	Low (1) [BR/CM (2)]	w/o presence of rar	e, threatened or endangered	species	
	None (0)	tolerant native sp al	native species with nonnativ bsent or virtually absent, and presence of rate, threatened	high sp diversity and of	
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Water			
	Extensive >75% cover (-5)		acres) [For BR/CM <0.04 ha 5 to 2.5 acres) [BR/CM 0.04		
	X Sparse 5-25% cover (-1)	(0.1 to 0.5 acre)]			
	Nearly absent <5% cover (0) Absent (1)		(2.5 to 9.9 acres) [BR/CM 0.2 or more [BR/CM 2 ha (5 acr		
	6d. Microtopography.		Estimating Degree of Inte		
	Score all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 ir Standing dead >25 cm (10 in.) dbl	n.)			
	Amphibian breeding pools	None Low	Low Moderate	Moderate High	
		Microtopography Cover			
		<u>0 = Absent</u> 1 = Present in verv small	amounts or if more common	of marginal guality	
			amounts, but not of highest of		

(max 100 pts)

- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



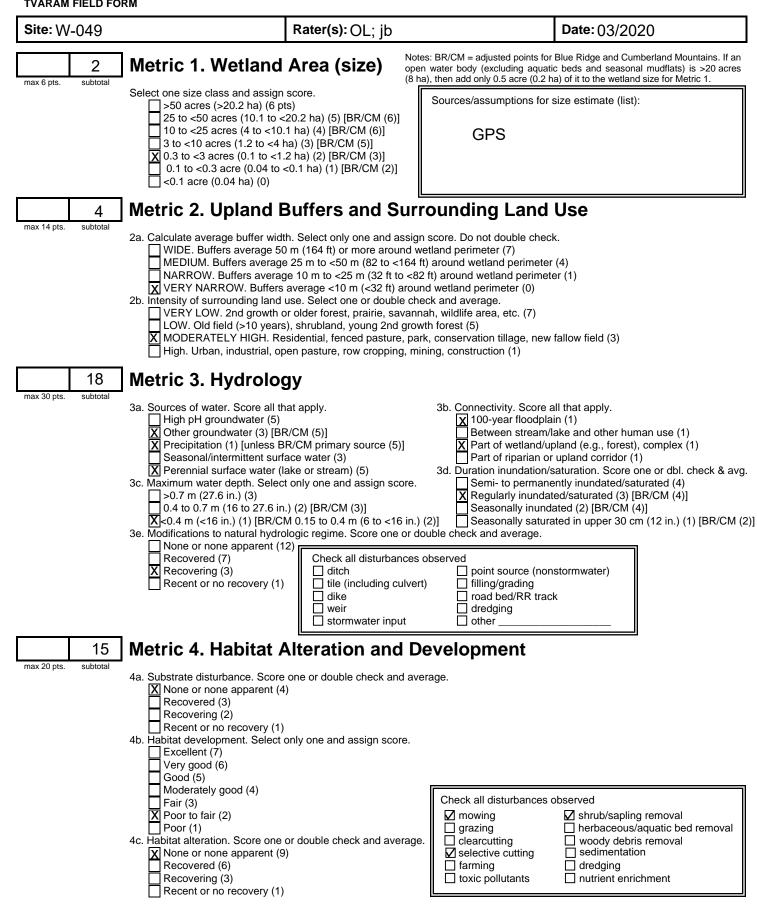
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<b>Site:</b> W-046	Rater(s): OH:jb		Date: 03/2020	
39				
ubtotal previous page	Matria E. Special Watler			
nax 10 pts. subtotal	Metric 5. Special Wetlar	105		
	*If the documented raw score for Metric 5 is			
aw score*	Assoc. forest (wetl. &/or adj. upland) incl. : Sensitive geologic feature such as spring/ Vernal pool (5); isolated, perched, or slope Island wetland >0.1 acre (0.04 ha) in reser Braided channel or floodplain/terrace depr Gross morph. adapt. in >5 trees >10 in. (2 Ecological community with global rank (Na Known occurrence state/federal threatene [*use higher rank where mixed rank or qu Superior/enhanced habitat/use: migratory	hecklists, maps, resource specialis mossy substrate >10 sq.m, sphagnum >0.25 acre (0.1 ha); old growth (10); ma seep, sink, losing/underground stream, a wetland (4); headwater wetland [1st or voir, river, or perennial water >6 ft (2 m essions (floodplain pool, slough, oxbow 5 cm) dbh: buttress, multitrunk/stool, sti ttureServe): G1*(10), G2*(5), G3*(3) [*u d/endangered species (10); other rare st alifier] [exclude records which are only songbird/waterfowl (5); in-reservoir butt	st concurrence, data sources, reference or other moss (5); muck, organic soil layer (3 iture >18 in. (45 cm) dbh (5) [exclude pine pl cave, waterfall, rock outcrop/cliff (5) rder perennial or above] (3) ) deep (5) , meander scar, etc.) (3) Ited, shallow roots/tip-up, or pneumatophore ise higher rank where mixed rank or qualifier species with global rank G1*(10), G2*(5), G3	es, etc). 3) antation] s (3) ] *(3) lesignation (3
3	Metric 6. Plant Commur	nities, Interspersio	n, Microtopography	
nax 20 pts. subtotal	6a. Wetland vegetation communities. Score all present using 0 to 3 scale.	Vegetation Community Cov 0 = Absent or <0.1 ha (0.25		
	Aquatic bed	[For BR/CM <0.04 ha (0.	.1 acre)]	
	X Emergent		prises a small part of wetland's vegetation	
	Shrub Forest		nprises a significant part but is of low quorises a significant part of wetland's veg	
	Mudflats	is of moderate quality, or	r comprises a small part and is of high	quality
	Open water <20 acres (8 ha) Moss/lichen. Other	3 = Present and comprises a significant part or more of wetland's vegetation and is of high quality		
	6b. Horizontal (plan view) interspersion.	Narrative Description of Ve		
	Select only one. High (5)	low = Low species diversity on native species	&/or dominance of nonnative or disturb	ance tolera
	Moderately high (4) [BR/CM (5)]		minant component of the vegetation, all	though
	Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)]	nonnative &/or disturbance tolerant native species can also be pr		
	Low (1) [BR/CM (2)]		threatened or endangered species	any
	None (0)		tive species with nonnative sp &/or dist ent or virtually absent, and high sp dive	
			esence of rate, threatened, or endangel	
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Water Cla	ass Quality	
	Extensive >75% cover (-5)		res) [For BR/CM <0.04 ha (0.1 acre)]	
	Moderate 25-75% cover (-3) X Sparse 5-25% cover (-1)	1 = Low 0.1 to <1 ha (0.25 to (0.1 to 0.5 acre)]	o 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)	5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0 more [BR/CM 2 ha (5 acres) or more]	.5 to 5 acre
	6d. Microtopography. Score all present using 0 to 3 scale.	Hypothetical Wetland for Es	stimating Degree of Interspersion	
	<ul> <li>Vegetated hummocks/tussocks</li> <li>Coarse woody debris &gt;15 cm (6 in.)</li> <li>Standing dead &gt;25 cm (10 in.) dbh</li> <li>Amphibian breeding pools</li> </ul>	None Low	Low Moderate Moderate	
		Microtopography Cover Sca		High
		0 = Absent		
			nounts or if more common of marginal of ounts, but not of highest quality or in sr	
			ity	

(max 100 pts)

0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



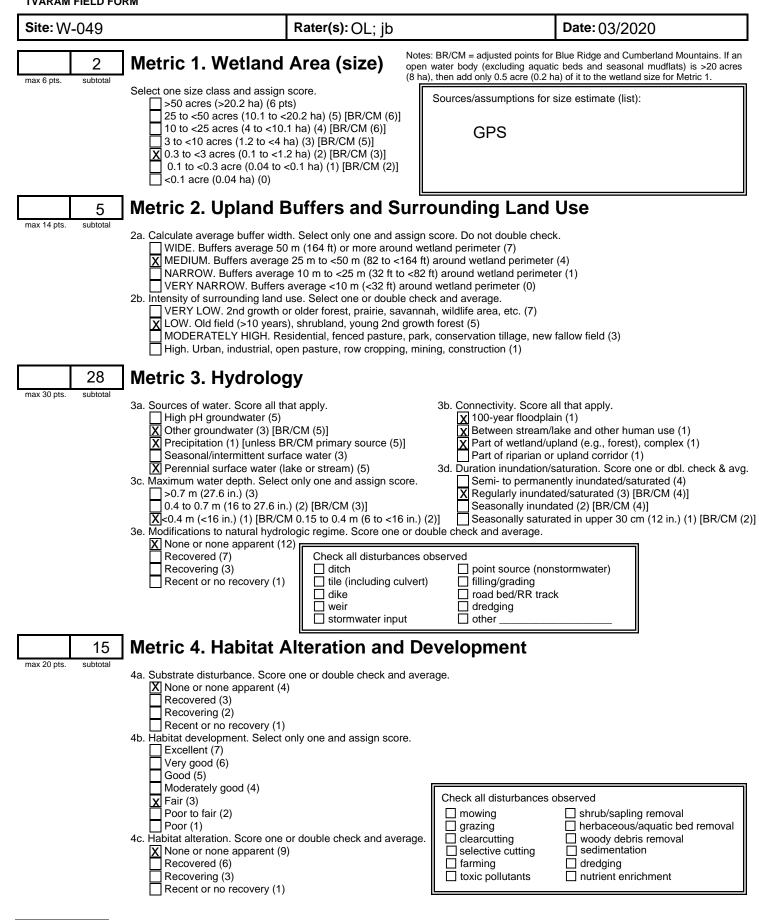
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<b>Site:</b> W-046	Rater(s): OH:jb		Date: 03/2020	
39				
ubtotal previous page	Matria E. Special Watler			
nax 10 pts. subtotal	Metric 5. Special Wetlar	105		
	*If the documented raw score for Metric 5 is			
aw score*	Assoc. forest (wetl. &/or adj. upland) incl. : Sensitive geologic feature such as spring/ Vernal pool (5); isolated, perched, or slope Island wetland >0.1 acre (0.04 ha) in reser Braided channel or floodplain/terrace depr Gross morph. adapt. in >5 trees >10 in. (2 Ecological community with global rank (Na Known occurrence state/federal threatene [*use higher rank where mixed rank or qu Superior/enhanced habitat/use: migratory	hecklists, maps, resource specialis mossy substrate >10 sq.m, sphagnum >0.25 acre (0.1 ha); old growth (10); ma seep, sink, losing/underground stream, a wetland (4); headwater wetland [1st or voir, river, or perennial water >6 ft (2 m essions (floodplain pool, slough, oxbow 5 cm) dbh: buttress, multitrunk/stool, sti ttureServe): G1*(10), G2*(5), G3*(3) [*u d/endangered species (10); other rare st alifier] [exclude records which are only songbird/waterfowl (5); in-reservoir butt	st concurrence, data sources, reference or other moss (5); muck, organic soil layer (3 iture >18 in. (45 cm) dbh (5) [exclude pine pl cave, waterfall, rock outcrop/cliff (5) rder perennial or above] (3) ) deep (5) , meander scar, etc.) (3) Ited, shallow roots/tip-up, or pneumatophore ise higher rank where mixed rank or qualifier species with global rank G1*(10), G2*(5), G3	es, etc). 3) antation] s (3) ] *(3) lesignation (3
3	Metric 6. Plant Commur	nities, Interspersio	n, Microtopography	
nax 20 pts. subtotal	6a. Wetland vegetation communities. Score all present using 0 to 3 scale.	Vegetation Community Cov 0 = Absent or <0.1 ha (0.25		
	Aquatic bed	[For BR/CM <0.04 ha (0.	.1 acre)]	
	X Emergent		prises a small part of wetland's vegetation	
	Shrub Forest		nprises a significant part but is of low quorises a significant part of wetland's veg	
	Mudflats	is of moderate quality, or	r comprises a small part and is of high	quality
	Open water <20 acres (8 ha) Moss/lichen. Other	3 = Present and comprises a significant part or more of wetland's vegetation and is of high quality		
	6b. Horizontal (plan view) interspersion.	Narrative Description of Ve		
	Select only one. High (5)	low = Low species diversity on native species	&/or dominance of nonnative or disturb	ance tolera
	Moderately high (4) [BR/CM (5)]		minant component of the vegetation, all	though
	Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)]	nonnative &/or disturbance tolerant native species can also be pr		
	Low (1) [BR/CM (2)]		threatened or endangered species	any
	None (0)		tive species with nonnative sp &/or dist ent or virtually absent, and high sp dive	
			esence of rate, threatened, or endangel	
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Water Cla	ass Quality	
	Extensive >75% cover (-5)		res) [For BR/CM <0.04 ha (0.1 acre)]	
	Moderate 25-75% cover (-3) X Sparse 5-25% cover (-1)	1 = Low 0.1 to <1 ha (0.25 to (0.1 to 0.5 acre)]	o 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)	5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0 more [BR/CM 2 ha (5 acres) or more]	.5 to 5 acre
	6d. Microtopography. Score all present using 0 to 3 scale.	Hypothetical Wetland for Es	stimating Degree of Interspersion	
	<ul> <li>Vegetated hummocks/tussocks</li> <li>Coarse woody debris &gt;15 cm (6 in.)</li> <li>Standing dead &gt;25 cm (10 in.) dbh</li> <li>Amphibian breeding pools</li> </ul>	None Low	Low Moderate Moderate	
		Microtopography Cover Sca		High
		0 = Absent		
			nounts or if more common of marginal of ounts, but not of highest quality or in sr	
			ity	

(max 100 pts)

0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

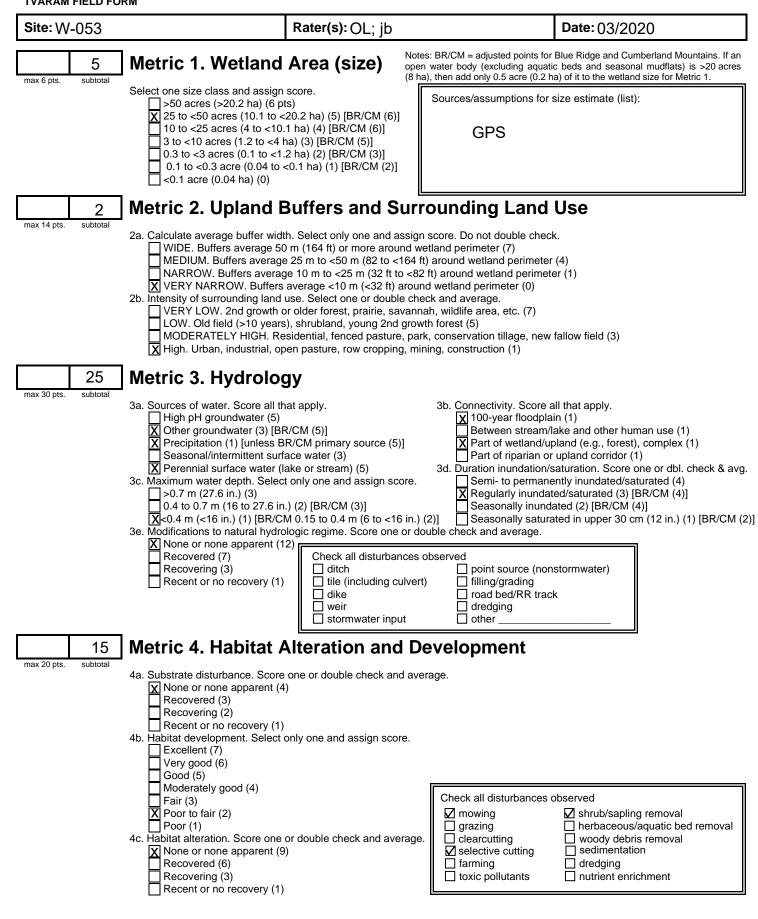


Site: W-049 Rater(s)		iter(s): OH:jb	Date: 03/2020
50 subtotal previous page max 10 pts. subtotal raw score*	Select all that apply. Where multiple v documentation for each selection (pho Bog, fen, wet prairie (10); acidophil Assoc. forest (wetl. &/or adj. upland Sensitive geologic feature such as Vernal pool (5); isolated, perched, ( Island wetland >0.1 acre (0.04 ha) i Braided channel or floodplain/terrac Gross morph. adapt. in >5 trees >1 Ecological community with global ra Known occurrence state/federal thr	ic 5 is 30 points or higher, the site is alues apply in row, score row as sing tos, checklists, maps, resource spec ic veg., mossy substrate >10 sq.m, sphag b) incl. >0.25 acre (0.1 ha); old growth (10) spring/seep, sink, losing/underground stre or slope wetland (4); headwater wetland [1 in reservoir, river, or perennial water >6 ft ce depressions (floodplain pool, slough, or 0 in. (25 cm) dbh: buttress, multitrunk/stoo ank (NatureServe): G1*(10), G2*(5), G3*(3	Ist order perennial or above] (3) (2 m) deep (5) kbow, meander scar, etc.) (3) ol, 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)
A max 20 pts. subtotal	Cat. 1 (very low quality) : <1 acre (	0.4 ha) AND EITHER >80% cover of invas	r buittonbush (4); other fish/wildlife management/designation (3 sives OR nonvegetated on mined/excavated land (-10) ion, Microtopography
	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	[For BR/CM <0.04 h]1 =Present and either c moderate quality, or2 =Present and either c is of moderate qualit	0.25 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) interspersio Select only one. High (5) Moderately high (4) [BR/CM (5) Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] None (0)	low =       Low species diversinative species         native species       nonnative species are nonnative &/or dis         and species diversinative species diversinative species diversinative species diversinative species diversinative species         high =       A predominance or tolerant native species are not species diversinative species diterative species diterative species diterative species diversinat	sity &/or dominance of nonnative or disturbance toleran 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 off
	6c. 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 (0) Absent (1)	Mudflat and Open Water           0 =         Absent <0.1 ha (0.25)	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 acres) or more [BR/CM 2 ha (5 acres) or more]
	6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks X Coarse woody debris >15 cm ( Standing dead >25 cm (10 in.) Amphibian breeding pools	s 6 in.)	br Estimating Degree of Interspersion
		2 = Present in moderate amounts of highest of	Il amounts or if more common of marginal quality amounts, but not of highest quality or in small

(max 100 pts)

- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

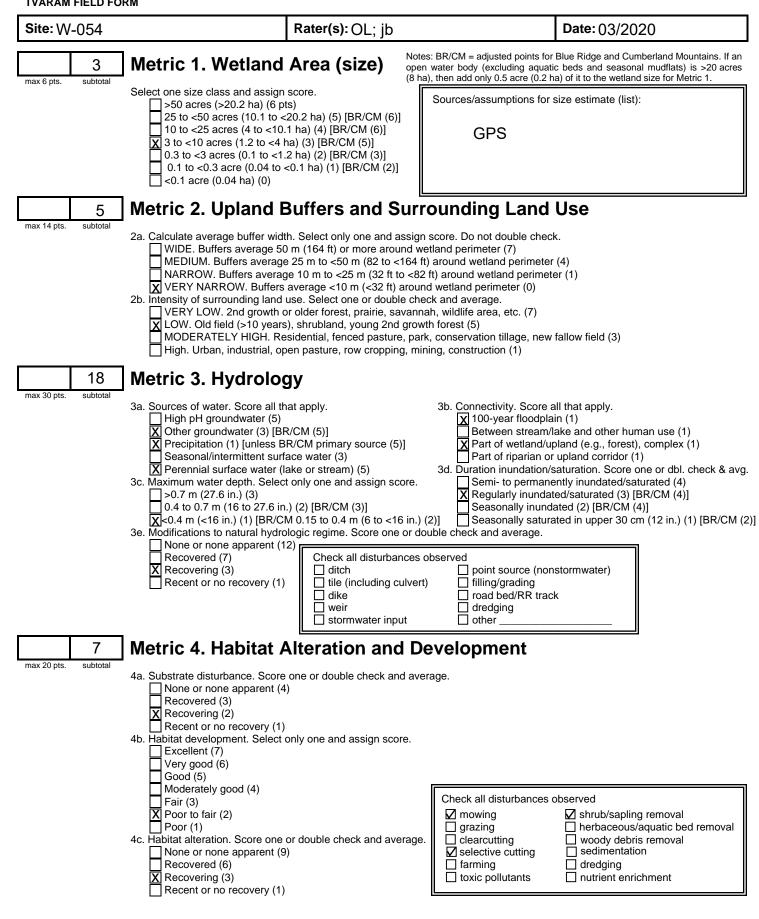


Site: W-053 Rater(s)		ter(s): OH:jb	s): OH:jb Date: 03/2020	
47 subtotal previous page max 10 pts. subtotal raw score*	Select all that apply. Where multiple va documentation for each selection (phot Bog, fen, wet prairie (10); acidophilio Assoc. forest (wetl. &/or adj. upland) Sensitive geologic feature such as s Vernal pool (5); isolated, perched, oi Island wetland >0.1 acre (0.04 ha) ir Braided channel or floodplain/terrace Gross morph. adapt. in >5 trees >10	c 5 is 30 points or higher, the site is llues apply in row, score row as sing tos, checklists, maps, resource spec veg., mossy substrate >10 sq.m, sphag incl. >0.25 acre (0.1 ha); old growth (10 pring/seep, sink, losing/underground stre r slope wetland (4); headwater wetland [7 r eservoir, river, or perennial water >6 ft e depressions (floodplain pool, slough, oz in. (25 cm) dbh: buttress, multitrunk/stoo	(2 m) deep (5) xbow, meander scar, etc.) (3) ol, stilted, shallow roots/tip-up, or pneumatophores (3)	
2	Known occurrence state/federal thre [*use higher rank where mixed rank Superior/enhanced habitat/use: migu Cat. 1 (very low quality) : <1 acre (0.	atened/endangered species (10); other r < or qualifier] [exclude records which are atory songbird/waterfowl (5); in-reservoir 4 ha) AND EITHER >80% cover of invas	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 communities. Score all present using 0 to 3 scale. Aquatic bed Emergent Shrub Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	[For BR/CM <0.04 h 1 = Present and either c moderate quality, or 2 = Present and either c is of moderate qualit	0.25 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) interspersion Select only one. High (5) Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] None (0)	low = Low species diver- native species mod = Native species are nonnative &/or dis and species divers w/o presence of ra high = A predominance o tolerant native species	f Vegetation Quality sity &/or dominance of nonnative or disturbance toleral 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 off e 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) X Nearly absent <5% cover (0) Absent (1)	Mudflat and Open Wate           0 =         Absent <0.1 ha (0.29)		
	6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 Standing dead >25 cm (10 in.) o Amphibian breeding pools	5 in.)	br Estimating Degree of Interspersion	
		2 = Present in moderate amounts of highest of	Il amounts or if more common of marginal quality a amounts, but not of highest quality or in small	

(max 100 pts)

- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



<b>Site:</b> W-054	Rat	e <b>r(s):</b> OH:jb	Date: 03/2020
32 subtotal previous page max 10 pts. subtotal raw score*	Select all that apply. Where multiple va documentation for each selection (phot Bog, fen, wet prairie (10); acidophilic Assoc. forest (wetl. &/or adj. upland) Sensitive geologic feature such as sy Vernal pool (5); isolated, perched, or Island wetland >0.1 acre (0.04 ha) in Braided channel or floodplain/terrace Gross morph. adapt. in >5 trees >10 Ecological community with global rar Known occurrence state/federal three	c 5 is 30 points or higher, the site is lues apply in row, score row as sin os, checklists, maps, resource spe veg, mossy substrate >10 sq.m, sphag incl. >0.25 acre (0.1 ha); old growth (10 pring/seep, sink, losing/underground str slope wetland (4); headwater wetland [ reservoir, river, or perennial water >6 fi e depressions (floodplain pool, slough, c in. (25 cm) dbh: buttress, multitrunk/sto nk (NatureServe): G1*(10), G2*(5), G3*(	t (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)
Max 20 pts. subtotal	Cat. 1 (very low quality) : <1 acre (0.	4 ha) AND EITHER >80% cover of inva <b>NUNITIES, INTERSPERS</b> Vegetation Community 0 = Absent or <0.1 ha ( <u>[For BR/CM &lt;0.04 h]</u> 1 = Present and either of <u>moderate quality, of</u> 2 = Present and either of <u>is of moderate quality</u>	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 ises a significant part or more of wetland's vegetation
	6b. Horizontal (plan view) interspersion Select only one. High (5) Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] X Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] None (0)	Narrative Description of low = Low species diver native species mod = Native species ar nonnative &/or dis and species diver w/o presence of r high = A predominance of tolerant native sp	
	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)	1 = Low 0.1 to <1 ha (0 (0.1 to 0.5 acre)] 2 = Moderate 1 to <4 ha	er 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 s) or more [BR/CM 2 ha (5 acres) or more]
	6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 Standing dead >25 cm (10 in.) c Amphibian breeding pools	; in.)	or Estimating Degree of Interspersion

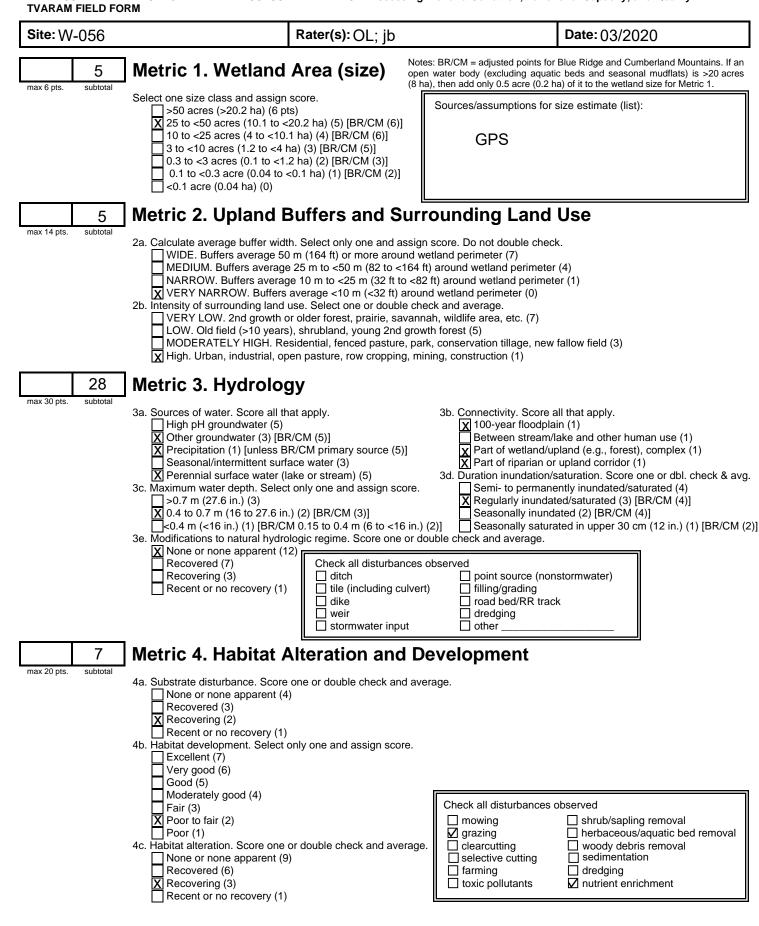
(max 100 pts)

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

  - 0- 29 = Category 1, low wetland function, condition, quality\*\*
    30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
    60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

TENNESSEE VALLEY AUTHORITY RAPID ASSESSMENT METHOD: Assessing Wetland Condition, Functional Capacity, and Quality



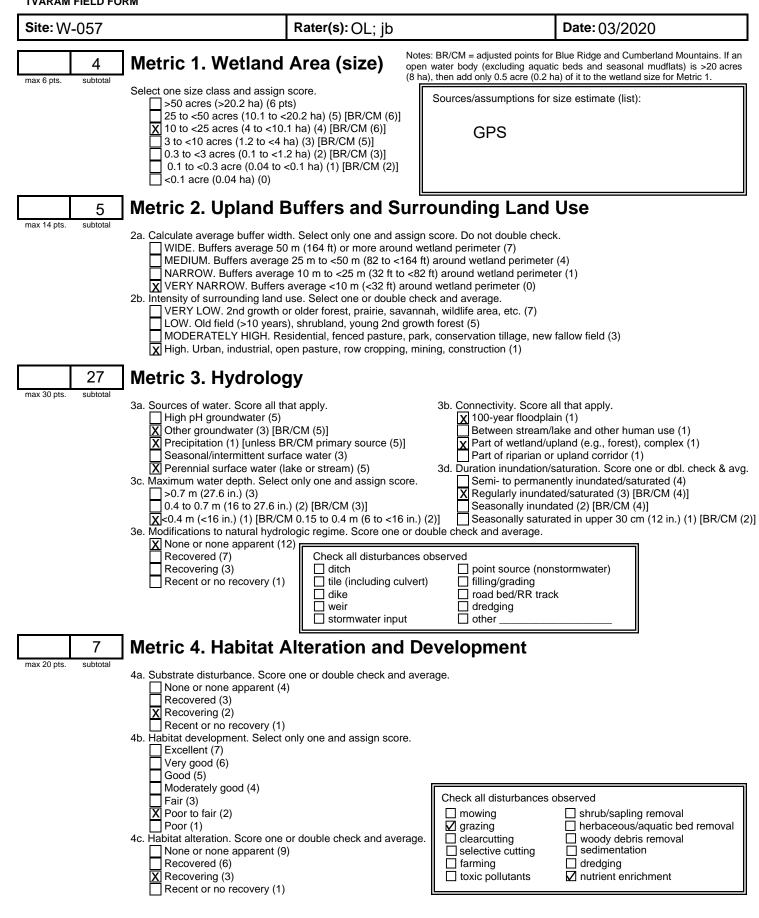
..... Eurotional Consolity and Quality 

<b>Site:</b> W-056	Rater	s): OH:jb Date: 03/2020		
45				
subtotal previous page	Metric 5. Special Wetla	nds		
max 10 pts. subtotal				
raw score*		s apply in row, score row as single checklists, maps, resource specia ., mossy substrate >10 sq.m, sphagnu . >0.25 acre (0.1 ha); old growth (10); n g/seep, sink, losing/underground strean be wetland (4); headwater wetland [1st	feature with highest point value. Provide list concurrence, data sources, reference m or other moss (5); muck, organic soil layer (3 nature >18 in. (45 cm) dbh (5) [exclude pine pla n, cave, waterfall, rock outcrop/cliff (5) order perennial or above] (3)	s, etc). 3)
	Braided channel or floodplain/terrace de Gross morph. adapt. in >5 trees >10 in ( Ecological community with global rank (N Known occurrence state/federal threaten [*use higher rank where mixed rank or of Superior/enhanced habitat/use: migrator	pressions (floodplain pool, slough, oxbo (25 cm) dbh: buttress, multitrunk/stool, statureServe): G1*(10), G2*(5), G3*(3) [ ned/endangered species (10); other rare qualifier] [exclude records which are on y songbird/waterfowl (5); in-reservoir but	w, meander scar, etc.) (3) stilted, shallow roots/tip-up, or pneumatophore *use higher rank where mixed rank or qualifier e species with global rank G1*(10), G2*(5), G3*	(3) esignation (3
3	Metric 6. Plant Commu	nities, Interspersio	on, Microtopography	
max 20 pts. subtotal	6a. Wetland vegetation communities. Score all present using 0 to 3 scale.	<u>Vegetation Community Cc</u> 0 = Absent or < 0.1 ha (0.2)	5 acre) contiguous acre	
	Aquatic bed Emergent Shrub Forest	moderate quality, or co	0.1 acre)) prises a small part of wetland's vegetation prises a significant part but is of low que prises a significant part of wetland's veg	ality
	Mudflats X Open water <20 acres (8 ha) Moss/lichen. Other	is of moderate quality,	or comprises a significant part of weitand's veg or comprises a small part and is of high of a significant part or more of wetland's v	quality
	6b. Horizontal (plan view) interspersion.	Narrative Description of V	egetation Quality	
	Select only one. High (5)		y &/or dominance of nonnative or disturba	ance tolera
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)]	mod = Native species are d nonnative &/or distur	ominant component of the vegetation, alt bance tolerant native species can also b v moderate to moderately high, but gener	e present,
	Low (1) [BR/CM (2)]	high = A predominance of n tolerant native sp ab	, threatened or endangered species ative species with nonnative sp &/or dist sent or virtually absent, and high sp diver resence of rate, threatened, or endanger	sity and off
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Water C	-	
	Extensive >75% cover (-5) Moderate 25-75% cover (-3)	1 = Low 0.1 to <1 ha (0.25	to 2.5 acres) [BR/CM <0.04 ha (0.1 acre)] to 2.5 acres) [BR/CM 0.04 to <0.2 ha	
	X Sparse 5-25% cover (-1) Nearly absent <5% cover (0) Absent (1)		2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0 or more [BR/CM 2 ha (5 acres) or more]	.5 to 5 acre
	6d. Microtopography.	Hypothetical Wetland for I	Estimating Degree of Interspersion	
	Score all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in.) Standing dead >25 cm (10 in.) dbh Amphibian breeding pools			000
		None Low Microtopography Cover S	Low Moderate Moderate	High
		0 = Absent	mounts or if more common of marginal c	ualitv
			mounts, but not of highest quality or in sn	

(max 100 pts)

0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

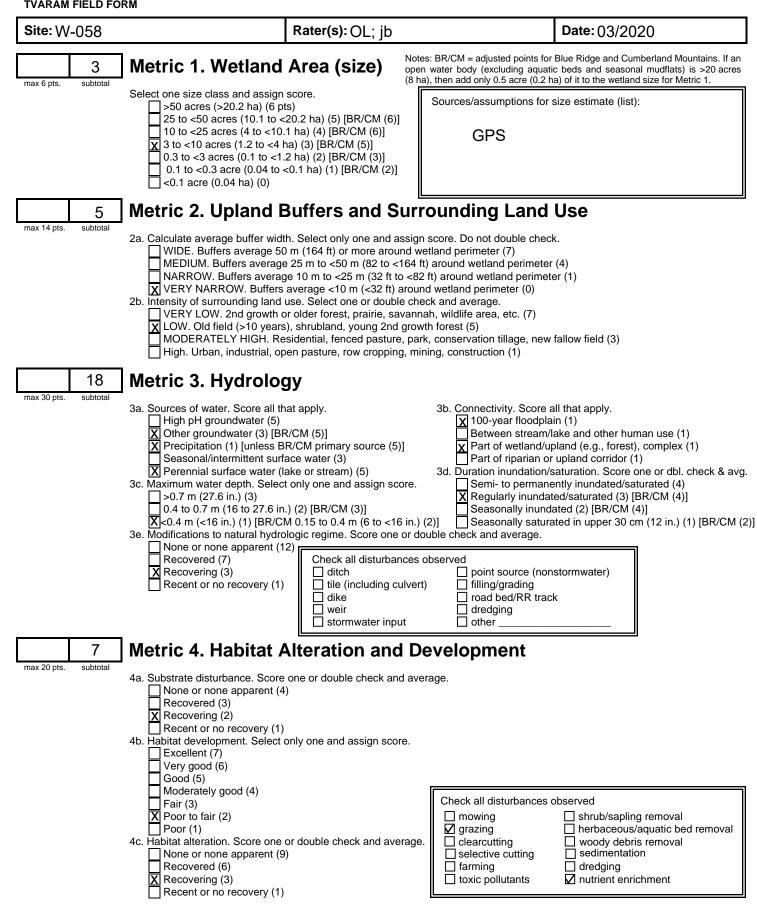


43 subtotal previous page max 10 pts. subtotal	Metric 5. Special Wetlar *If the documented raw score for Metric 5 is		itomatically considered a Category 3 wetland.
raw score*	Bog, fen, wet prairie (10); acidophilic veg. Assoc. forest (wetl. &/or adj. upland) incl. Sensitive geologic feature such as spring/ Vernal pool (5); isolated, perched, or slop Island wetland >0.1 acre (0.04 ha) in rese Braided channel or floodplain/terrace dep Gross morph. adapt. in >5 trees >10 in. (2 Ecological community with global rank (Ni Known occurrence state/federal threatene [*use higher rank where mixed rank or q Superior/enhanced habitat/use: migratory	checklists, maps, resource specia , mossy substrate >10 sq.m, sphagnu >0.25 acre (0.1 ha); old growth (10); r /seep, sink, losing/underground stream e wetland (4); headwater wetland [1st ervoir, river, or perennial water >6 ft (2 ressions (floodplain pool, slough, oxbo 25 cm) dbh: buttress, multitrunk/stool, atureServe): G1*(10), G2*(5), G3*(3) [ ad/endangered species (10); other rare ualifier] [exclude records which are on songbird/waterfowl (5); in-reservoir but	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) w, meander scar, etc.) (3) stilted, shallow roots/tip-up, or pneumatophores (3) *use higher rank where mixed rank or qualifier] a species with global rank G1*(10), G2*(5), G3*(3)
max 20 pts. subtotal	Metric 6. Plant Communities.	Nities, Interspersion	
	Score all present using 0 to 3 scale. Aquatic bed Emergent Shrub Forest Mudflats X Open water <20 acres (8 ha) Moss/lichen. Other	2 = Present and either con is of moderate quality,	, 6
	6b. Horizontal (plan view) interspersion. Select only one. High (5) Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] None (0)	native species mod = Native species are d nonnative &/or distur and species diversity w/o presence of rare high = A predominance of r tolerant native sp ab	egetation Quality y &/or dominance of nonnative or disturbance tolera ominant component of the vegetation, although bance tolerant native species can also be present, r 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 off resence 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)	1 = Low 0.1 to <1 ha (0.25 (0.1 to 0.5 acre)] 2 = Moderate 1 to <4 ha (2	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/tussocks Coarse woody debris >15 cm (6 in.) Standing dead >25 cm (10 in.) dbh Amphibian breeding pools	Hypothetical Wetland for None Low	Estimating Degree of Interspersion

(max 100 pts)

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  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

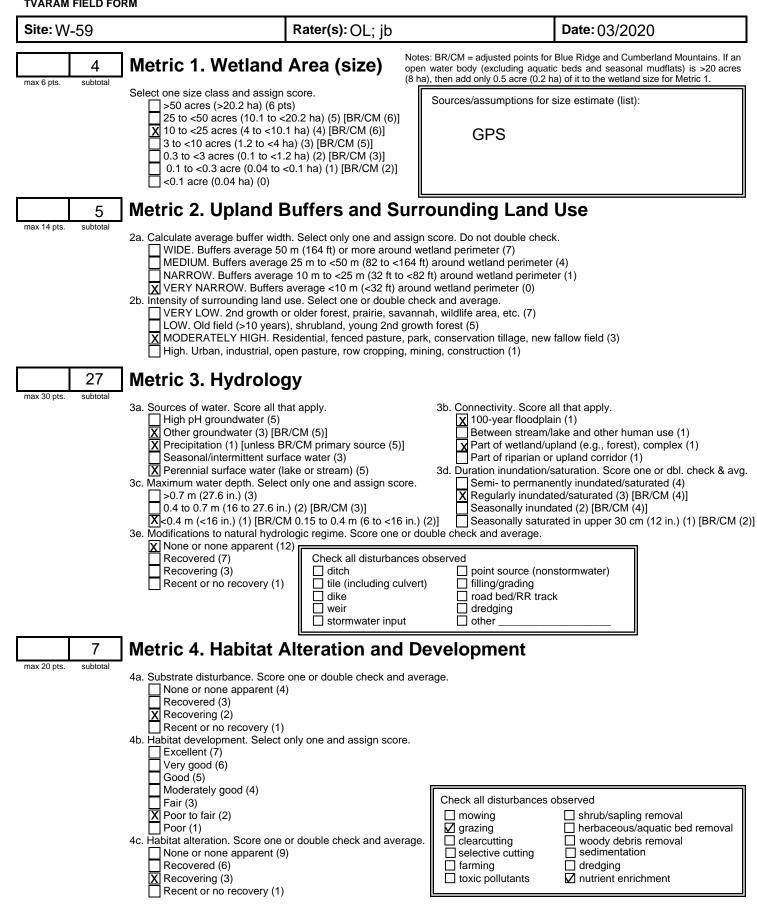


Site: W-058	Rater(	s):OH:jb	Date: 03/2020	
33				
subtotal previous page				
	Metric 5. Special Wetla	nds		
max 10 pts. subtotal				
	*If the documented raw score for Metric 5 is	, <u> </u> , <u> </u> ,	, , , , , , , , , , , , , , , , , , , ,	
'aw score*	Assoc. forest (wetl. &/or adj. upland) incl Sensitive geologic feature such as spring Vernal pool (5); isolated, perched, or slop Island wetland >0.1 acre (0.04 ha) in res Braided channel or floodplain/terrace deg Gross morph. adapt. in >5 trees >10 in. ( Ecological community with global rank (N	checklists, maps, resource specia ,, mossy substrate >10 sq.m, sphagnu , >0.25 acre (0.1 ha); old growth (10); r /seep, sink, losing/underground strear be wetland (4); headwater wetland [1st ervoir, river, or perennial water >6 ft (2 pressions (floodplain pool, slough, oxbe 25 cm) dbh: buttress, multitrunk/stool, latureServe): G1*(10), G2*(5), G3*(3) med/endangered species (10); other rar	list concurrence, data sources, referen m or other moss (5); muck, organic soil laye nature >18 in. (45 cm) dbh (5) [exclude pine n, cave, waterfall, rock outcrop/cliff (5) order perennial or above] (3) m) deep (5) w, meander scar, etc.) (3) stilted, shallow roots/tip-up, or pneumatopho *use higher rank where mixed rank or qualif a species with global rank G1*(10), G2*(5), 6	nces, etc). r (3) plantation] pres (3) fier]
	Superior/enhanced habitat/use: migrator	y songbird/waterfowl (5); in-reservoir b	uttonbush (4); other fish/wildlife managemer ss OR nonvegetated on mined/excavated la	
3	] Metric 6. Plant Commu	nities, Interspersio	on, Microtopography	,
max 20 pts. subtotal	6a. Wetland vegetation communities.	Vegetation Community Co		
	Score all present using 0 to 3 scale.	0 = Absent or <0.1 ha (0.2 [For BR/CM <0.04 ha	, .	
	Emergent Shrub		nprises a small part of wetland's veget omprises a significant part but is of low	
	X Forest Mudflats	2 = Present and either cor	apprises a significant part of wetland's v or comprises a small part and is of hig	regetation and
	Open water <20 acres (8 ha) Moss/lichen. Other	3 = Present and comprise and is of high quality	s a significant part or more of wetland's	s vegetation
	6b. Horizontal (plan view) interspersion.	Narrative Description of V		
	Select only one. High (5)	low = Low species diversit native species	y &/or dominance of nonnative or distu	irbance tolera
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)]	nonnative &/or distu	ominant component of the vegetation, bance tolerant native species can also moderate to moderately high, but ger	be present,
	Low (1) [BR/CM (2)]	w/o presence of rare	, threatened or endangered species	
	None (0)	tolerant native sp ab	ative species with nonnative sp &/or d sent or virtually absent, and high sp div resence of rate, threatened, or endand	versity and of
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Water (		_
	Extensive >75% cover (-5) Moderate 25-75% cover (-3)		to 2.5 acres) [For BR/CM <0.04 ha (0.1 acre)] to 2.5 acres) [BR/CM 0.04 to <0.2 ha	
	🗙 Sparse 5-25% cover (-1)	(0.1 to 0.5 acre)]		
	Nearly absent <5% cover (0) Absent (1)		2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha or more [BR/CM 2 ha (5 acres) or more	
	6d. Microtopography. Score all present using 0 to 3 scale.	Hypothetical Wetland for	Estimating Degree of Interspersion	
	Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in.) Standing dead >25 cm (10 in.) dbh Amphibian breeding pools			
		None Low	Low Moderate Modera	te Higl
		<u>Microtopography Cover S</u> 0 = Absent		
			mounts or if more common of margina	

(max 100 pts)

- 0- 29 = Category 1, low wetland function, condition, quality\*\*
  30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
  60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



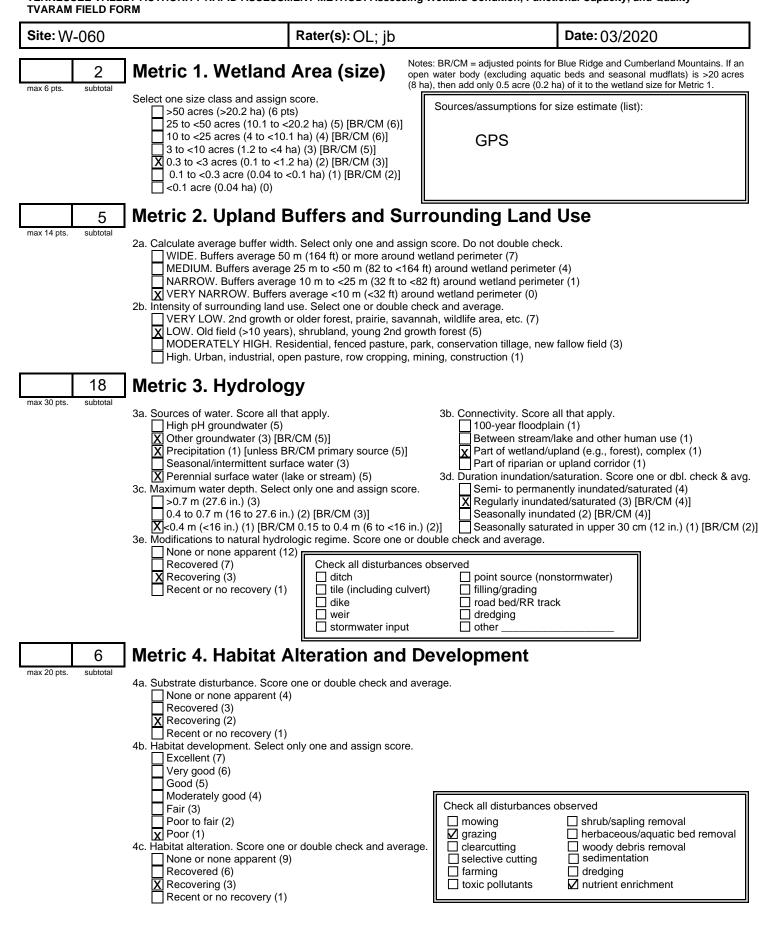
Site: W-059	Rater(s	):OH:jb		Date: 03/2020	
raw score* subtotal *If the dc documer	ic 5. Special Wetlan ecumented raw score for Metric 5 is 3 I that apply. Where multiple values a ntation for each selection (photos, ch og, fen, wet prairie (10); acidophilic veg., ssoc. forest (wetl. &/or adj. upland) incl. > ensitive geologic feature such as spring/s ernal pool (5); isolated, perched, or slope	30 points or higher, the site is a apply in row, score row as single ecklists, maps, resource specia mossy substrate >10 sq.m, sphagn 0.25 acre (0.1 ha); old growth (10); eep, sink, losing/underground strea	e feature with hi alist concurrenc um or other moss mature >18 in. (4 m, cave, waterfall	ighest point value. Provide e, data sources, references (5); muck, organic soil layer (3) 5 cm) dbh (5) [exclude pine plar l, rock outcrop/cliff (5)	, etc).
	land wetland >0.1 acre (0.04 ha) in reservation reservation of floodplain/terrace depressions morph. adapt. in >5 trees >10 in. (25 cological community with global rank (Nationown occurrence state/federal threatened *use higher rank where mixed rank or quipperior/enhanced habitat/use: migratory stat. 1 (very low quality) : <1 acre (0.4 ha) /	voir, river, or perennial water >6 ft (2 assions (floodplain pool, slough, oxt 5 cm) dbh: buttress, multitrunk/stool, ureServe): G1*(10), G2*(5), G3*(3) Wendangered species (10); other ra alifier] [exclude records which are o songbird/waterfowl (5); in-reservoir t AND EITHER >80% cover of invasiv	2 m) deep (5) bow, meander sca stilted, shallow rc [*use higher rank re species with glo nly "historic"] outtonbush (4); oth res OR nonvegeta	ar, etc.) (3) pots/tip-up, or pneumatophores where mixed rank or qualifier] obal rank G1*(10), G2*(5), G3*(3 her fish/wildlife management/dea ated on mined/excavated land (-	3) signation (3
max 20 pts. subtotal	ic 6. Plant Commun and vegetation communities.	Vegetation Community C	-	otopography	
A E S F O C	present using 0 to 3 scale. quatic bed mergent hrub orest ludflats pen water <20 acres (8 ha) loss/lichen. Other	2 = Present and either co is of moderate quality	(0.1 acre)] mprises a small comprises a sign mprises a signif , or comprises a	lous acre I part of wetland's vegetation hificant part but is of low qua ficant part of wetland's vege a small part and is of high qu part or more of wetland's veg	ality tation and uality
Select or	contal (plan view) interspersion. nly one. igh (5)	Narrative Description of V low = Low species diversi native species		ality nce of nonnative or disturbar	nce tolera
	loderately high (4) [BR/CM (5)] loderate (3)[BR/CM (5)] loderately low (2) [BR/CM (3)] ow (1) [BR/CM (2)] one (0)	mod = Native species are o nonnative &/or distu and species diversi <u>w/o presence of ran</u> high = A predominance of tolerant native sp al	Irbance tolerant ty moderate to r e, threatened of native species psent or virtually	onent of the vegetation, alth t native species can also be moderately high, but genera <u>r endangered species</u> with nonnative sp &/or distury y absent, and high sp divers e, threatened, or endangere	present, Ily rbance ity and oft
Add or d E M X S N	rage of invasive plants. educt points for coverage. xtensive >75% cover (-5) loderate 25-75% cover (-3) parse 5-25% cover (-1) early absent <5% cover (0) bsent (1)	Mudflat and Open Water           0 =         Absent <0.1 ha (0.25)	Class Quality acres) [For BR/ 5 to 2.5 acres) [ 2.5 to 9.9 acres	/ <u>CM &lt;0.04 ha (0.1 acre)]</u> /BR/CM 0.04 to <0.2 ha s) [BR/CM 0.2 to <02 ha (0.5	
6d. Micr Score al V C Score al S	otopography. I present using 0 to 3 scale. egetated hummocks/tussocks oarse woody debris >15 cm (6 in.) tanding dead >25 cm (10 in.) dbh mphibian breeding pools	Hypothetical Wetland for	Estimating De	egree of Interspersion	0 00 R
			amounts or if m	Moderate Moderate	

(max 100 pts)

- 3 = Present in moderate or greater amounts and of highest quality
- 0- 29 = Category 1, low wetland function, condition, quality\*\*
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TENNESSEE VALLEY AUTHORITY RAPID ASSESSMENT METHOD: Assessing Wetland Condition, Functional Capacity, and Quality



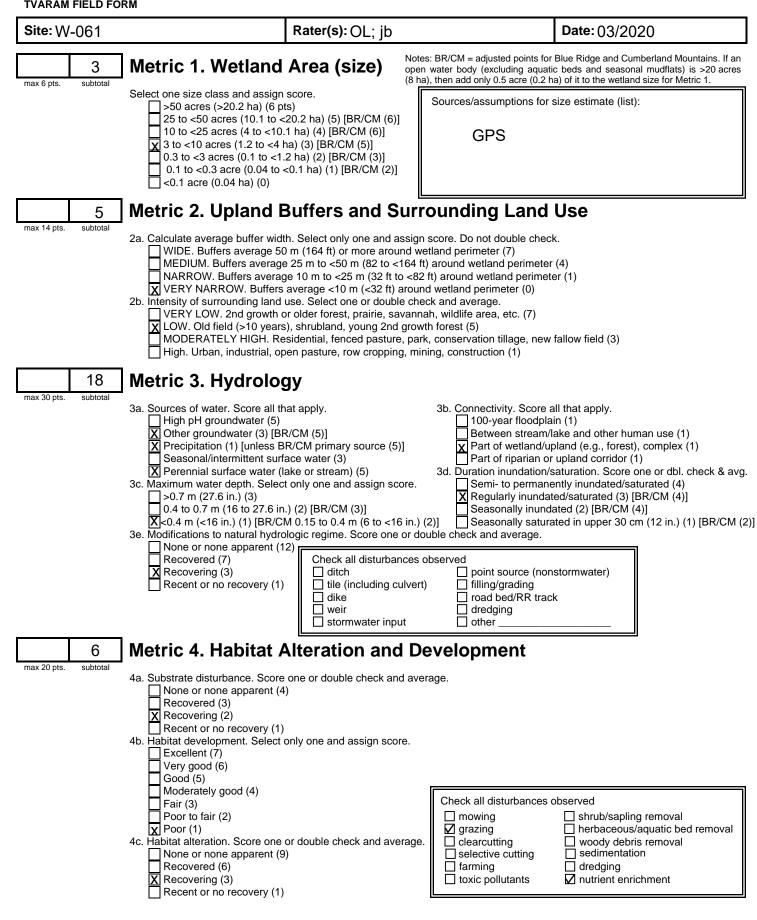
TENNESSEE VALLEY AUTHORITY RAPID ASSESSMENT METHOD: Assessing Wetland Condition, Functional Capacity, and Quality

Site: W-060	Rater	<b>(s):</b> OH:jb	Date: (	03/2020
31 subtotal previous page				
nax 10 pts. subtotal	] Metric 5. Special Wetla	ands		
lax to pis. Subiolai	*If the documented raw score for Metric 5	is 30 points or higher, the site is	automatically considered a	a Category 3 wetland.
aw score*	Select all that apply. Where multiple value documentation for each selection (photos, Bog, fen, wet prairie (10); acidophilic ve Assoc. forest (wetl. &/or adj. upland) inc Sensitive geologic feature such as sprin Vernal pool (5); isolated, perched, or sk Island wetland >0.1 acre (0.04 ha) in re Braided channel or floodplain/terrace de Gross morph. adapt. in >5 trees >10 in. Ecological community with global rank ( Known occurrence state/federal threate [*use higher rank where mixed rank or Superior/enhanced habitat/use: migrato Cat. 1 (very low quality) : <1 acre (0.4 h	, checklists, maps, resource spec g., mossy substrate >10 sq.m, sphage cl. >0.25 acre (0.1 ha); old growth (10) ng/seep, sink, losing/underground stre ope wetland (4); headwater wetland [1 servoir, river, or perennial water >6 ft epressions (floodplain pool, slough, ox (25 cm) dbh: buttress, multitrunk/stoo NatureServe): G1*(10), G2*(5), G3*(3 ned/endangered species (10); other ra qualifier] [exclude records which are ry songbird/waterfowl (5); in-reservoir	ialist concurrence, data so hum or other moss (5); muck, ; mature >18 in. (45 cm) dbh am, cave, waterfall, rock outc st order perennial or above] ( (2 m) deep (5) bow, meander scar, etc.) (3) I, stilted, shallow roots/tip-up, ) [*use higher rank where mix are species with global rank G only "historic"] buttonbush (4); other fish/wik	burces, references, etc). organic soil layer (3) (5) [exclude pine plantation] rop/cliff (5) 3) or pneumatophores (3) ked rank or qualifier] 61*(10), G2*(5), G3*(3) dlife management/designation
1	] Metric 6. Plant Commu	inities, Interspers	ion, Microtopo	ography
nax 20 pts. subtotal	6a. Wetland vegetation communities.	Vegetation Community		
	Score all present using 0 to 3 scale.	0 = Absent or <0.1 ha (0 [For BR/CM <0.04 ha		
	Emergent		• •	vetland's vegetation and is
	Shrub X Forest		comprises a significant part	art but is of low quality t of wetland's vegetation ar
	Mudflats		y, or comprises a significant part	
	Open water <20 acres (8 ha) Moss/lichen. Other	3 = Present and compris and is of high quality		ore of wetland's vegetation
	6b. Horizontal (plan view) interspersion.	Narrative Description of	Vegetation Quality	
	Select only one. High (5)			nnative or disturbance toler
	Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)]	and species divers	urbance tolerant native sp ity moderate to moderatel	becies can also be present ly high, but generally
	Low (1) [BR/CM (2)]	w/o presence of ra high = A predominance of	re, threatened or endange	
		tolerant native sp a	absent or virtually absent,	and high sp diversity and c ned, or endangered specie
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Water	Class Quality	
	Extensive >75% cover (-5)	0 = Absent < 0.1 ha (0.25	5 acres) [For BR/CM < 0.04	
	Moderate 25-75% cover (-3)  X Sparse 5-25% cover (-1)	1 = Low 0.1 to <1 ha (0.2 (0.1 to 0.5 acre)]	25 to 2.5 acres) [BR/CM 0	.04 to <0.2 na
	Nearly absent <5% cover (0) Absent (1)	$\frac{2 = \text{Moderate 1 to <4 ha}}{3 = \text{High 4 ha} (9.9 \text{ acres})}$		1 0.2 to <02 ha (0.5 to 5 ac acres) or more]
	6d. Microtopography. Score all present using 0 to 3 scale.	Hypothetical Wetland fo	r Estimating Degree of I	nterspersion
	Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in Standing dead >25 cm (10 in.) dbh			
	Amphibian breeding pools	None Low	Low Moderat	te Moderate Hi
		Microtopography Cover	Scale	
		0 = Absent 1 = Present in very smal	l amounts or if more comn	non of marginal quality
		2 = Present in moderate		

(max 100 pts)

0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



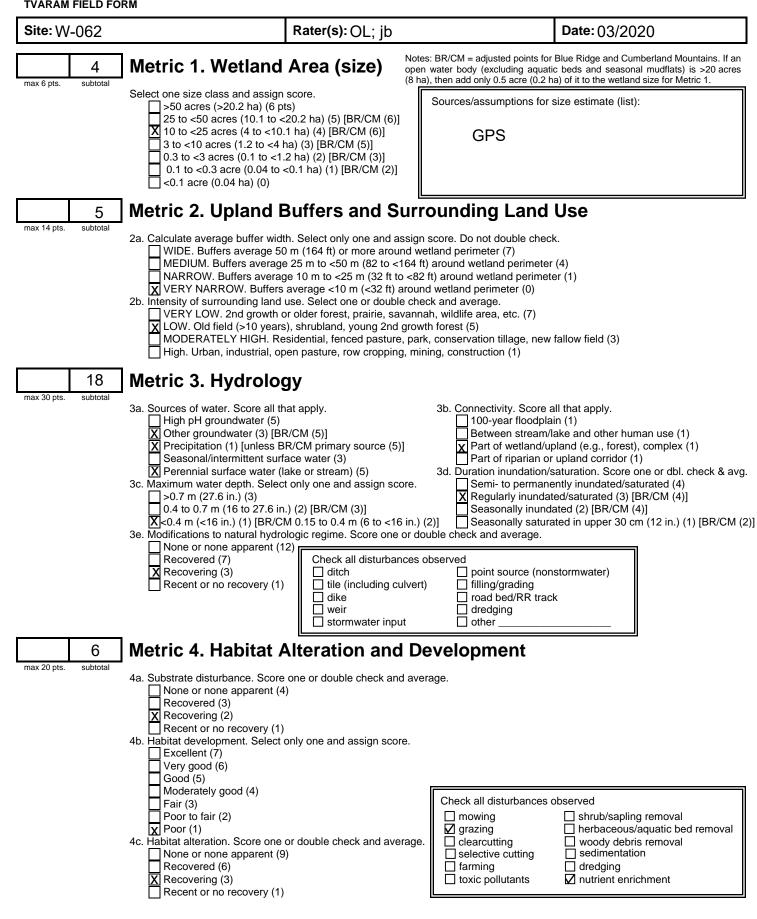
ational Consoitur 

<b>Site:</b> W-061	Rater(s	):OH:jb	Date:	03/2020	
32 subtotal previous page		de			
max 10 pts. subtotal	Metric 5. Special Wetlan	as			
	*If the documented raw score for Metric 5 is a	30 points or higher, the site is a	automatically considered	d a Category 3 wetlar	nd.
raw score*	Select all that apply. Where multiple values a documentation for each selection (photos, ch Bog, fen, wet prairie (10); acidophilic veg., Assoc. forest (wetl. &/or adj. upland) incl. > Sensitive geologic feature such as spring/s Vernal pool (5); isolated, perched, or slope Island wetland >0.1 acre (0.04 ha) in reser Braided channel or floodplain/terrace depre Gross morph. adapt. in >5 trees >10 in. (25 Ecological community with global rank (Na Known occurrence state/federal threatened [*use higher rank where mixed rank or qu Superior/enhanced habitat/use: migratory s Cat. 1 (very low quality) : <1 acre (0.4 ha) /	hecklists, maps, resource speci mossy substrate >10 sq.m, sphagn 0.25 acre (0.1 ha); old growth (10); heep, sink, losing/underground streat wetland (4); headwater wetland [15 voir, river, or perennial water >6 ft ( essions (floodplain pool, slough, oxl 5 cm) dbh: buttress, multitrunk/stool tureServe): G1*(10), G2*(5), G3*(3) //endangered species (10); other ra alifier] [exclude records which are co songbird/waterfowl (5); in-reservoir	alist concurrence, data num or other moss (5); muc mature >18 in. (45 cm) dbl am, cave, waterfall, rock ou st order perennial or above] 2 m) deep (5) bow, meander scar, etc.) (3 l, stilted, shallow roots/tip-u ) [*use higher rank where m re species with global rank only "historic"] buttonbush (4); other fish/w	sources, references, k, organic soil layer (3) h (5) [exclude pine plant tcrop/cliff (5) ] (3) B) p, or pneumatophores ( nixed rank or qualifier] c G1*(10), G2*(5), G3*(3) vildlife management/des	tation] 3) ) ignation (3
1	] Metric 6. Plant Commun	ities, Interspersi	on, Microtop	ography	
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	2 = Present and either co	25 acre) contiguous acr <u>(0.1 acre)]</u> pomprises a small part of <u>comprises a significant p</u> pomprises a significant pa <u>v</u> , or comprises a small p	wetland's vegetation part but is of low qual art of wetland's veget part and is of high qu	lity ation and ality
	6b. Horizontal (plan view) interspersion.	Narrative Description of	Vegetation Quality		
	Select only one. High (5) Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] None (0)	low = Low species divers native species mod = Native species are nonnative &/or distuand species diversi w/o presence of ran high = A predominance of tolerant native sp a	ity &/or dominance of no dominant component of urbance tolerant native ity moderate to moderat re, threatened or endand native species with non bsent or virtually absent	f the vegetation, althors species can also be tely high, but general gered species mative sp &/or disturn t, and high sp diversi	ough present, ly bance ty and off
	6c. Coverage of invasive plants.		presence of rate, threat	tened, or endangered	d 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)	Mudflat and Open Water           0 =         Absent <0.1 ha (0.25)	acres) [For BR/CM <0. 5 to 2.5 acres) [BR/CM (2.5 to 9.9 acres) [BR/C	0.04 to <0.2 ha M 0.2 to <02 ha (0.5	to 5 acre
	6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in.)	Hypothetical Wetland for	r Estimating Degree of		A
	Standing dead >25 cm (10 in.) dbh	None Low	Low Moder		High
		Microtopography Cover 0 = Absent	Scale		_
		1 = Present in very small	amounts or if more con	nmon of marginal gue	ality

(max 100 pts)

0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



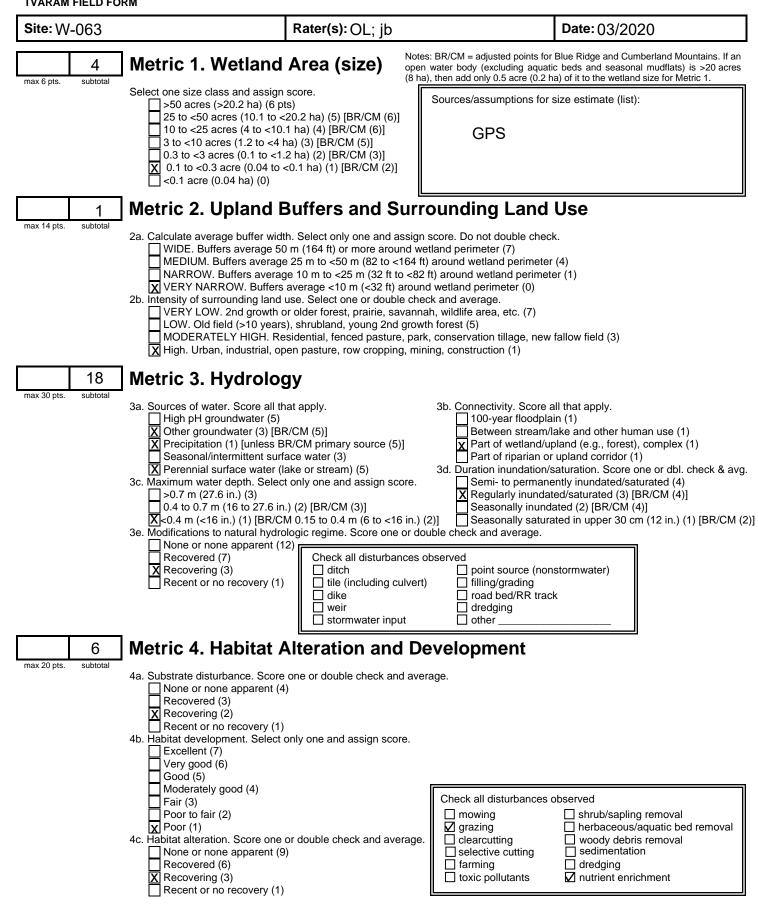
TENNESSEE VALLEY AUTHORITY RAPID ASSESSMENT METHOD: Assessing Wetland Condition, Functional Capacity, and Quality

<b>Site:</b> W-062	R	ater(s): OH:jb	Date: 03/2020	
33 subtotal previous page				
nax 10 pts. subtotal	] Metric 5. Special We	etlands		
nax to pis. Subiolai	*If the documented raw score for Met	tric 5 is 30 points or higher, the site is a	automatically considered a Category 3 wetland.	
aw score*	documentation for each selection (ph Bog, fen, wet prairie (10); acidoph Assoc. forest (wetl. &/or adj. uplar Sensitive geologic feature such as Vernal pool (5); isolated, perched, Island wetland >0.1 acre (0.04 ha] Braided channel or floodplain/terra Gross morph. adapt. in >5 trees > Ecological community with global Known occurrence state/federal th [*use higher rank where mixed ra Superior/enhanced habitat/use: m	notos, checklists, maps, resource speci- ilic veg., mossy substrate >10 sq.m, sphagr nd) incl. >0.25 acre (0.1 ha); old growth (10); s spring/seep, sink, losing/underground strea or slope wetland (4); headwater wetland [1: ) in reservoir, river, or perennial water >6 ft ( ace depressions (floodplain pool, slough, ox 10 in. (25 cm) dbh: buttress, multitrunk/stoo rank (NatureServe): G1*(10), G2*(5), G3*(3) arreatened/endangered species (10); other re ank or qualifier] [exclude records which are of igratory 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)	
1 nax 20 pts. subtotal	] Metric 6. Plant Com	munities, Interspersi	ion, Microtopography	
iax 20 pi3. 300101ai	6a. Wetland vegetation communities. Score all present using 0 to 3 scale.	0 = Absent or <0.1 ha (0.		
	Aquatic bed	[For BR/CM <0.04 ha	a (0.1 acre)]	
	X Emergent		omprises a small part of wetland's vegetation and i	is o
	Shrub Forest		comprises a significant part but is of low quality omprises a significant part of wetland's vegetation	and
	Mudflats		, or comprises a small part and is of high quality	and
	Open water <20 acres (8 ha) Moss/lichen. Other	3 = Present and compris and is of high quality	es a significant part or more of wetland's vegetatio	'n
	6b. Horizontal (plan view) interspersi	on. Narrative Description of	Vegetation Quality	
	Select only one.	low = Low species divers	ity &/or dominance of nonnative or disturbance to	era
	High (5) Moderately high (4) [BR/CM (	5)1 mod = Native species are	dominant component of the vegetation, although	
	Moderate (3)[BR/CM (5)]	nonnative &/or dist	urbance tolerant native species can also be preser	nt,
	X Moderately low (2) [BR/CM (3 Low (1) [BR/CM (2)]		ity moderate to moderately high, but generally re, threatened or endangered species	
	None (0)		ative species with nonnative sp &/or disturbance	
			bsent or virtually absent, and high sp diversity and presence of rate, threatened, or endangered spec	
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Water		
	$\Box \text{ Extensive >75\% cover (-5)}$		acres) [For BR/CM <0.04 ha (0.1 acre)]	
	Moderate 25-75% cover (-3) X Sparse 5-25% cover (-1)	1 = Low 0.1 to <1 ha (0.2 (0.1 to 0.5 acre)]	25 to 2.5 acres) [BR/CM 0.04 to <0.2 ha	
	Nearly absent <5% cover (0)	2 = Moderate 1 to <4 ha	(2.5 to 9.9 acres) [BR/CM 0.2 to <02 ha (0.5 to 5 a	acre
	Absent (1)	<u>3 = High 4 ha (9.9 acres)</u>	or more [BR/CM 2 ha (5 acres) or more]	
	6d. Microtopography. Score all present using 0 to 3 scale.		r Estimating Degree of Interspersion	1
	Coarse woody debris >15 cm Standing dead >25 cm (10 in. Amphibian breeding pools	(6 in.) ) dbh		80
		None Low		High
		Microtopography Cover 0 = Absent	Scale	
		1 = Present in very small	amounts or if more common of marginal quality	
		2 = Present in moderate	amounts, but not of highest quality or in small	
		amounts of highest g		

(max 100 pts)

0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



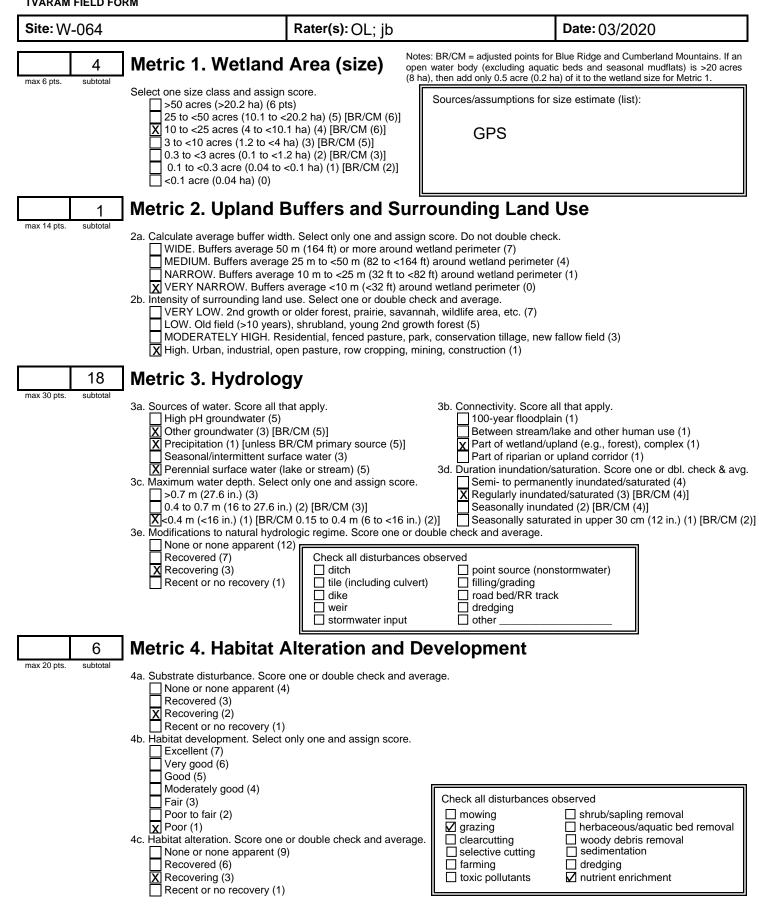
TENNESSEE VALLEY AUTHORITY RAPID ASSESSMENT METHOD: Assessing Wetland Condition, Functional Capacity, and Quality

Site: W-063	Rater	( <b>s):</b> OH:jb	Date: 03/2020	
29 subtotal previous page max 10 pts	] Metric 5. Special Wetla	nds		
raw score*	Assoc. forest (wetl. &/or adj. upland) inc Sensitive geologic feature such as sprin Vernal pool (5); isolated, perched, or slo Island wetland >0.1 acre (0.04 ha) in res Braided channel or floodplain/terrace de Gross morph. adapt. in >5 trees >10 in. Ecological community with global rank (I Known occurrence state/federal threater [*use higher rank where mixed rank or Superior/enhanced habitat/use: migrator	s apply in row, score row as single checklists, maps, resource specia g., mossy substrate >10 sq.m, sphagnu . >0.25 acre (0.1 ha); old growth (10); r g/seep, sink, losing/underground stream pe wetland (4); headwater wetland [1st ervoir, river, or perennial water >6 ft (2 pressions (floodplain pool, slough, oxbo (25 cm) dbh: buttress, multitrunk/stool, NatureServe): G1*(10), G2*(5), G3*(3) [ ned/endangered species (10); other rare qualifier] [exclude records which are on y songbird/waterfowl (5); in-reservoir bo	feature with highest point value. Provide list concurrence, data sources, reference m or other moss (5); muck, organic soil layer (3 nature >18 in. (45 cm) dbh (5) [exclude pine pla 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 pneumatophoree *use higher rank where mixed rank or qualifier] e species with global rank G1*(10), G2*(5), G3*	rs, etc). 3) antation] s (3) ] *(3) lesignation (3
nax 20 pts. subtotal	Metric 6. Plant Commu     6a. Wetland vegetation communities.     Score all present using 0 to 3 scale.     Aquatic bed     Emergent     Shrub	Vegetation Community Co0 =Absent or <0.1 ha (0.2	over Scale 5 acre) contiguous acre	
	Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	2 = Present and either con is of moderate quality,	nprises a significant part of wetland's veg or comprises a small part and is of high o s a significant part or more of wetland's ve	etation and quality
	6b. Horizontal (plan view) interspersion. Select only one. High (5) Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)] Low (1) [BR/CM (2)] None (0)	native species mod = Native species are d nonnative &/or distur and species diversity <u>w/o presence of rare</u> high = A predominance of r tolerant native sp ab	y &/or dominance of nonnative or disturbative ominant component of the vegetation, alt bance tolerant native species can also but moderate to moderately high, but gener threatened or endangered species native species with nonnative sp &/or distussent or virtually absent, and high sp diver	though e present, ally urbance rsity and off
	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 a	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 for more [BR/CM 2 ha (5 acres) or more]	
	6d. Microtopography. Score all present using 0 to 3 scale. Vegetated hummocks/tussocks Coarse woody debris >15 cm (6 in. Standing dead >25 cm (10 in.) dbh Amphibian breeding pools		Estimating Degree of Interspersion	) (***
		Microtopography Cover S 0 = Absent 1 = Present in very small a	cale mounts or if more common of marginal q mounts, but not of highest quality or in sn	juality

(max 100 pts)

0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html



unational Consolity and Qualit .....

Site: W-064	Rater(s	s): OH:jb	Date: 03/2020	
29				
subtotal previous page				
	Metric 5. Special Wetlar	nds		
nax 10 pts. subtotal	*If the documented raw score for Metric 5 is		motionally considered a Category 2 water	nd
aw score*	Select all that apply. Where multiple values documentation for each selection (photos, o Bog, fen, wet prairie (10); acidophilic veg. Assoc. forest (wetl. &/or adj. upland) incl. Sensitive geologic feature such as spring/ Vernal pool (5); isolated, perched, or slope Island wetland >0.1 acre (0.04 ha) in rese Braided channel or floodplain/terrace dep Gross morph. adapt. in >5 trees >10 in. (2 Ecological community with global rank (Na Known occurrence state/federal threatene [*use higher rank where mixed rank or q	apply in row, score row as single fe shecklists, maps, resource specialis , mossy substrate >10 sq.m, sphagnum >0.25 acre (0.1 ha); old growth (10); mai (seep, sink, losing/underground stream, of e wetland (4); headwater wetland [1st or rvoir, river, or perennial water >6 ft (2 m) ressions (floodplain pool, slough, oxbow, 25 cm) dbh: buttress, multitrunk/stool, stil atureServe): G1*(10), G2*(5), G3*(3) [*us add/endangered species (10); other rare s ualifier] [exclude records which are only to songbird/waterfowl (5); in-reservoir butts	eature with highest point value. Provide t concurrence, data sources, references or other moss (5); muck, organic soil layer (3) ture >18 in. (45 cm) dbh (5) [exclude pine plan cave, waterfall, rock outcrop/cliff (5) der perennial or above] (3) o deep (5) , meander scar, etc.) (3) ted, shallow roots/tip-up, or pneumatophores se higher rank where mixed rank or qualifier] pecies with global rank G1*(10), G2*(5), G3*(	s, etc). ntation] (3) 3) signation (3
1	] Metric 6. Plant Commun		-	10)
nax 20 pts. subtotal	6a. Wetland vegetation communities.	Vegetation Community Cov		
	Score all present using 0 to 3 scale.	0 = Absent or <0.1 ha (0.25 a [For BR/CM <0.04 ha (0.	, 8	
	Emergent	1 = Present and either comp	rises a small part of wetland's vegetation	
	Shrub X Forest Mudflats Open water <20 acres (8 ha) Moss/lichen. Other	2 = Present and either comp is of moderate quality, or	prises a significant part but is of low qua rises a significant part of wetland's vege comprises a small part and is of high qua significant part or more of wetland's ve	etation and uality
	6b. Horizontal (plan view) interspersion.	Narrative Description of Vec	retation Quality	
	Select only one.	low = Low species diversity &	Vor dominance of nonnative or disturba	nce tolera
	High (5) Moderately high (4) [BR/CM (5)] Moderate (3)[BR/CM (5)] Moderately low (2) [BR/CM (3)]	nonnative &/or disturba and species diversity n	ninant component of the vegetation, alth ance tolerant native species can also be noderate to moderately high, but genera	present,
	Low (1) [BR/CM (2)]	high = A predominance of nat tolerant native sp abse	hreatened or endangered species ive species with nonnative sp &/or distu nt or virtually absent, and high sp divers sence of rate, threatened, or endangere	sity and of
	6c. Coverage of invasive plants. Add or deduct points for coverage.	Mudflat and Open Water Cla		
	Extensive >75% cover (-5) Moderate 25-75% cover (-3)		res) [For BR/CM <0.04 ha (0.1 acre)] 0 2.5 acres) [BR/CM 0.04 to <0.2 ha	
	X Sparse 5-25% cover (-1) Nearly absent <5% cover (0) Absent (1)		to 9.9 acres) [BR/CM 0.2 to <02 ha (0.8 more [BR/CM 2 ha (5 acres) or more]	5 to 5 acre
	6d. Microtopography. Score all present using 0 to 3 scale.	Hypothetical Wetland for Es	timating Degree of Interspersion	
	Vegetated hummocks/tussocks     Coarse woody debris >15 cm (6 in.)     Standing dead >25 cm (10 in.) dbh     Amphibian breeding pools			
		None Low Microtopography Cover Sca	Low Moderate Moderate	High
		0 = Absent		- 19
			ounts or if more common of marginal quots, but not of highest quality or in sma	

0- 29 = Category 1, low wetland function, condition, quality\*\*
30- 59 = Category 2, good/moderate wetland function, condition, quality\*\*
60-100 = Category 3, superior wetland function, condition, quality\*\*

(max 100 pts)

\*\*Based on ORAM Score Calibration Report for the scoring breakpoints between wetland categories: http://www.epa.state.oh.us/dsw/401/401.html

APPENDIX D – GOLDEN TRIANGLE PROTECTED SPECIES INFORMATION AND REPORTING





# 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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	3.1		se Types	
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### APPENDIX A - PROTECTED SPECIES INFORMATION APPENDIX B - MAPS AND FIGURES

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Table 3-1:	Protected Species Potentially Occurring within the Survey Area
Table 3-2:	Birds of Conservation Concern Potentially Occurring within the Survey
	Area

# LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
BCC	Birds of Conservation Concern
BGEPA	Bald and Golden Eagle Protection Act
Burns & McDonnell	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

#### 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.

Common Name	Scientific Name	Federal Status	State Status	Preferred Habitat Description	Habitat Present		
	• •		Mammal	5			
Northern long- eared bat	Myotis septentrionalis	LT	-	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 long- eared 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		
	•	•	Invertebrat	ies .			
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		

Table 3-1: Protected Species Potentially Occurring within the Survey Area
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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	No		
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.

		Probability of Presence						
Common Name	Scientific Name	probability of presence						
Name	Naille	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					

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

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. <u>https://www.mdwfp.com/media/256526/endangered\_species\_of\_mississippi.pdf</u>.
- 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. <u>Range-wide Indiana Bat Survey Guidelines</u>. April 2019. Available via the internet at: <u>https://www.fws.gov/arkansas-es/docs/FINAL%202019%20Range-wide%20IBat%20Survey%20Guidelines%204.10.19.pdf</u>
- 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.

**APPENDIX A - PROTECTED SPECIES INFORMATION** 



# 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/correntBirdIssues/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,

## **Project Location:**

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



MS

Counties: Lowndes, MS

## **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 Fisheries<sup>1</sup>, 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 <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/9045</u>	Threatened
Birds	
NAME	STATUS
Wood Stork <i>Mycteria americana</i> Population: AL, FL, GA, MS, NC, SC No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/8477</u>	Threatened
Flowering Plants	
NAME	STATUS
Price''s Potato-bean <i>Apios priceana</i> No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/7422</u>	Threatened

## **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 Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

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 <u>Migratory Birds Treaty Act</u> of 1918.
- 2. The <u>Bald and Golden Eagle Protection Act</u> 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</u> <u>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 <u>below</u>.

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 Haliaeetus leucocephalus 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. <u>https://ecos.fws.gov/ecp/species/9679</u>	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. <u>https://ecos.fws.gov/ecp/species/9481</u>	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 Limnodromus griseus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/9480</u>	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.

- 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 ()

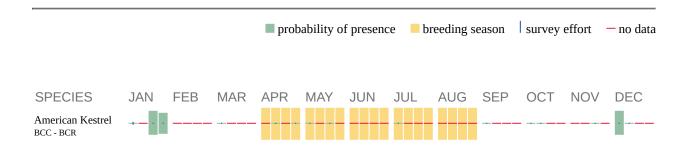
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

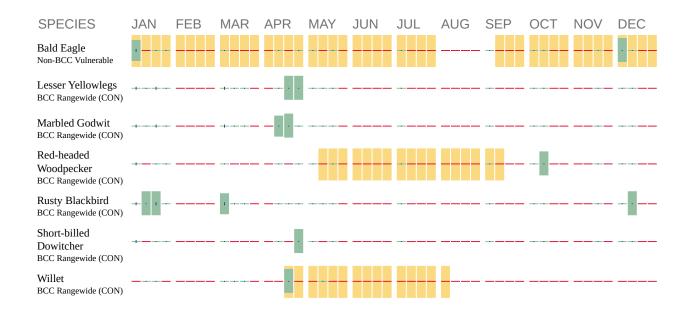
## No Data (-)

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 <u>http://www.fws.gov/birds/management/managed-species/</u> <u>birds-of-conservation-concern.php</u>
- Measures for avoiding and minimizing impacts to birds <u>http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php</u>
- Nationwide conservation measures for birds <u>http://www.fws.gov/migratorybirds/pdf/</u> 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</u> <u>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, banding, 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: <u>The Cornell Lab</u> <u>of Ornithology All About Birds Bird Guide</u>, or (if you are unsuccessful in locating the bird of interest there), the <u>Cornell Lab of Ornithology Neotropical Birds guide</u>. 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 <u>Eagle Act</u> 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 <u>Northeast Ocean Data Portal</u>. 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 <u>NOAA NCCOS Integrative Statistical</u> <u>Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic</u> <u>Outer Continental Shelf</u> 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

- <u>PEM1A</u>
- <u>PEM1Ax</u>
- <u>PEM1Cx</u>

FRESHWATER FORESTED/SHRUB WETLAND

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

FRESHWATER POND

- <u>PUBH</u>
- <u>PUBHh</u>
- <u>PUBHx</u>

RIVERINE

- <u>R2UBH</u>
- <u>R4SBC</u>
- <u>R5UBH</u>

## MISSISSIPPI NATURAL HERITAGE PROGRAM LISTED SPECIES OF MISSISSIPPI

- 2018 -

	SPECIES NAME	COMMON NAME	GLOBAL RANK	STATE RANK	FEDERAL STATUS	STATE STATUS
IMALIA						
BIVALVI	A					
UN	IONOIDA					
	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	<b>FAT POCKETBOOK</b>	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
MALACC	OSTRACA					
DEC	CAPODA					
	CAMBARIDAE					
	CREASERINUS GORDONI	CAMP SHELBY BURROWING CRAWFISH	G1	S1		LE
INSECTA						
COI	LEOPTERA					
	SILPHIDAE					
	NICROPHORUS AMERICANUS	AMERICAN BURYING BEETLE	G2G3	SX	LE	LE
LEP	IDOPTERA					
	NYMPHALIDAE					
	NEONYMPHA MITCHELLII MITCHELLII	MITCHELL'S SATYR	G2T2	S1	LE	LE

24 September 2018

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SPECIES NAME	COMMON NAME	GLOBAL RANK	STATE RANK	FEDERAL STATUS	STATE STATUS
CTINOPTERYGII					
ACIPENSERIFORMES					
ACIPENSERIDAE					
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
CYPRINIDAE					
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					
ICTALURIDAE					
NOTURUS EXILIS	SLENDER MADTOM	G5	SH		LE
NOTURUS GLADIATOR	PIEBALD MADTOM	G3	S1		LE
NOTURUS MUNITUS	FRECKLEBELLY MADTOM	G3	S2		LE
мрнівіа					
ANURA					
RANIDAE					
RANA SEVOSA	DUSKY GOPHER FROG	G1	S1	LE	LE
CAUDATA					
AMBYSTOMATIDAE					
AMBYSTOMA TIGRINUM	TIGER SALAMANDER	G5	SH	PS	
AMPHIUMIDAE					
AMPHIUMA PHOLETER	ONE-TOED AMPHIUMA	G3	S1		LE
<b>CRYPTOBRANCHIDAE</b>					
CRYPTOBRANCHUS ALLEGANIENSIS	HELLBENDER	G3G4	S1	PS	LE
PLETHODONTIDAE					
ANEIDES AENEUS	GREEN SALAMANDER	G3G4	S1		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
	RAINBOW SNAKE	G4	S2		LE
FARANCIA ERYTROGRAMMA	RAINDOW SWARE	0-	52		
FARANCIA ERYTROGRAMMA HETERODON SIMUS	SOUTHERN HOGNOSE SNAKE	G2	SX		LE

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SPECIES NAME	COMMON NAME	GLOBAL RANK	STATE RANK	FEDERAL STATUS	STATE STATU
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
DERMOCHELYIDAE					
DERMOCHELYS CORIACEA	LEATHERBACK SEA TURTLE	G2	SNA	LE	LE
EMYDIDAE					
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					
CHARADRIIDAE					
CHARADRIUS MELODUS	PIPING PLOVER	G3	S2N	LT	LE
CHARADRIUS NIVOSUS	SNOWY PLOVER	G3	S2	PS:LT	LE
LARIDAE					
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		0.	02.11		
ACCITRIPIFORMES					
ACCIPITRIDAE					
ACCIPITER STRIATUS	SHARP-SHINNED HAWK	G5	S1?B	PS	
ELANOIDES FORFICATUS	SWALLOW-TAILED KITE	G5	S2B		LE
FALCONIFORMES		03	525		
FALCONIDAE					
FALCO PEREGRINUS	PEREGRINE FALCON	G4	S1N		LE
GALLIFORMES		04	JIN		
ODONTOPHORIDAE					
COLINUS VIRGINIANUS	NORTHERN BOBWHITE	G4G5	S3S4	PS	
GRUIFORMES	Normenin Bobwnine	0403	5554	гJ	
GRUIDAE		CET1	C1	16	15
GRUS CANADENSIS PULLA	MISSISSIPPI SANDHILL CRANE	G5T1	S1	LE	LE
		~ ~	62	56	
AMMODRAMUS MARITIMUS	SEASIDE SPARROW	G4	S2	PS	
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	G5	S3B,S3N	PS	

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Page | 3

	SPECIES NAME	COMMON NAME	GLOBAL RANK	STATE RANK	FEDERAL STATUS	STATE STATUS
	PARULIDAE					
	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
MAMM	ALIA					
CA	RNIVORA					
	FELIDAE					
	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
СН	ROPTERA					
	<b>VESPERTILIONIDAE</b>					
	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
PLANTAE						
ISOETOF	SIDA					
	ISOETACEAE					
	ISOETES LOUISIANENSIS	LOUISIANA QUILLWORT	G2G3	S2	LE	
DICOTYL	EDONEAE					
	FABACEAE					
	APIOS PRICEANA	PRICE'S POTATO-BEAN	G3	S1	LT	
	LAURACEAE					
	LINDERA MELISSIFOLIA	PONDBERRY	G2G3	S2	LE	
	OROBANCHACEAE					
	SCHWALBEA AMERICANA	CHAFFSEED	G2G3	SH	LE	
MONOC	OTYLEDONEAE					
	ORCHIDACEAE					
	PLATANTHERA INTEGRILABIA	WHITE FRINGELESS ORCHID	G2G3	S1	LT	

Cite the list as:

Mississippi Natural Heritage Program, 2018. Listed Species of Mississippi. Museum of Natural Science, Mississippi Dept. of Wildlife, Fisheries, and Parks, Jackson, MS. 6 pp.

#### **Rank & Status Definitions**

The Mississippi Natural Heritage Program uses the Heritage ranking system developed by <u>The Nature Conservancy</u> and maintained by <u>NatureServe</u>. 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.

Page | 5

<sup>24</sup> September 2018 Cite the list as:

Mississippi Natural Heritage Program, 2018. Listed Species of Mississippi. Museum of Natural Science, Mississippi Dept. of Wildlife, Fisheries, and Parks, Jackson, MS. 6 pp.

#### **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.

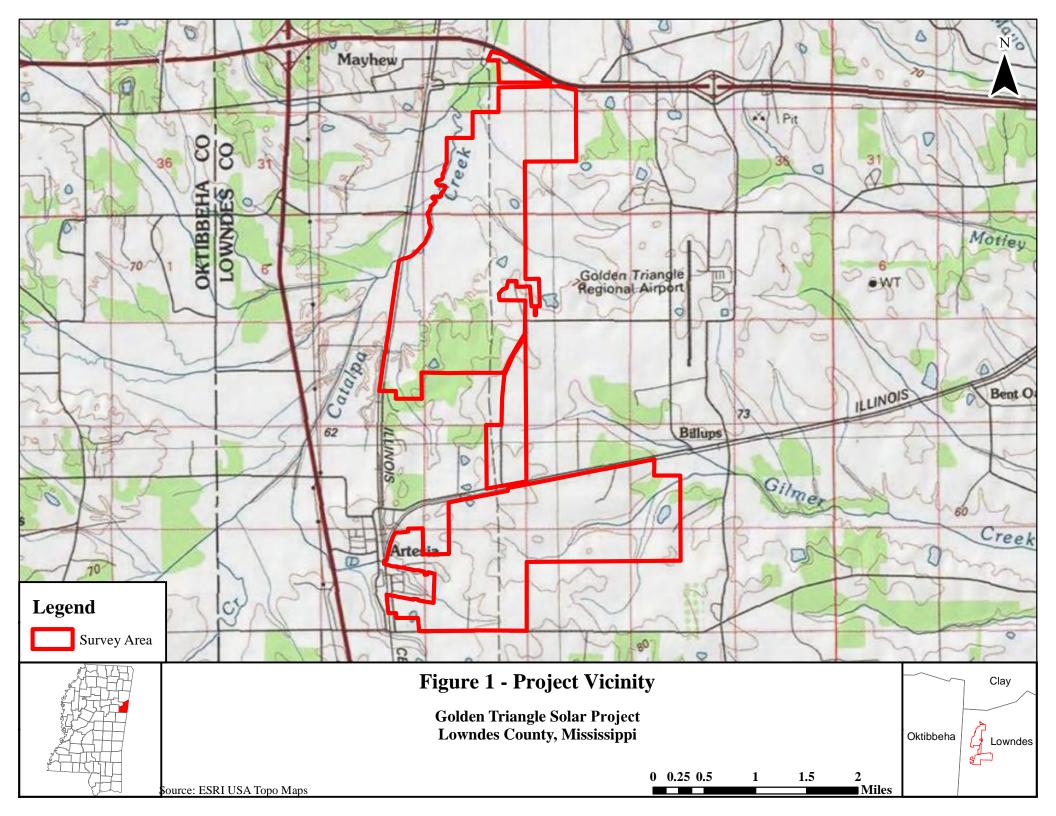
PT – Proposed Threatened – Species proposed for official listing as threatened.

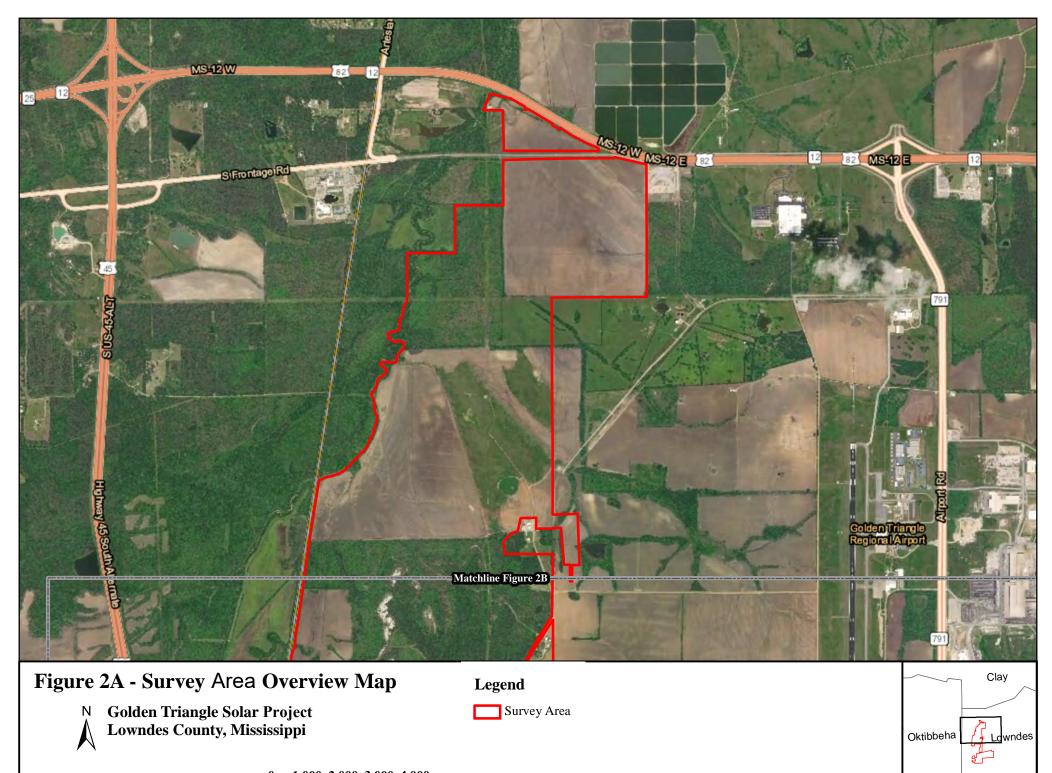
C - Candidate Species - A species under consideration for official listing for which there is sufficient information to support proposing to list as endangered or threatened.

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.

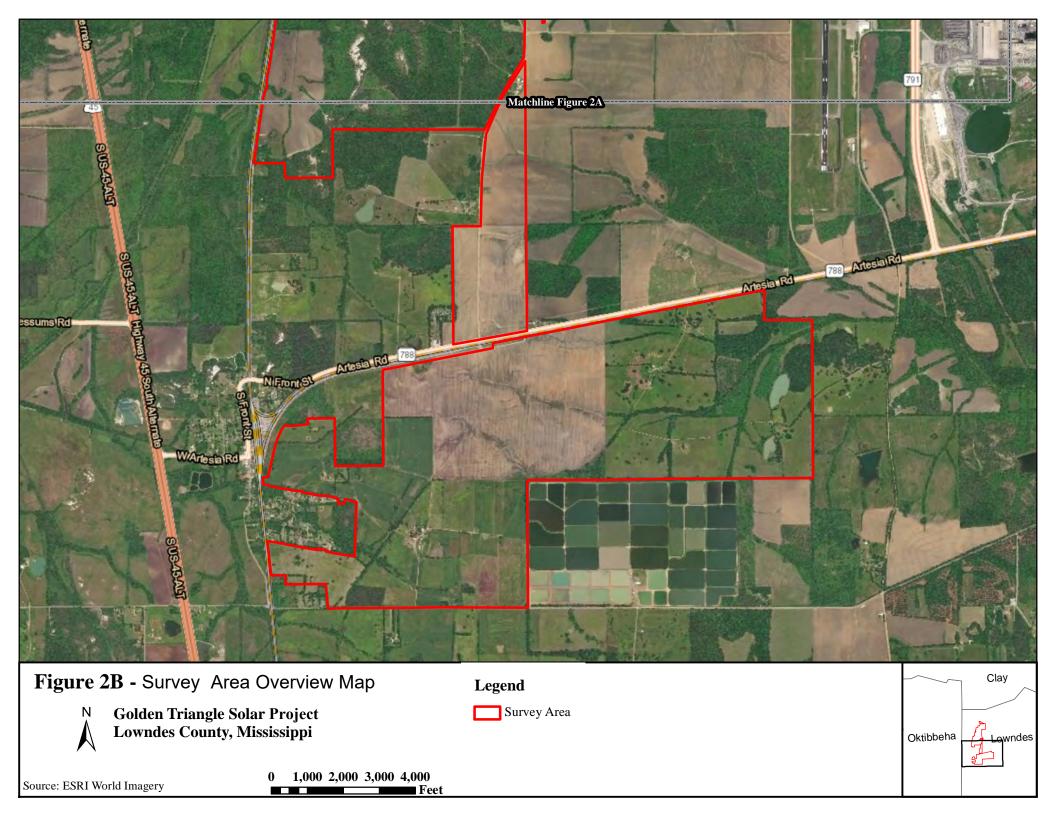
Source: U.S. Fish & Wildlife Service Endangered Species Program

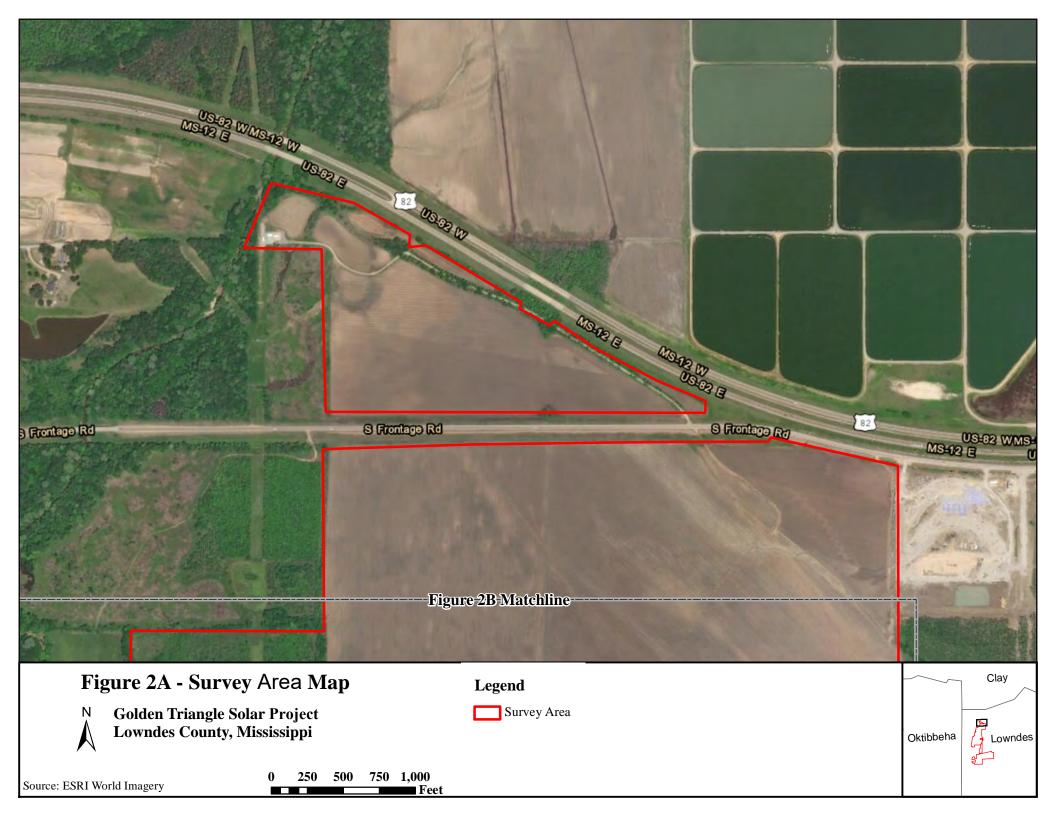
**APPENDIX B - MAPS AND FIGURES** 



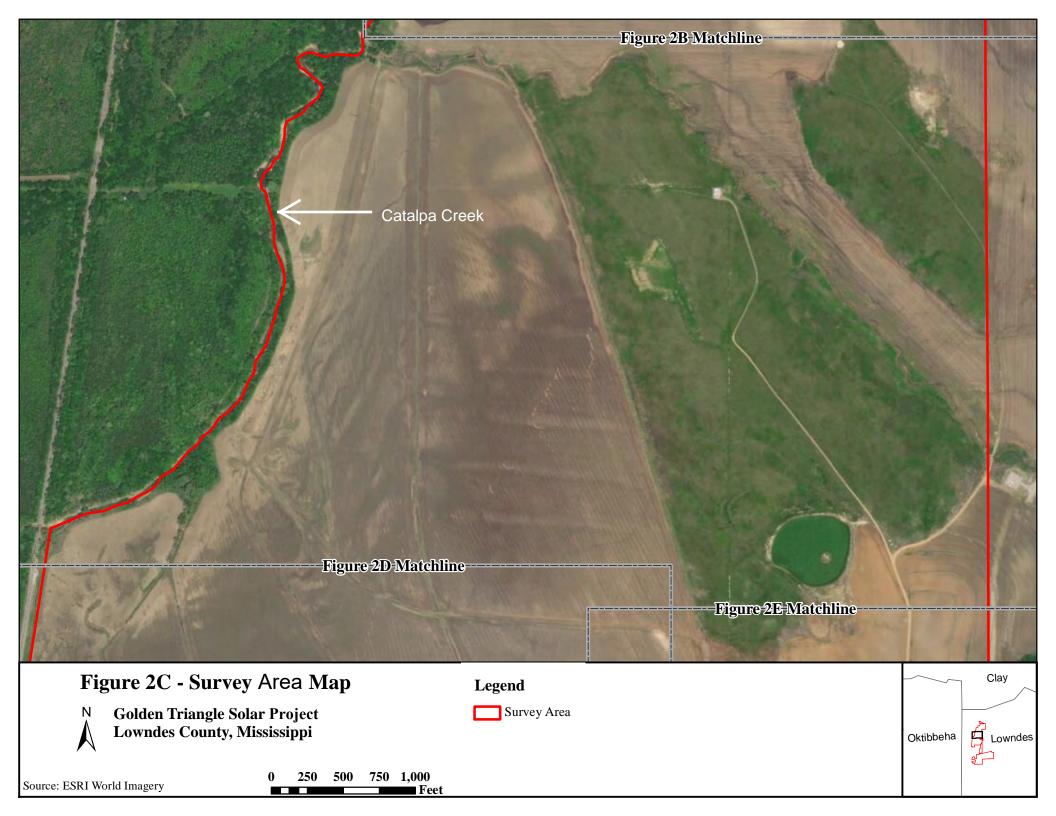


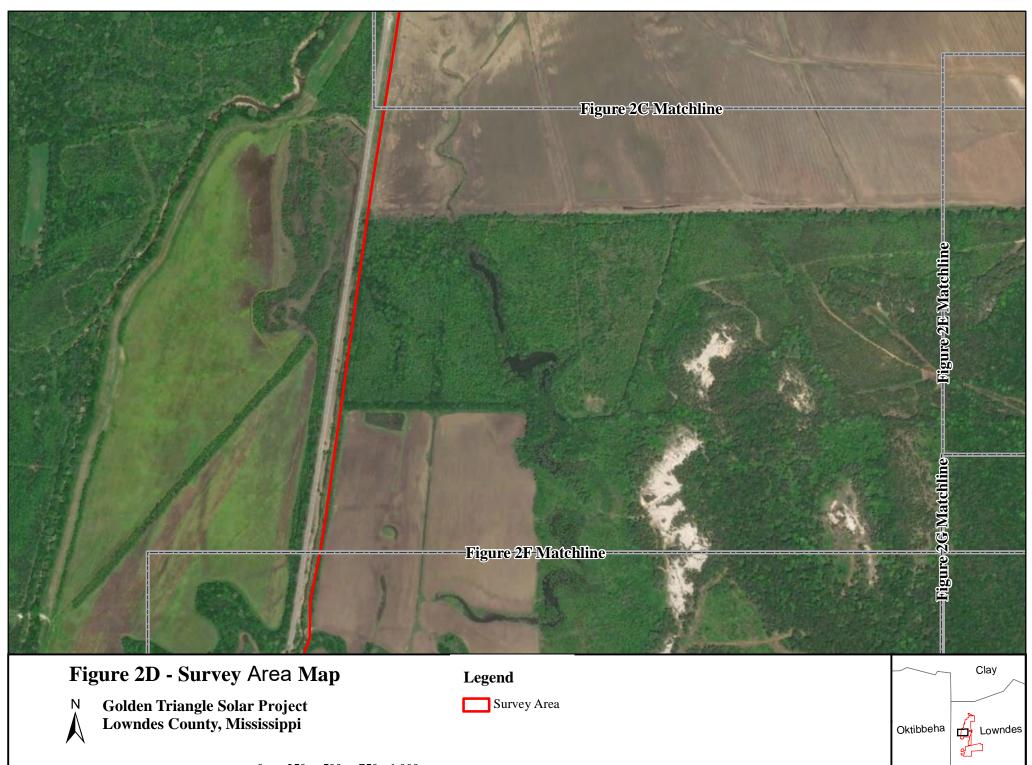
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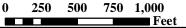


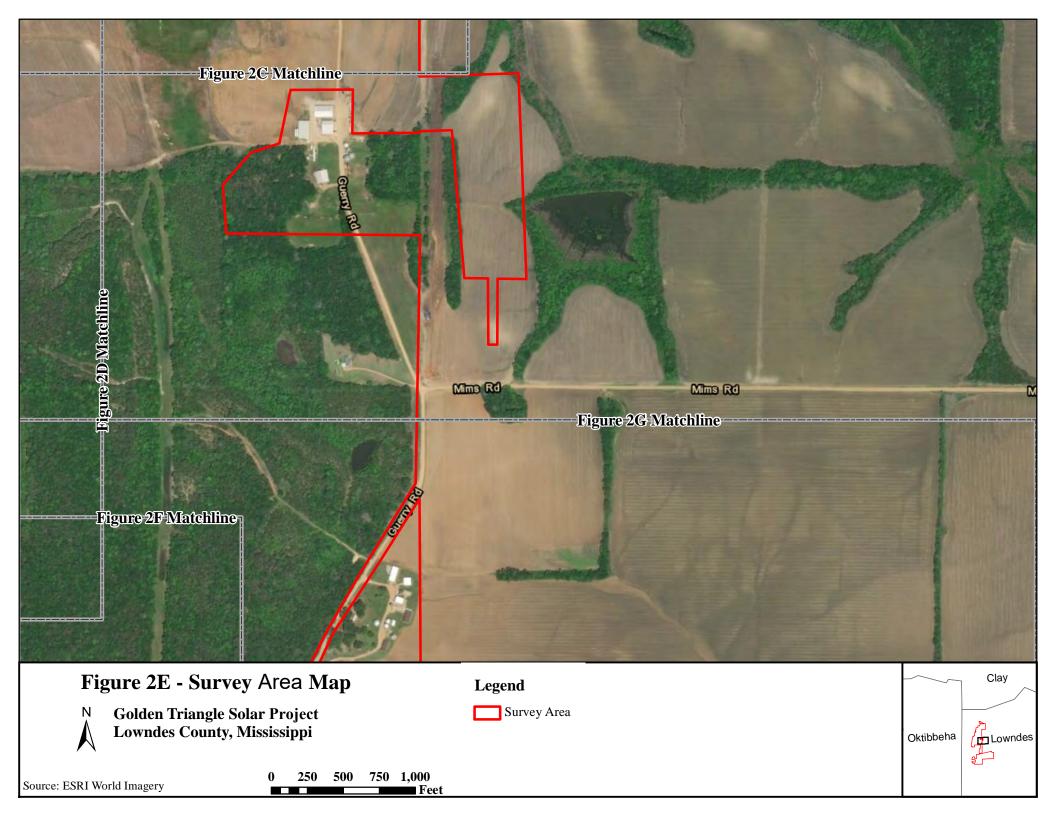


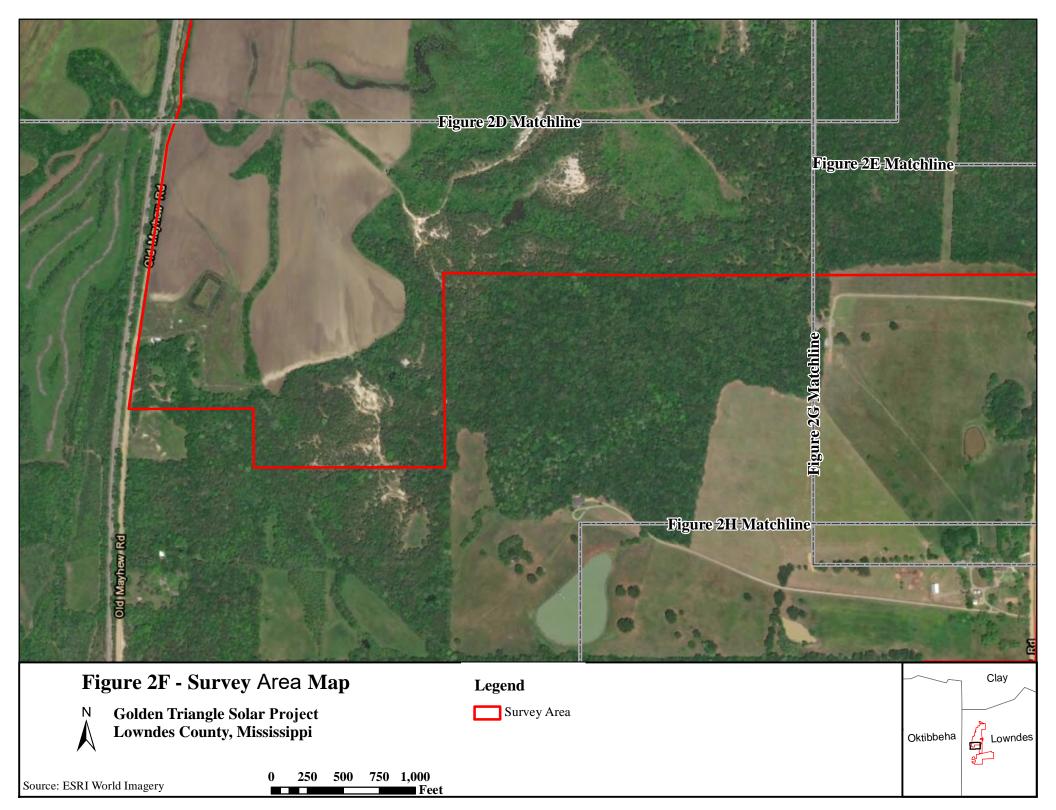


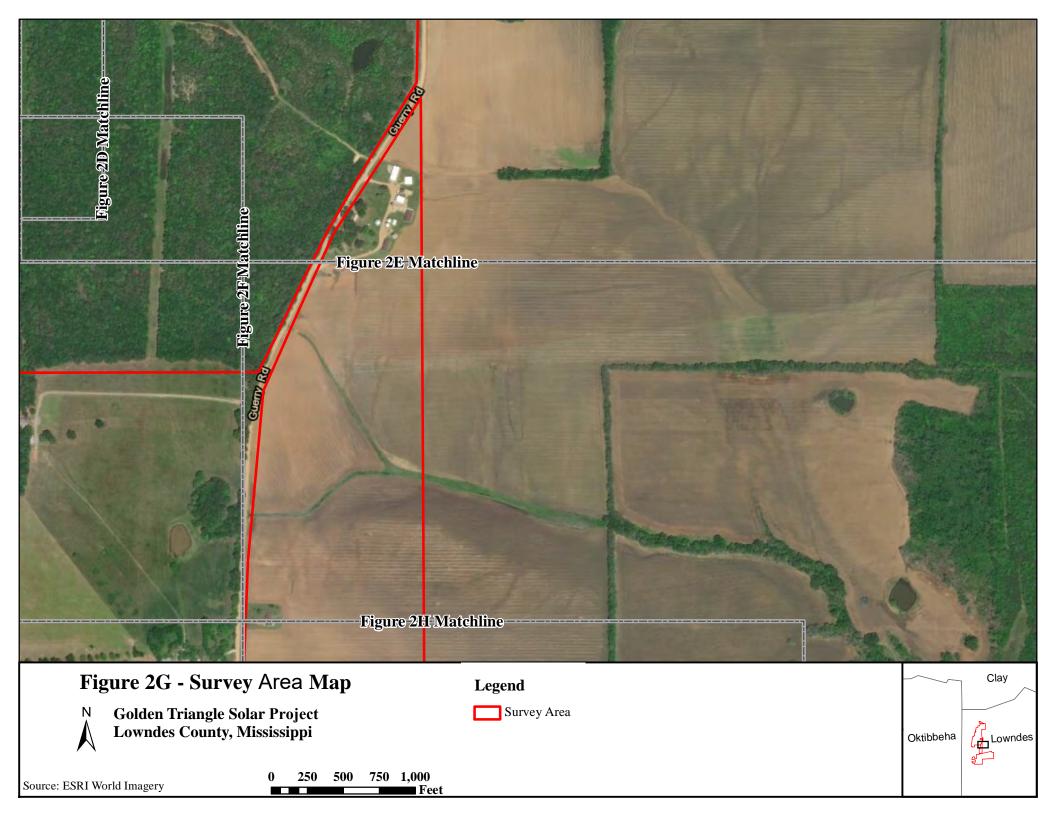


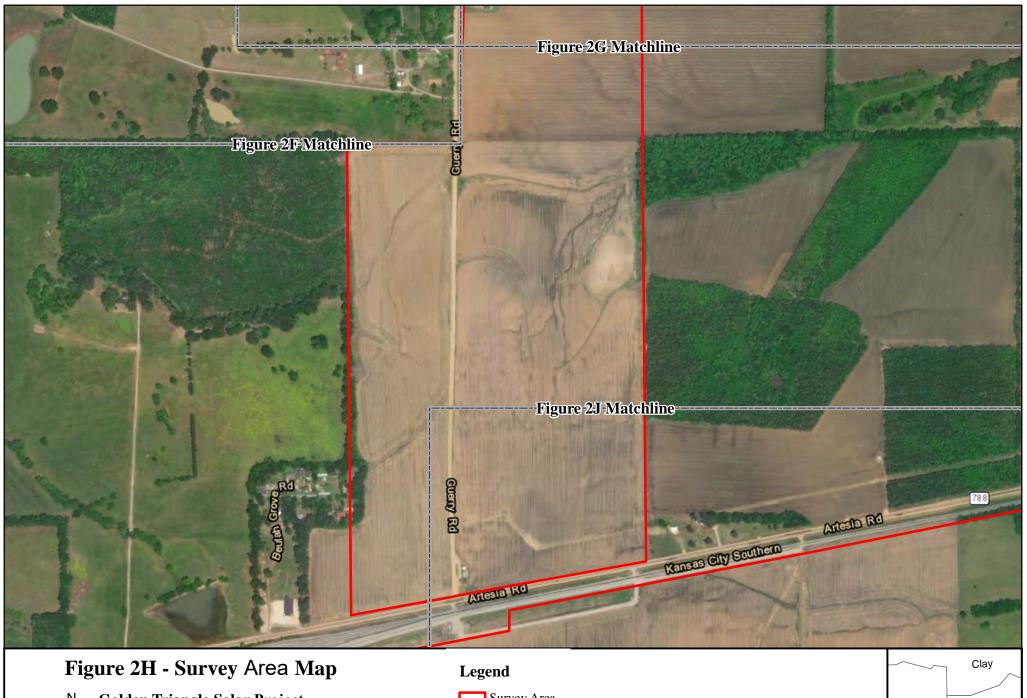














Source: ESRI World Imagery

Survey Area

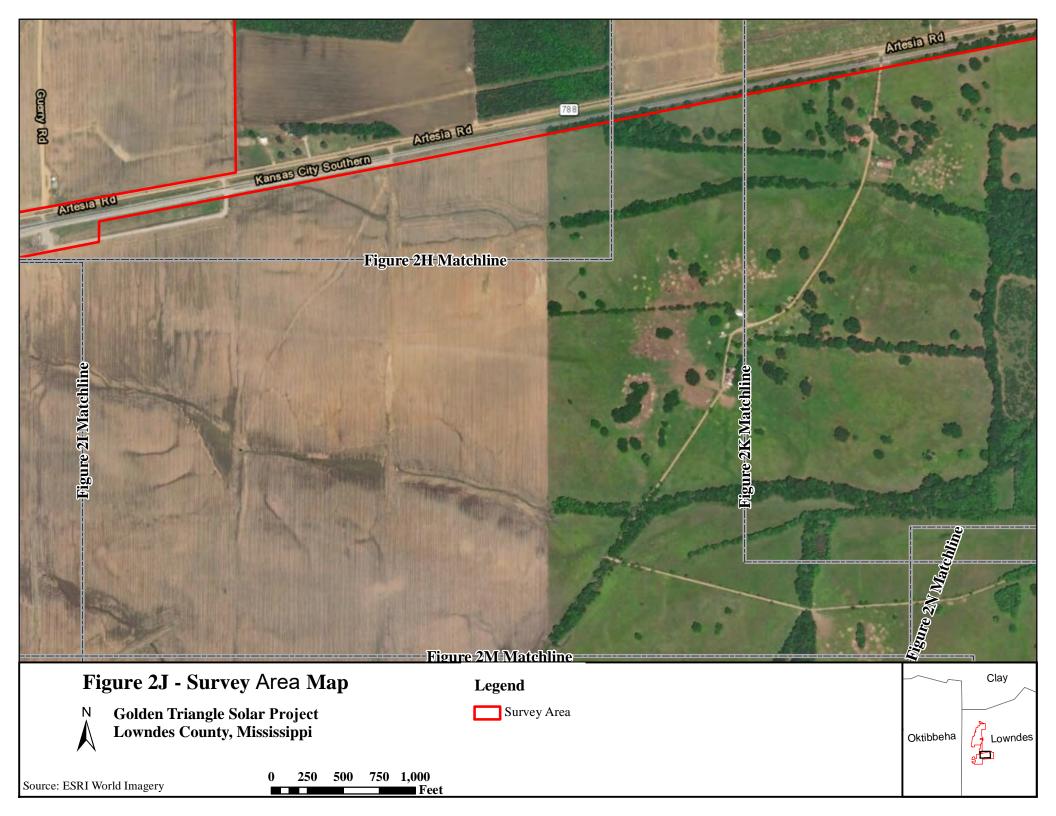
Lowndes

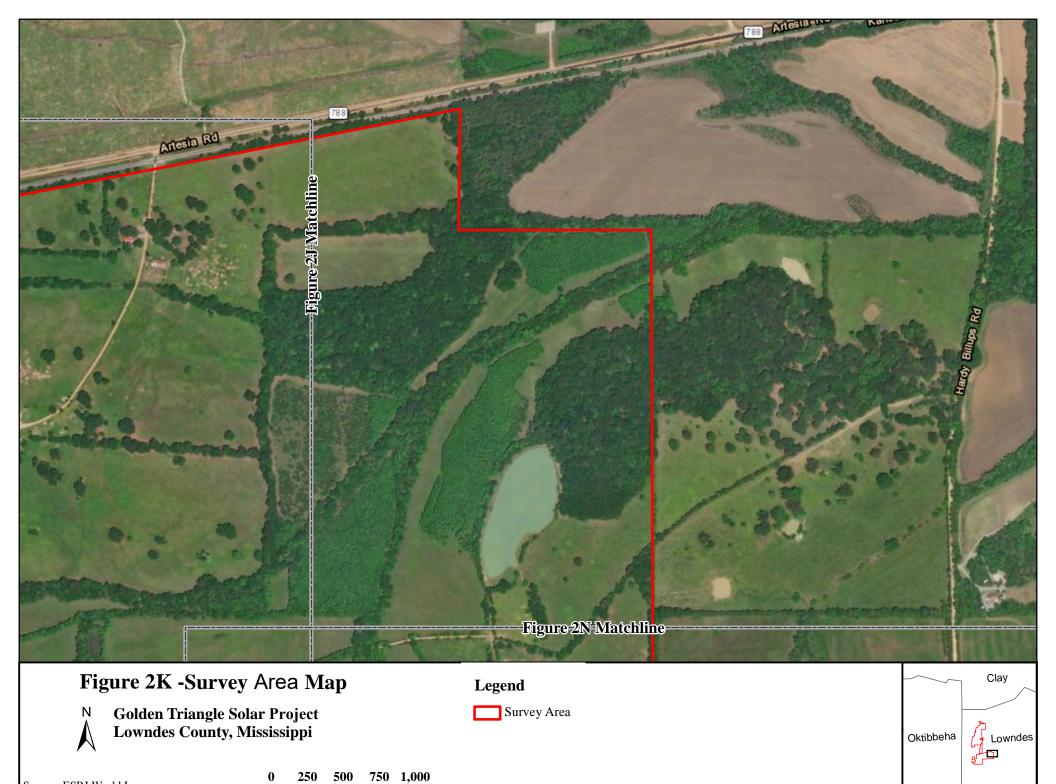
Oktibbeha



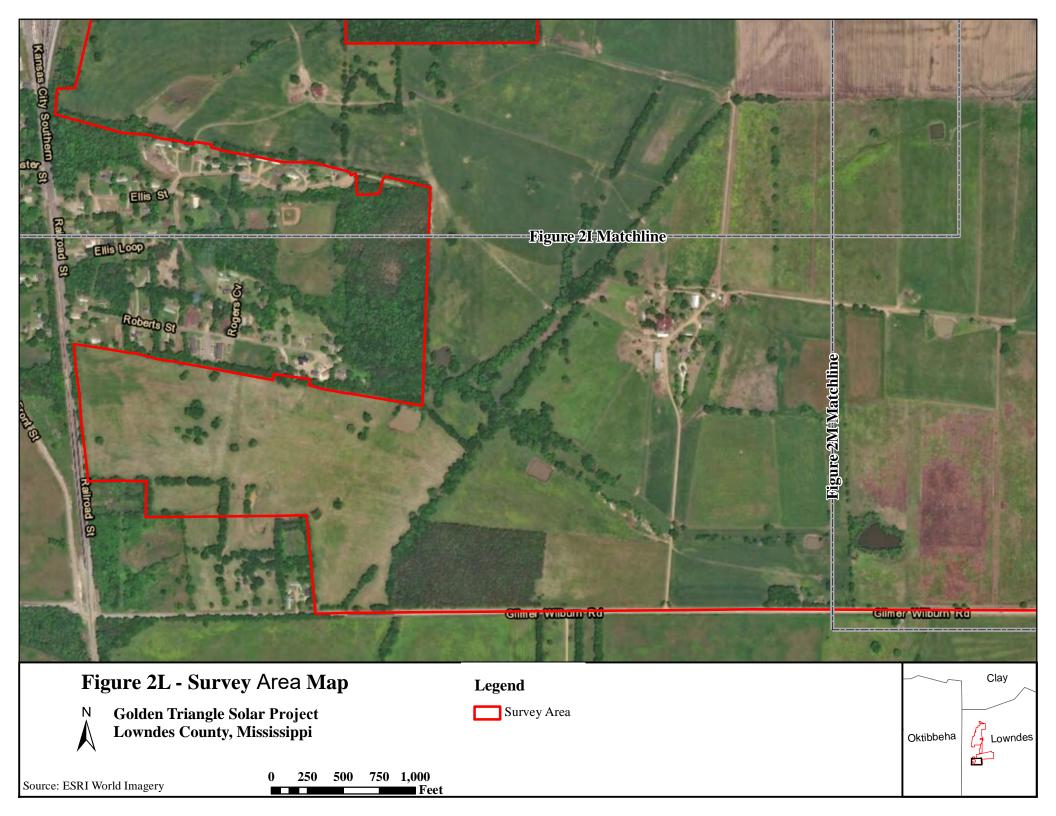
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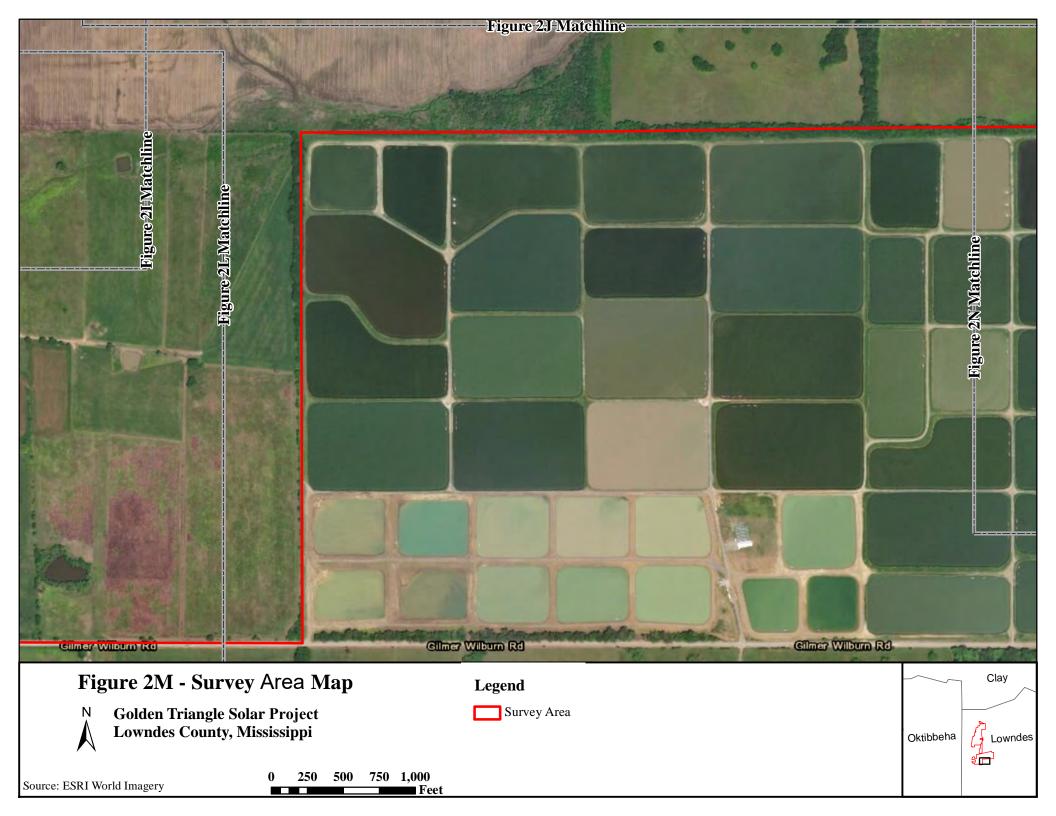
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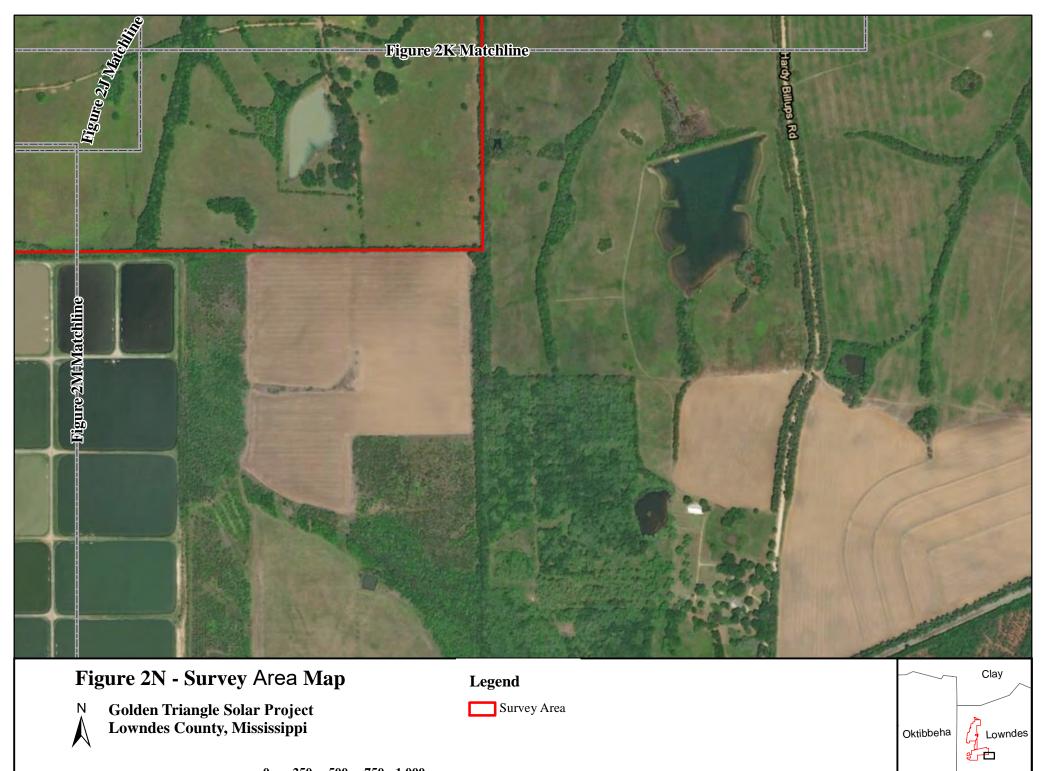




**Feet** 

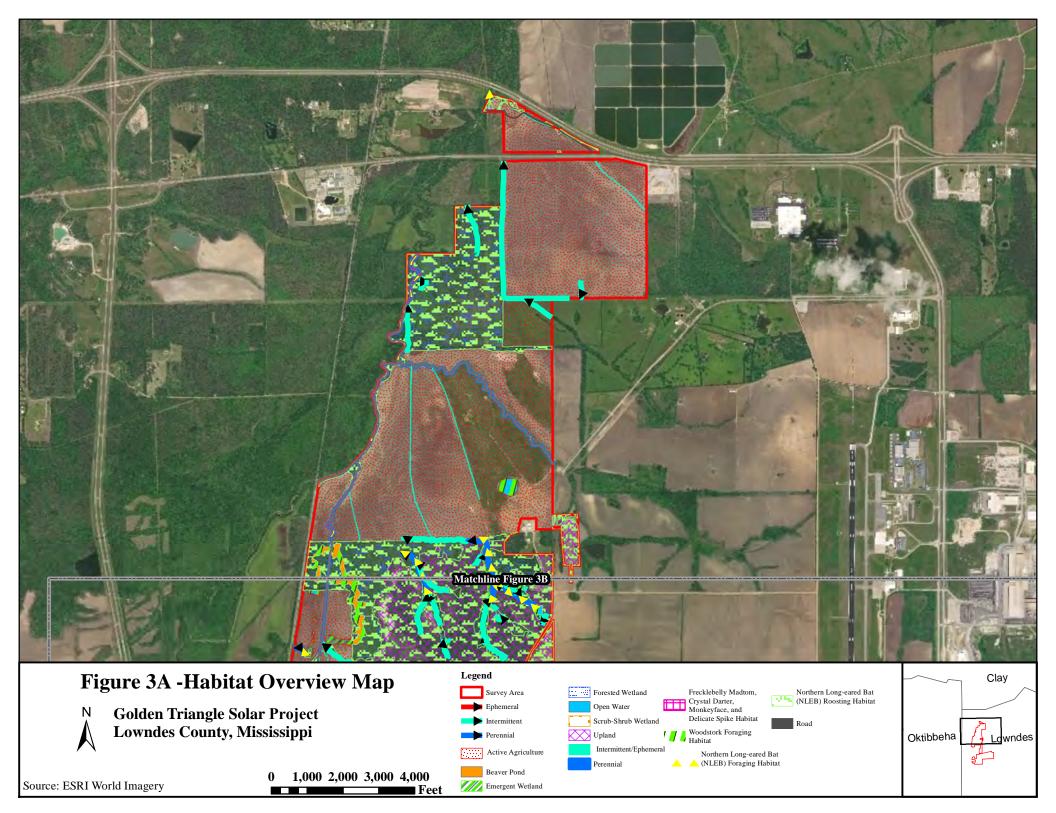


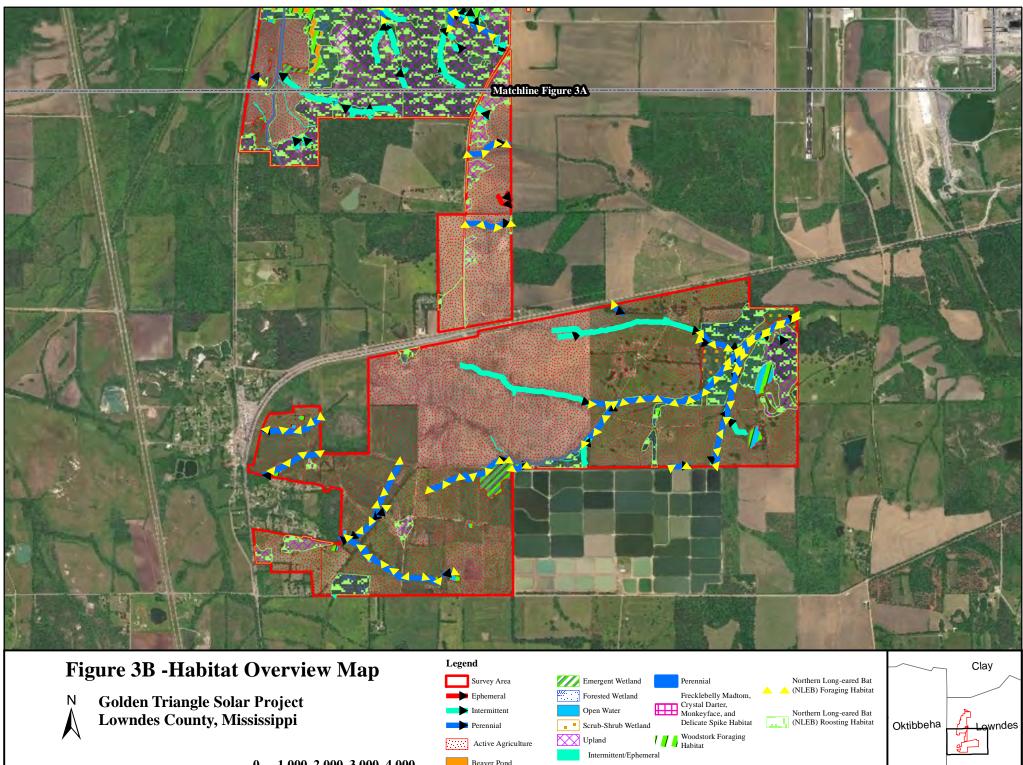




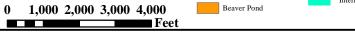
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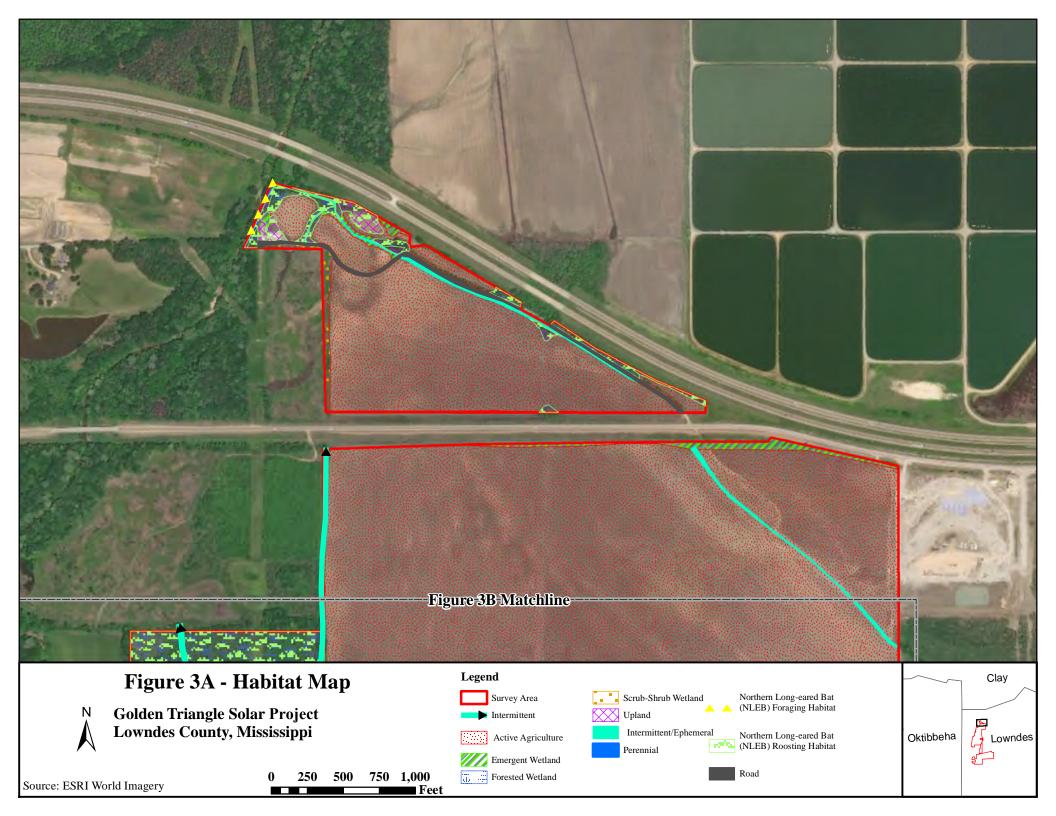
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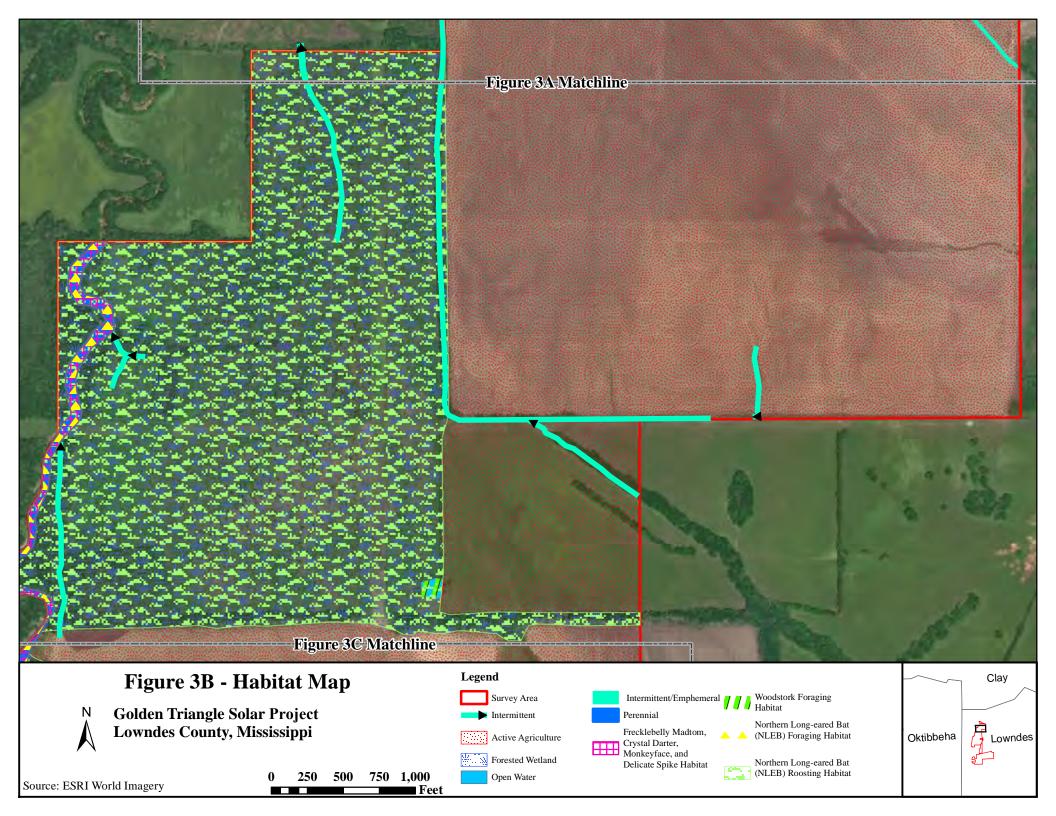


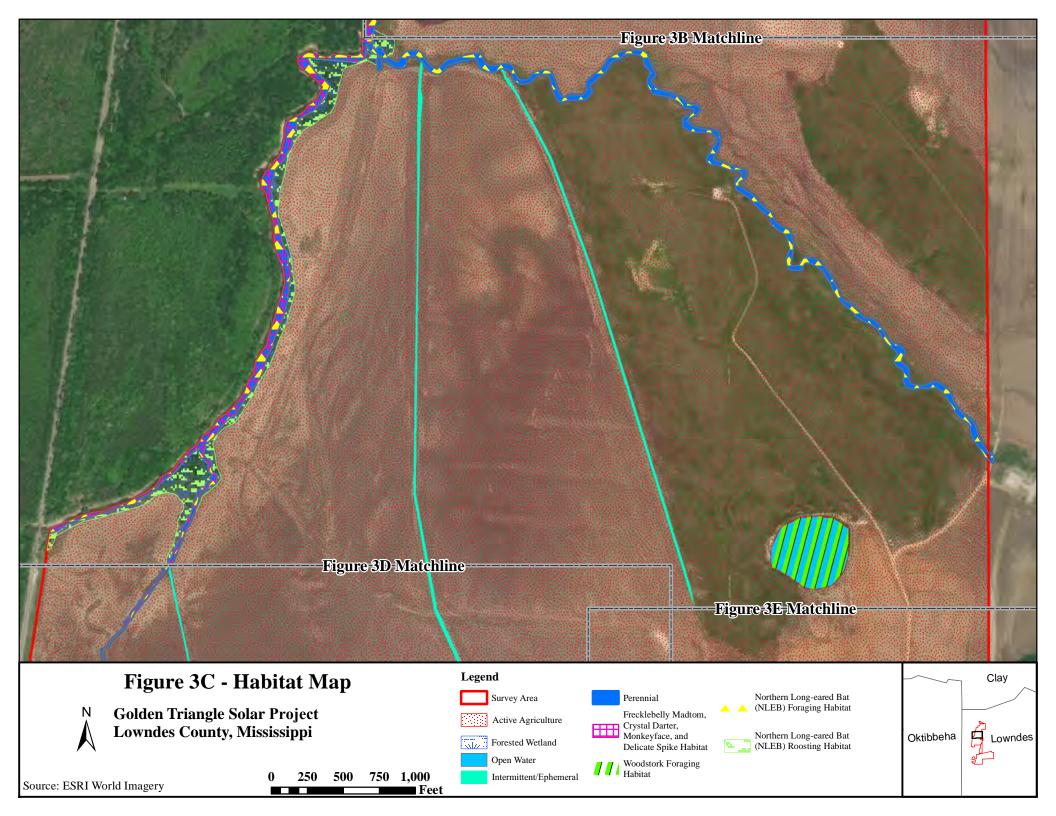


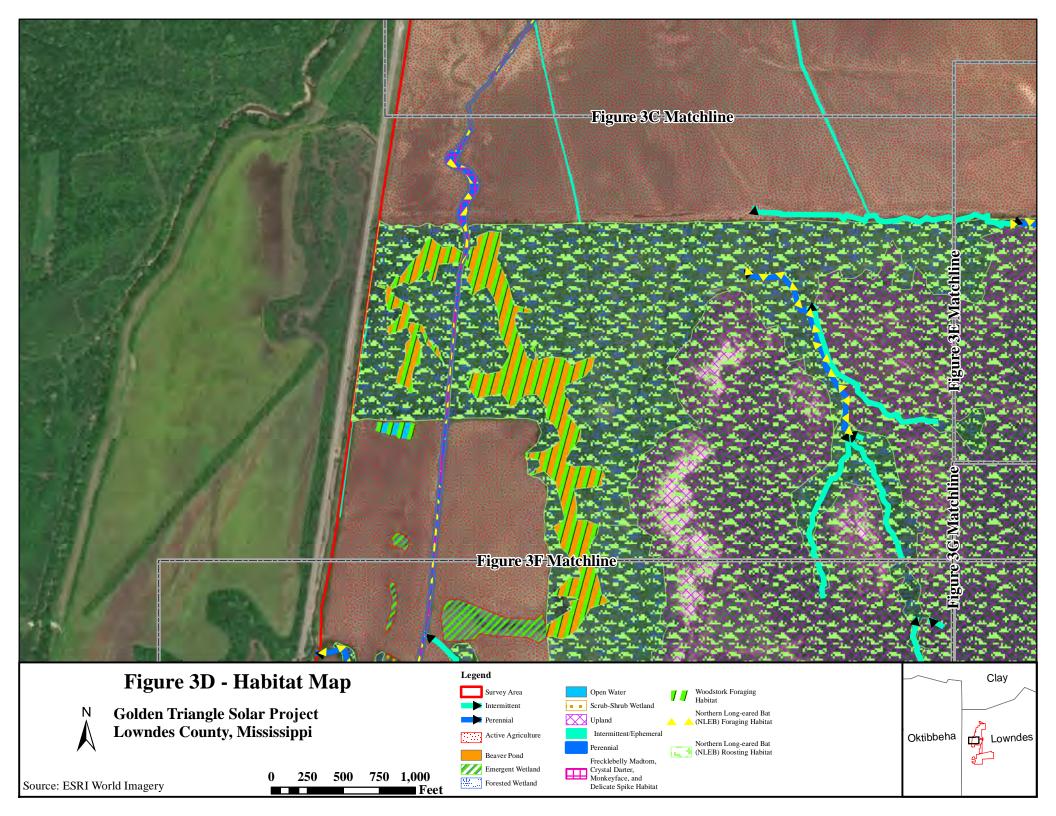
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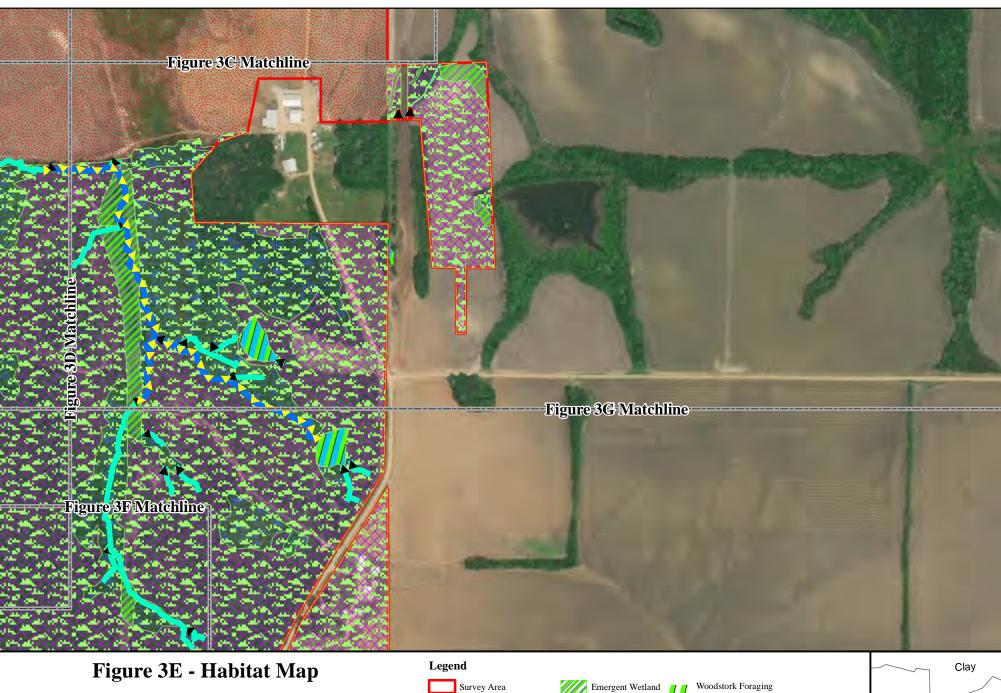










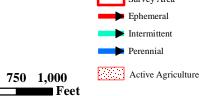


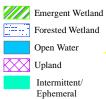


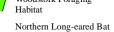
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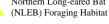
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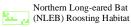
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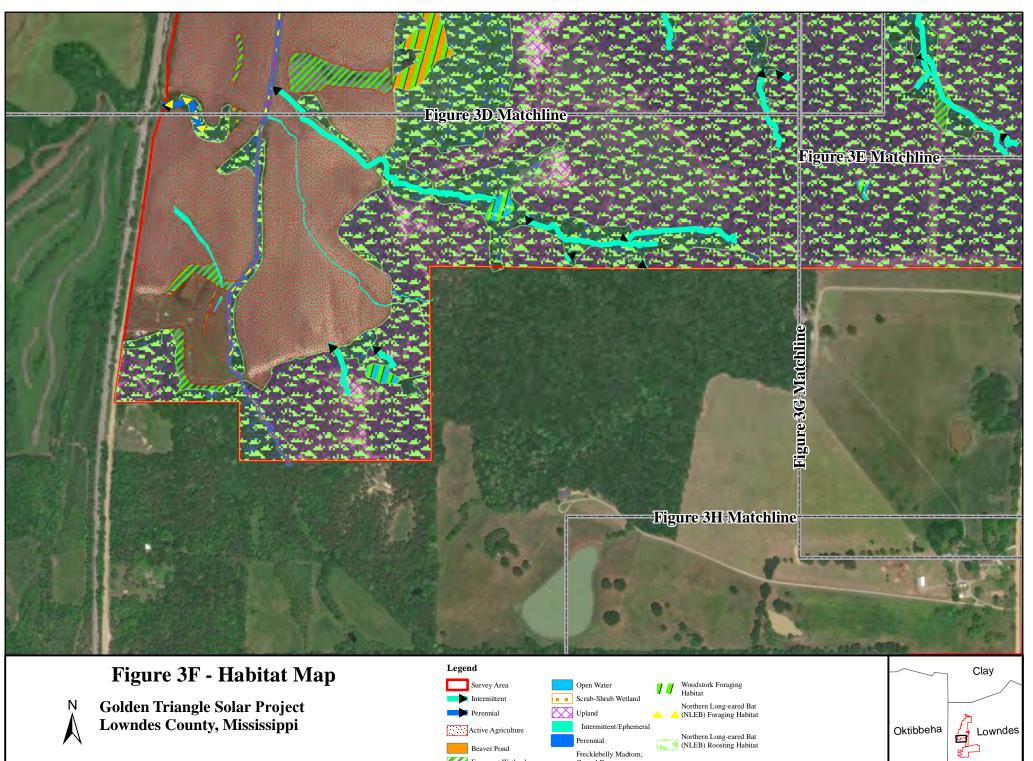






Lowndes

Source: ESRI World Imagery

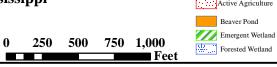


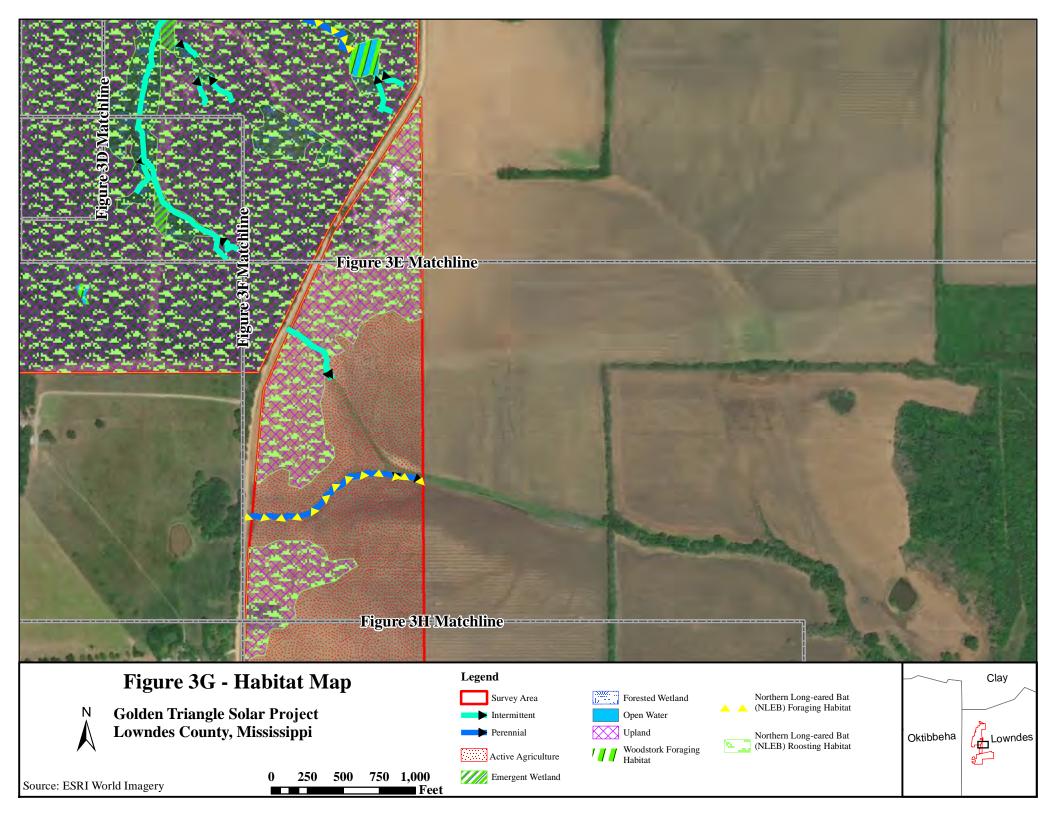
Beaver Pond

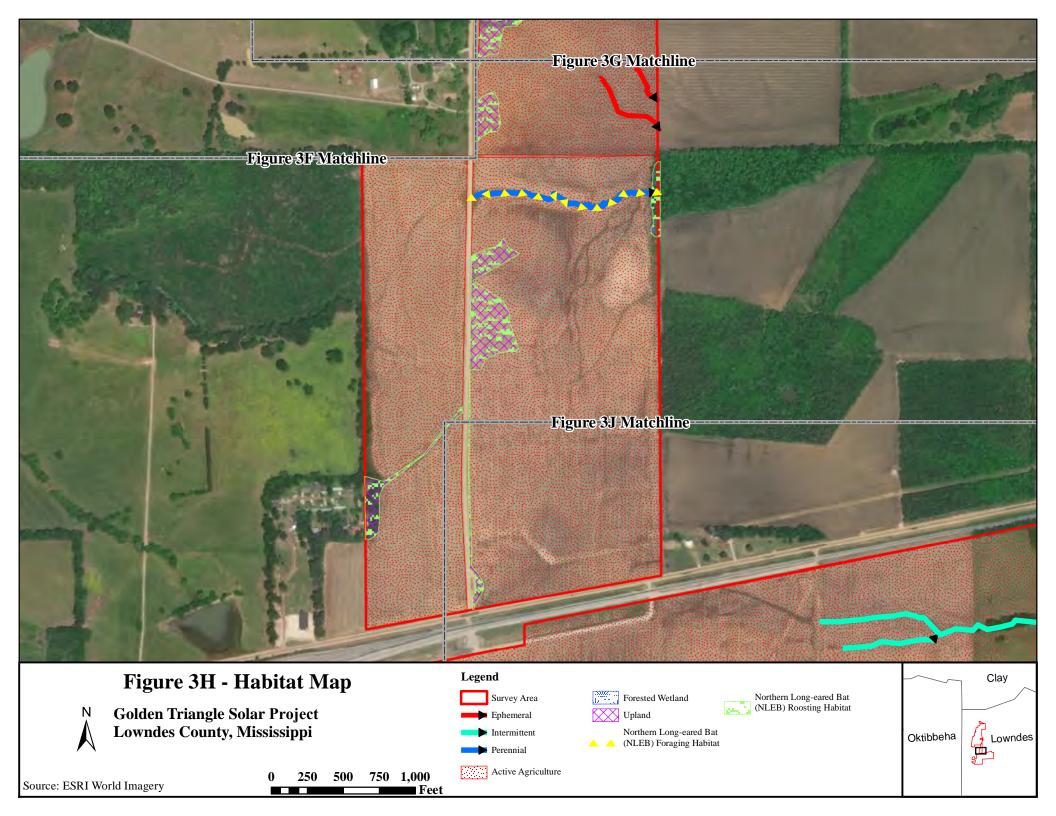
Frecklebelly Madtom, Crystal Darter,

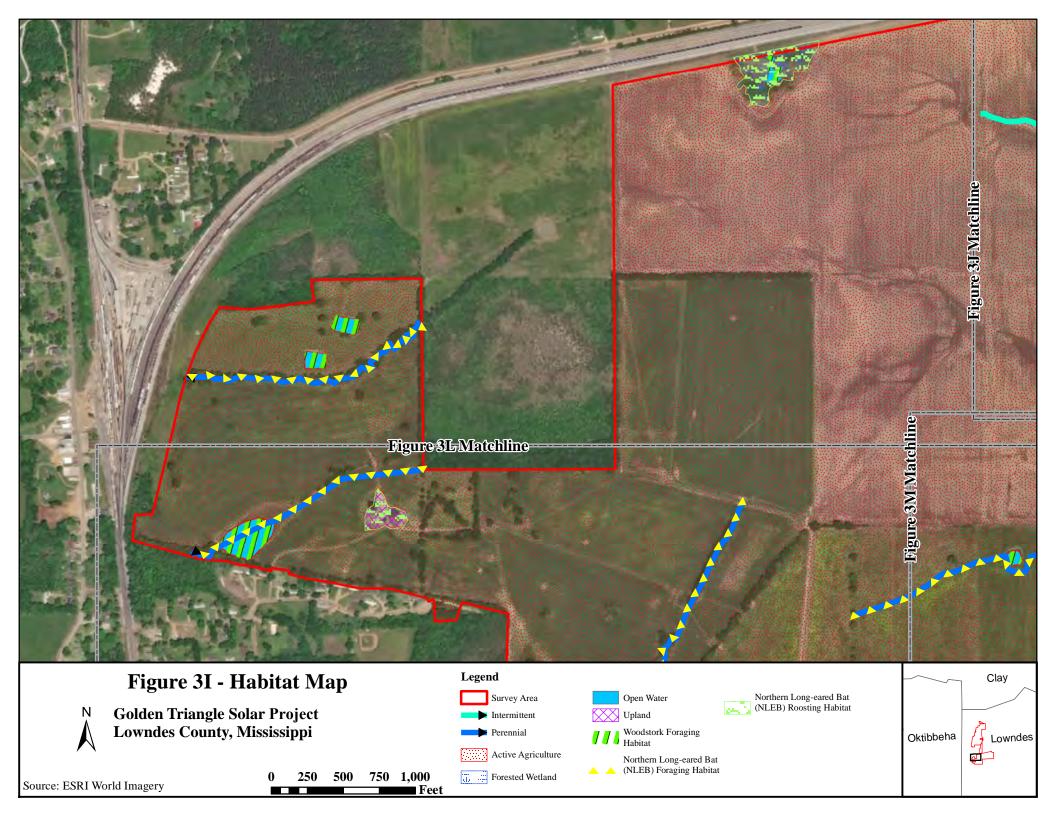
Crystal Darier, Monkeyface, and Delicate Spike Habitat

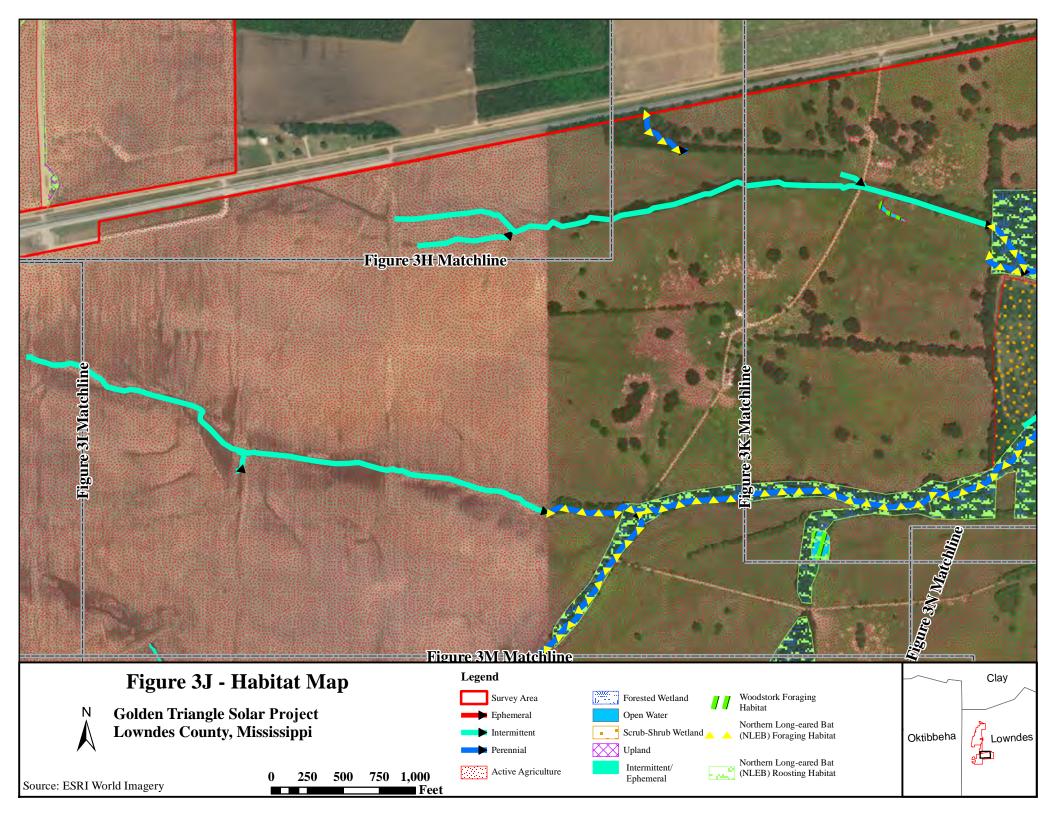
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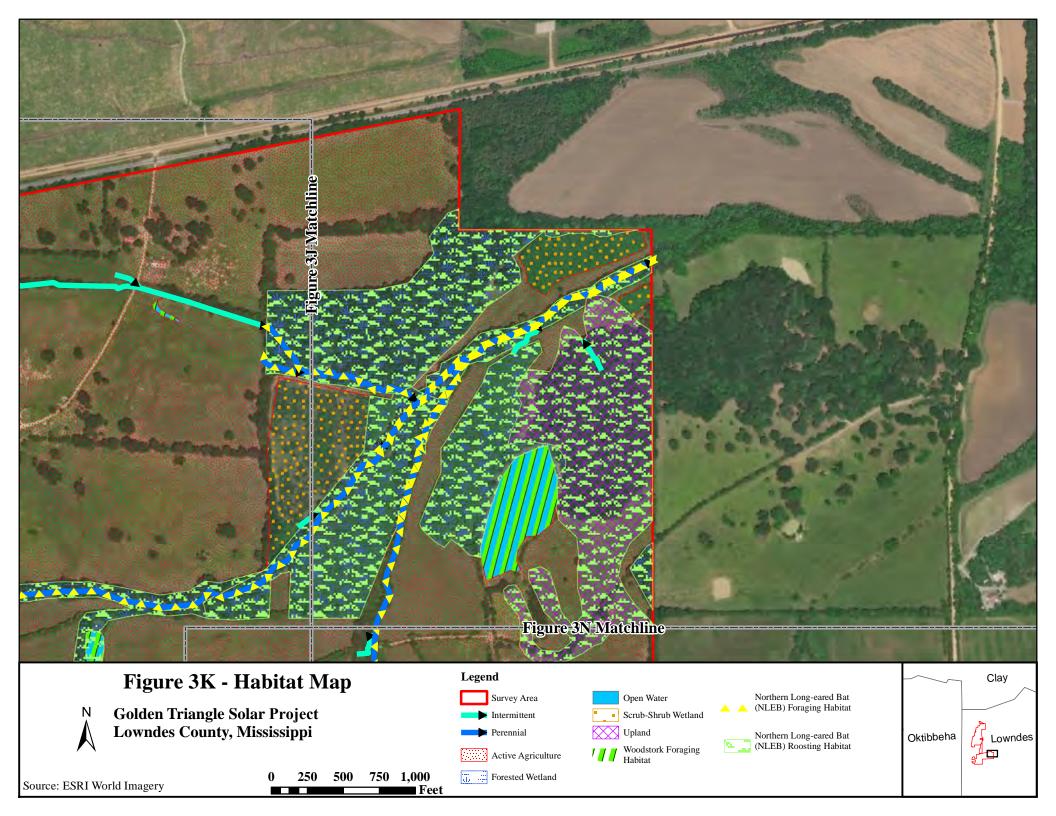


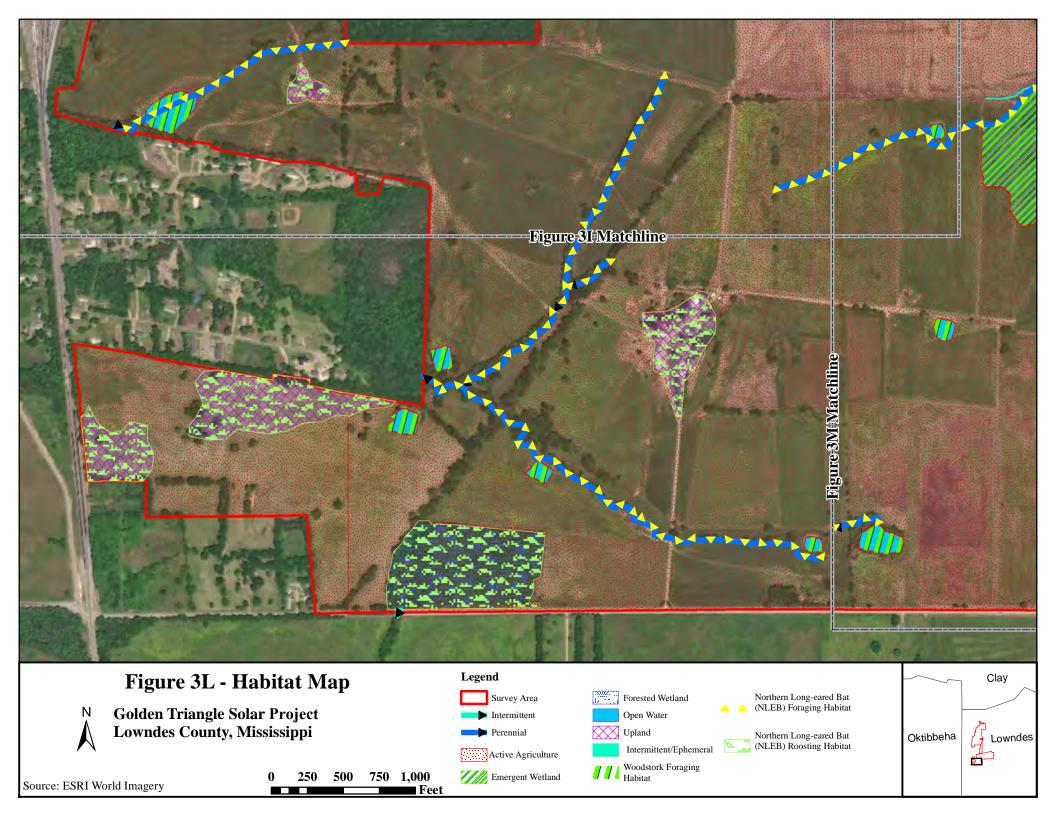


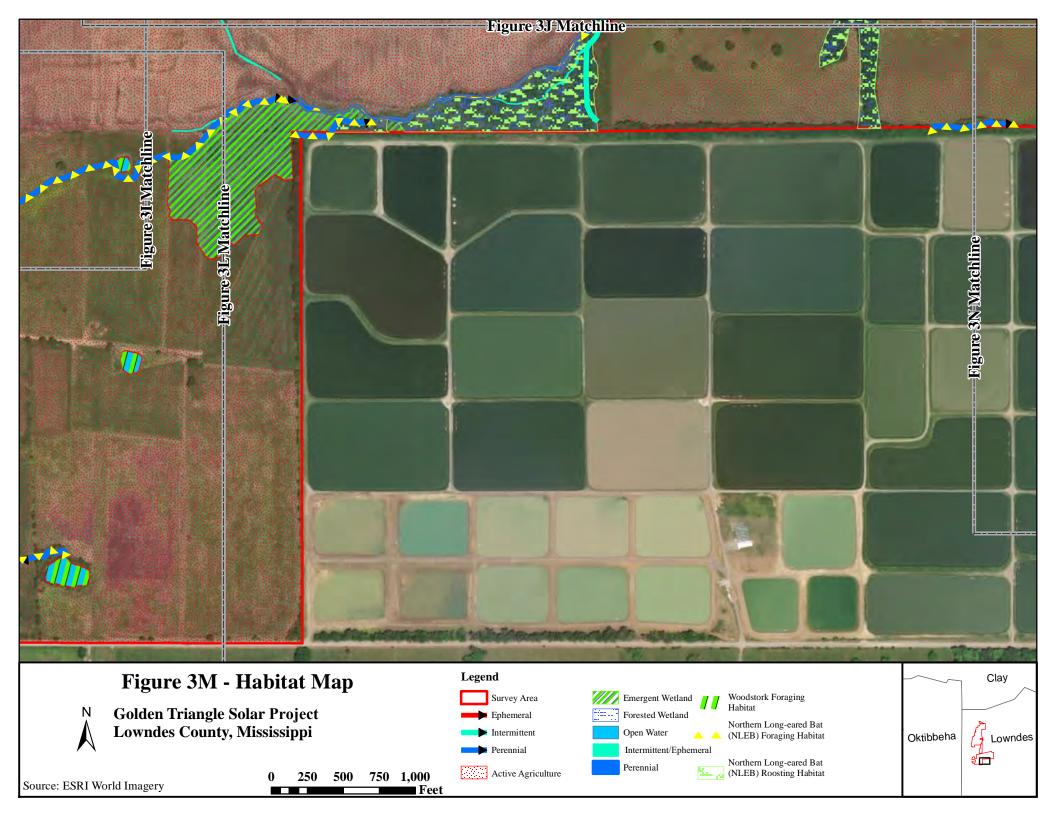


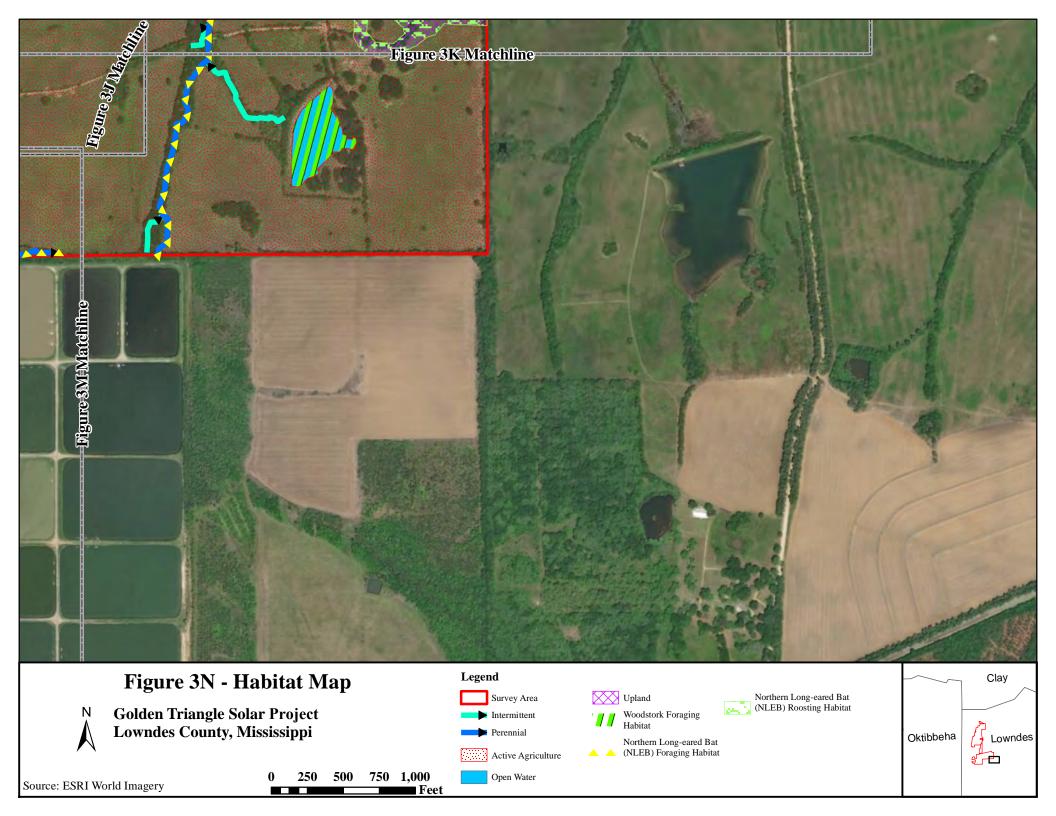














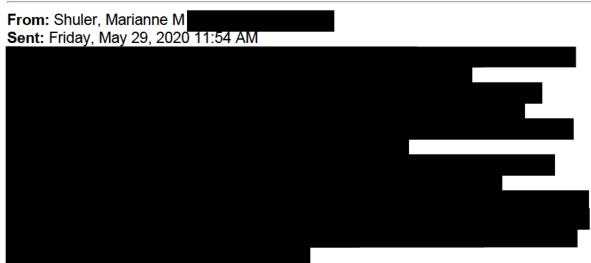


# CREATE AMAZING.



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 28<sup>th</sup>, 2020 if you have any questions or comments on the proposed undertaking or phase I scope of work. Thanks Marianne

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

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

October 8, 2020

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
То:	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,

10-1-51

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
  - a) 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

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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,

Will Dhales

W. Douglas White Manager Biological Compliance

JCT:ABM Enclosures