



Application for Section 401 Water Quality Certification

Division of Surface Water 401 Water Quality Certification and Isolated Wetland Permitting Unit

Section 1: Applicant and Agent Information		
	Applicant:	Agent:
Company/ Agency Name:	Sergeant Stone, Inc.	Click here to enter text.
Name of Contact:	Claude W. Imler	Click here to enter text.
Title:	President	Click here to enter text.
Technical Point of Contact:	Click here to enter text.	Click here to enter text.
Address:	P.O. Box 2086	Click here to enter text.
City, State, Zip:	Zanesville, Ohio 43702-2086	Click here to enter text.
Phone Number(s):	740-452-7434	Click here to enter text.
Email Address:	Click here to enter text.	Click here to enter text.

PAID
 Date 11/25/2014
 Amount \$7,130.00
 Check # 1360
 Date 11/28/2014

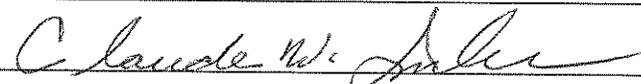
Section 2: Project Information		
A. Project Name: Deavortown Limestone Mine Site		
B Has Pre-App. Coordination occurred? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Indicate the 401 reviewer: Choose an item. DATE: Click here to enter a date.		
C. Brief Project Description/Purpose: Open pit quarrying of limestone		
D. Construction Timeframe (Provide ~start and end dates): January 2015 January 2020		
E. Is any portion of the activity complete now? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Is this an "After-The-Fact" permit application? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO If YES to either, describe the extent of completed portion of the activity below and the unauthorized impacts on waters of the state: Click here to enter text.		
F. Coordinates (degree, minutes, seconds): 39°42' 00" N - 82° 01' 50" W		
G. Project Address: Street: 1268 State Route 555 NE City or Town: Corning Zip Code: 43730 Township: Bearfield County: Perry		
H. 12 Digit HUC No.: 050400040500	I. Watershed Name: Bennett Creek	J. Corps District: Huntington
K. Proposed impacts to "waters of the state":		L. Other water related permits issued or required include:
<input type="checkbox"/> Beach Nourish <input type="checkbox"/> Levees/Berms <input type="checkbox"/> Blasting <input checked="" type="checkbox"/> Mine Through <input type="checkbox"/> Breakwater <input type="checkbox"/> Revetment <input type="checkbox"/> Bulkhead <input type="checkbox"/> Bank Stabilization <input type="checkbox"/> Bridge/Culvert <input type="checkbox"/> Stream Channeliz. <input type="checkbox"/> Dam <input type="checkbox"/> Stream Relocation <input type="checkbox"/> Dredge <input type="checkbox"/> Water Body Cross <input type="checkbox"/> Fill <input type="checkbox"/> Weirs <input type="checkbox"/> Groin/Jetty <input type="checkbox"/> Other		<input checked="" type="checkbox"/> Individual 404 Permit – Public Notice # LRH-2010-930-MUS <input type="checkbox"/> Nationwide Permit # Choose an item. Choose an item. Click here to enter a date. <input type="checkbox"/> Section 10 Permit - Choose an item. Click here to enter a date. <input type="checkbox"/> Section 9 Permit - Click here to enter text. <input type="checkbox"/> Iso. Wetland Permit Choose an item. Click here to enter a date. Choose an item. <input checked="" type="checkbox"/> NPDES Permit – General Date Submitted: 6/26/2014 <input type="checkbox"/> Permit to Install – Choose an item. : Click here to enter a date. <input checked="" type="checkbox"/> ODNR IM Permit - Dated Issued: 8/8/2014 <input type="checkbox"/> ODNR Coastal Permit - Choose an item. Click here to enter a date. <input type="checkbox"/> Regional Permit - Choose an item. Click here to enter a date.

PERSON ID: _____
 PLACE ID: _____
 DOCUMENT ID: 24408
 ORGANIZATION ID: 119760
 REVENUE ID: 1026803

Section 3: Fees			
Are you exempt from fees? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO (If YES, leave fee section blank)			
Application Fee =			\$ 200.00
Review Fee			
Wetland	Acres Impacted	0.38 x \$500 =	\$ 190.00
Ephemeral Stream	Linear Feet Impacted	2734.00 x \$5.00 =	\$ 13,670.00 (\$200.00 minimum)
Intermittent Stream	Linear Feet Impacted	0.00 x \$10.00 =	\$ 0.00 (\$200.00 minimum)
Perennial Stream	Linear Feet Impacted	0.00 x \$15.00 =	\$ 0.00 (\$200.00 minimum)
Lake	Cubic Yards	0.00 x \$3.00 =	\$ 0.00
Total Review Fees =			\$ 13,860.00
Total Fees (\$200 Application Fee + Total Review Fees) =			\$ 14,060.00
Standard Applicant - Is the fee cap (\$25,000) exceeded? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
If YES, \$12,500 (\$12,700) is due with application and \$12,500 (\$12,300) is due at time of 401 WQC issuance			
County, Township or Municipal Corp. – Is the fee cap (\$5,000) exceeded? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
If YES, \$2,500 (\$2,700) is due with application and \$2,500 (\$2,300) is due at time of 401 WQC issuance			
If fee cap is not exceeded:			
DUE AT TIME OF 401 WQC APP. SUBMITTAL – APPLICATION FEE AND ½ OF REVIEW FEE =			\$ 7,130.00
DUE AT TIME OF 401 WQC ISSUANCE – ½ OF REVIEW FEE (Invoice will be sent) =			\$ 6,930.00
PLEASE MAKE FEE CHECK PAYABLE TO: "TREASURER, STATE OF OHIO"			

Section 4: Submitted Documentation		
Check all documents/items that have been submitted:		
<input checked="" type="checkbox"/> U.S. ACOE JD letter	<input checked="" type="checkbox"/> A specific & detailed mitigation plan	<input checked="" type="checkbox"/> US FWS & ODNR T&E Coordination
<input checked="" type="checkbox"/> 10 page ORAM forms - impacted wetlands	<input checked="" type="checkbox"/> Applicable fees	<input checked="" type="checkbox"/> Investigation report of "waters of the US"
<input type="checkbox"/> A DoEU for each undesignated stream *	<input checked="" type="checkbox"/> Site photographs	<input checked="" type="checkbox"/> US ACOE 404 Permit Public Notice
<input checked="" type="checkbox"/> Descriptions, schematics & appropriate economic information for <u>all three alternatives</u> (Preferred, Minimal Degradation and Non Degradation)		

*DoEU – Determination of Existing Use (See pages 6 and 11 in the Instructions)

Section 5: Applicant and Agent Signature		
I hereby designate and authorize the agent/consultant identified in Section 1 to act on my behalf in the processing of this permit application, and to furnish, upon request, supplemental information in support of the application:		
Applicant Name		Applicant Signature
Application is hereby made for a Section 401 Water Quality Certification. I certify that the information provided on this form and all attachments related to this project are true and accurate to the best of my knowledge:		
Applicant Name	Claude W. Imler	Applicant Signature <input checked="" type="checkbox"/> 
Agent Name		Agent Signature

For Internal Ohio EPA Use	
Reviewer:	
Project ID #	144877
Date Received:	11/28/14
CR Due:	12/19/14

OHIO EPA - DSN
2014 NOV 28 AM 11:06

**OHIO ENVIRONMENTAL PROTECTION AGENCY
SECTION 401
WATER QUALITY CERTIFICATION**

**SERGEANT STONE, INC.
DEAVERTOWN LIMESTONE MINE SITE
IM-2429**

November 20, 2014

Prepared by:



Linn Engineering, Inc.
Civil Engineering Consultants
740-452-7434 • 1-800-991-7434
534 Market Street • P.O. Box 2086 • Zanesville, Ohio 43702-2086



US Army Corps of Engineers
BUILDING STRONG

LRH 2010-930-MUS

Posted 10/29/2014

ATTACHMENTS

 2010-930-MUS Drawings

TO WHOM IT MAY CONCERN: The following application has been submitted for a Department of the Army (DA) Permit under the provisions of Section 404 of the Clean Water Act. This notice serves as the United States Army Corps of Engineers' (Corps) request to the Ohio Environmental Protection Agency (OEPA) to act on the Section 401 Water Quality Certification for the following application.

APPLICANT: Mr. Claude W. Imler
Sergeant Stone, Inc.
Post Office Box 2086
Zanesville, Ohio 43702-2086

LOCATION: The proposed project is bisected by State Route 555 and is located within the watershed of Bennett Run (N38°42'00" and W81°01'50") approximately 2.5 miles south of Deavertown and 1.5 miles north of Porterville, in the Bearfield Township of Perry County, Ohio. Bearfield Township Roads 201 and 454 run adjacent to the proposed project site. The proposed discharges of dredged and/or fill material would take place within unnamed tributaries to Bennett Run and adjacent wetlands. Bennett Run is an indirect tributary to the Muskingum River, a traditional navigable water of the United States. Sheet 1 of 6 depicts the proposed project location.

DESCRIPTION OF PROPOSED WORK: The applicant proposes to discharge dredged and/or fill material into waters of the United States in conjunction with the construction of a 69.8 acre industrial limestone mine, known as the Deavertown Limestone Mine Site. The project would include the extraction of approximately 150,000 tons of limestone via contour mining techniques annually for an approximate 10 year period. All surface waters proposed to be affected by the proposed project are underlain by recoverable limestone. Extraction of limestone, subsequent backfilling and grading and/or haulroad and sediment pond construction would permanently impact 0.38 acre of jurisdictional wetlands and 2,734 linear feet (0.11 acre) of jurisdictional streams as indicated on the attached Table 1. Material that would be discharged into the on-site wetlands and streams would be soft shale and cohesive soil overburden. The applicant has obtained an Ohio Department of Natural Resources (ODNR) Industrial Minerals Permit 2429. The purpose of the project is to recover limestone for commercial sale. Reclamation activities would involve backfilling, grading, re-distribution of resoiling material, revegetation, and mitigation of affected aquatic features. Plan view maps (Sheets

2A to 2H) of the proposed site layout and associated impacts to waters of the United States are attached to this public notice.

ALTERNATIVES ANALYSIS: A total of approximately 0.38 acre of jurisdictional wetlands and 2,734 linear feet of jurisdictional streams would be filled as a result of the proposal. The project does not require access or proximity to, or siting within, the wetlands to fulfill its basic purpose and is considered a non-water dependent activity. The Section 404(b)(1) Guidelines state for non-water dependent activities, practicable alternatives that do not involve wetlands are presumed to be available, unless clearly demonstrated otherwise. The applicant is required to provide an alternatives analysis that must overcome this presumption prior to receiving authorization for the discharge of fill material. The applicant has submitted the required alternatives analysis and it is currently under review. A complete copy of the applicant's alternatives analysis can be reviewed by appointment at the above address. No permit will be issued until our office determines practicable upland alternatives are not available to achieve the overall project purpose based upon the applicant's alternative analysis.

AVOIDANCE AND MINIMIZATION: In evaluating a project area containing waters of the United States, consideration must be given to avoiding impacts on these sites. If waters of the United States cannot be avoided, then the impacts must be minimized. A total of approximately 1,059 linear feet of one perennial stream, 713 linear feet of one intermittent stream, 4,256 linear feet of ten ephemeral streams and 0.38 acre of emergent wetlands, subject to Section 404 Clean Water Act regulation, exists within the project area. Avoidance and minimization efforts were incorporated into the proposal to reduce the footprint of the proposed project. The applicant initially proposed to permanently discharge dredged and/or fill material into 0.38 acre of six jurisdictional wetlands and 4,969 linear feet of 10 jurisdictional streams. The applicant's proposed project would avoid 1,059 linear feet (100%) of the on-site perennial stream, 713 linear feet (100%) of the on-site intermittent stream, and 1,522 linear feet (35.8%) of the on-site ephemeral streams. Agricultural land uses have dominated the project site for the last 40 years. As shown on Sheet 3 of 6, the applicant proposes to use an existing crossing currently used by farming purposes to access the site. Sediment ponds, diversion ditches and other drainage controls would be constructed to minimize sedimentation and turbidity in receiving waters. All disturbed areas would be seeded and/or revegetated with native plant species and native seed mixes after completion of construction activities.

COMPENSATORY MITIGATION PLAN: The applicant has indicated the loss of waters of the United States associated with the proposed project would be offset by performing on-site wetland establishment and stream re-establishment. Approximately 0.70 acre of emergent wetlands would be established within the floodplain area of Bennett Run. Relatively impermeable material (i.e. shale or clay) would be obtained on-site and placed in the bottom of the mitigation wetland. This material would be placed in nine inch uncompacted lifts and then compacted by repetitious phases of heavy equipment to form an 18 inch thick layer. A 12 inch thick layer of uncompacted organic material or previously stockpiled topsoil soils would be placed on the clay layer. Natural recruitment of native plants would be allowed in the on-site wetland mitigation area. Re-distributed organic material would serve to provide a seed base for natural regeneration of hydrophytic vegetation. A maximum water depth of six inches would be maintained above the top of the hydric soils. A 50-foot buffer would be established around the wetland would be planted according to the riparian/wetland planting plan. Trees and shrubs would be slightly staggered to increase shade coverage. Sheet 4 of 6 provides details regarding the wetland mitigation site.

The applicant also proposes to re-establish the affected ephemeral streams using natural stream design techniques at the time of backfilling and grading. Once the stream corridors are graded, they would be resoiled during the first appropriate planting/growing season. Pools and riffles would be established at the outside meander bends and runs and eddy rocks and woody debris would be installed at various other locations to provide additional aquatic habitat and cover. All re-established stream channels would exhibit surface water connections to tributary systems of Bennett Run. Sheet 5 of 6 shows details of the proposed stream re-establishment. The applicant proposes to permanently protect the wetland mitigation area, including its surrounding upland buffer area via a conservation easement. The wetland mitigation site would be monitored for a minimum period of five years. Sheet 6 of 6 depicts the location of the proposed wetland mitigation site.

WATER QUALITY CERTIFICATION: A Section 401 Water Quality Certification will be required for this project. It is the applicant's responsibility to obtain certification from the OEPA.

HISTORIC AND CULTURAL RESOURCES: The National Register of Historic Places

has been consulted and it has been determined there are no properties currently listed on the National Register of Historic Places that would be indirectly or directly affected by the proposed work. Additional resources were reviewed including the Ohio Archaeological Inventory, the Ohio Historic Inventory, recorded cemeteries, county atlases/maps, county histories, and Cultural Resource Management survey files. No previously recorded archaeological or historic sites are located within the proposed project area. No historic buildings are located within the proposed project area. No historic significance was noted associated with the owners of the land denoted on the historic atlases. Agricultural land uses have dominated the project site for the last 45 years. We have determined the proposed project would have no effect on historic properties. A copy of this public notice will be furnished to the State Historic Preservation Office for their review. Comments concerning archaeological sensitivity of the project area should be based on collected data.

THREATENED AND ENDANGERED SPECIES: The proposed project is located within the known or historic range of the endangered Indiana bat (*Myotis sodalis*), the proposed endangered northern long-eared bat (*Myotis septentrionalis*), the endangered snuffbox mussel (*Epioblasma triquetra*), the endangered American burying beetle (*Nicrophorus americanus*), the endangered Fanshell mussel (*Cyprogenia stegaria*), and endangered Pink mucket pearly mussel (*Lampsilis abrupta*).

No suitable habitat is present within the proposed project area for the above-mentioned federally-protected mussel species. We have determined the proposed project would have no effect on federally-protected mussel species.

The project site consists predominately of agricultural fields with small wooded areas. The small wooded areas may contain suitable summer roosting and foraging habitat for the Indiana bats or the northern long-eared bats. Similar forested habitat appears to be abundant in the adjacent landscape.

The applicant has agreed to conduct timber removal operations between September 30 and April 1 to minimize effects on the Indiana bats or the northern long-eared bats. We have determined the proposed project may affect, but would not likely adversely affect either the Indiana bat or the northern long-eared bat.

Regarding the American burying beetle, the proposed project would have no effect on this insect species because its range does not currently extend into proposed project area; its range is limited to the southern portion of Bearfield and Deerfield Townships.

Based on this information, the project is not likely to adversely affect the continued existence of any endangered species or threatened species, or result in the destruction or adverse modification of habitat of such species which has been determined to be critical. This Public Notice serves as a request for concurrence from the United States Fish and Wildlife Service with the aforementioned effect determinations and for any additional information they may have on whether any listed or proposed to be listed endangered or threatened species may be present in the area which would be affected by the activity, pursuant to Section 7(c) of the Endangered Species Act of 1972 (as amended).

PUBLIC INTEREST REVIEW AND CUMULATIVE EFFECTS: This application will be reviewed in accordance with 33 CFR 320–332, the Regulatory Program of the Corps, and other pertinent laws, regulations, and executive orders. Our evaluation will also follow the guidelines published by the United States Environmental Protection Agency pursuant to Section 404(b)(1) of the Clean Water Act (40 CFR part 230). The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both the protection and the utilization of important resources. The benefit that reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors that may be relevant to the proposal will be considered, including the cumulative effects thereof; among those factors are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people.

SOLICITATION OF COMMENTS: The Corps is soliciting comments from the public, the Federal, state, and local agencies and officials, the Indian Tribes, and other interested parties in order to consider and evaluate the impacts of this proposed activity. For accuracy and completeness of the administrative record, all data in support of or in opposition to the proposed work should be submitted in writing setting forth sufficient detail to furnish a clear understanding of the reasons for

support or opposition. Any person may request, in writing, within the comment period specified in the notice, that a public hearing be held to consider the application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing. Any comments received will be considered by the Corps to determine whether to issue, modify, condition or deny a permit for this

proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity. Written statements received in this office on or before the expiration date of this Public Notice will become a part of the record and will be considered in the final determination. A permit will be granted unless its issuance is found to be contrary to the public interest.

CLOSE OF COMMENT PERIOD: All comments pertaining to this Public Notice must reach this office on or before the close of the comment period listed on page one of this Public Notice. If no comments are received by that date, it will be considered that there are no objections. Comments and requests for additional information should be submitted to Teresa Spagna of the North Branch at teresa.d.spagna@usace.army.mil or at the following address:

United States Army Corps of Engineers

ATTN: CELRH-RD-N

Public Notice No. LRH-2010-930-MUS

502 Eighth Street

Huntington, West Virginia 25701-2070.

Please note names and addresses of those who submit comments in response to this Public Notice become part of our administrative record and, as such, are available to the public under provisions of the Freedom of Information Act. Thank you for your interest in our nation's water resources. If you have any questions concerning this Public Notice, please contact Teresa Spagna of the North Branch at (304) 399-5210, by mail at the above address, or by email at: teresa.d.spagna@usace.army.mil.

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INTRODUCTION

Sergeant Stone, Inc. ("Applicant" or "Sergeant") has obtained an industrial minerals mining permit IM-2429 from the Ohio Department of Natural Resources, Division of Mineral Resources Management ("DMRM") for the removal of limestone from the subject site.

The purpose of the project is to recover the Brush Creek Limestone in a manner that is environmentally responsible, economically feasible and safely done for the protection of employees and the general public. Qualitative testing has demonstrated this limestone is highly durable making it ideally suited for numerous construction related applications. Within the area proposed for mining, the stratigraphic position of the limestone places it below drainage at several locations. To maintain a continual and uniformly advancing mining area, earthmoving activities which are necessary to uncover, remove and reclaim disturbed areas, resulting in the unavoidable impact of jurisdictional waters.

This document is prepared in order to receive federal Clean Water Act Section 404 ("Section 404") authorization from the U. S. Army Corps of Engineers, Huntington District ("USACE" or "Corps of Engineers") and federal Clean Water Act Section 401 ("Section 401") water quality certification from the Ohio Environmental Protection Agency ("OEPA").

SITE DESCRIPTION

The subject property lies within Bearfield Township, Perry County, and Deerfield Township, Morgan County, Ohio on the Deavertown 7.5 Minute USGS Quadrangle Maps. The site, which is approximately 2.5 miles south of Deavertown, is essentially bisected by State Route 555. Bearfield Township Roads 201 and 454 also run adjacent to the proposed quarry site. The site consists of agricultural land which has nearby rural residential and undeveloped lands. A small portion of the site has been previously surface mined for limestone. Additionally, operations from an abandoned underground coal mine have also impacted an area within the area that was delineated for jurisdictional waters.

DELINEATION FOR JURISDICTIONAL WATERS

A delineation of jurisdictional waters was conducted on the subject property by Linn Engineering, Inc. The report is titled "*Jurisdictional Waters Delineation Report; Deavertown Site; Bearfield Township, Perry County, Ohio; Deerfield Township, Morgan County, Ohio*" dated September 10, 2010. The map of the delineated aquatic features and the jurisdictional determination letter from the Corps of Engineers are submitted in Appendix A.

PROJECT DESCRIPTION

Surface mining of the Brush Creek limestone is proposed under ODNR Permit IM-2429, which encompasses 83.0 acres. The Jurisdictional Waters Delineation encompassed 100.7 acres. To avoid and minimize impacts to "waters", an area of 69.8 acres is sought for approval under the Preferred Alternative. The Preferred Alternative includes a 4.2 acre area of proposed expansion of IM-2429 that is located east of Bennett Creek adjoining the north side of IM-2429. Furthermore, the Preferred Alternative does not include land in Morgan County.

APPLICATION COORDINATION

As part of the industrial minerals permit application review process, the Ohio Department of Natural Resources ("ODNR"), Division of Mineral Resources Management ("DMRM") notifies numerous federal, state and local agencies as to the location and nature of the permit application. Coordination with other agencies included the U.S. Fish and Wildlife Service ("FWS"), USDA Forest Service, U.S. Army Corps of Engineers, ODNR Division of Wildlife, ODNR Division of Natural Areas and Preserves, ODNR Soil and Water Conservation, Ohio EPA, Ohio Department of Transportation, County Commissioners, and Township Trustees.

Except for general technical comments from DMRM, no comments or requests for additional information were received during the application review from the other agencies listed above.

Federally Listed Rare and Endangered Species

The FWS published list of endangered and threatened species in Ohio (3/2008) was reviewed. According to the list, *Myotis sodalis* (Indiana bat) is the only endangered species found with the distribution range inside that of Morgan and Perry Counties, which could possibly encounter the proposed mining area.

According to Clark, B. K., et. al., *Myotis sodalis* is found in Ohio during summer months through September. Preferred habitat includes large living or dead trees with large cavities, cracks or exfoliated bark (1987). Tree species including *Ulmus americana* (American elm), *U. rubra* (slippery elm), *Quercus stellata* (post oak), *Q. rubra* (red oak), *Carya ovata* (shagbark hickory), *C. cordiformis* (bitternut hickory), *Populus deltoides* (Eastern cottonwood), *Acer saccharinum* (silver maple) and *Fraxinus pennsylvanica* (green ash) have been documented as used by reproductively active females in Michigan (Kurta, et. al., 1993).

Communications with Jeromy Applegate, of the U.S. Fish and Wildlife Service, state that since there is minimal forested acreage onsite, impacts to Indiana bat habitat is unlikely due to the abundant adjacent landscape. Also, mining between September 30 and April 1, ensures that any feasible effects produced by tree clearing will in essence be insignificant or discountable. Refer to USFW correspondence in Appendix E. ✓

Archaeological and Historical Records

A Phase I Cultural Resources survey was performed by Professional Archeological Services Team ("P.A.S.T.") on behalf of Sergeant Stone, Inc. Dated November 2010, the report states that no archaeological or historical significance was found with the proposed mining area. The report is submitted in Appendix E.

JURISDICTIONAL STREAM and WETLAND FEATURES / HABITAT ASSESSMENT

Linn Engineering, Inc. conducted a stream and wetland survey and a jurisdictional delineation.

Their report describes in detail aquatic features and their respective habitat.

Jurisdictional Stream Features / Habitat Assessment

Based on the delineation, a total of 7,458 linear feet of stream features were identified on the site. Of this total, 1,430 linear feet are considered isolated, resulting in 6,028 linear feet of jurisdictional streams. The jurisdictional length is summarized as one perennial stream (1,059 lf), one intermittent stream (713 lf), and ten ephemeral streams (4,256 lf).

None of the streams appearing on the site are listed in the Ohio EPA's "Alphabetical List of Special High Quality Waters contained in Ohio Administrative Code 3745-1-05 effective 7/1/03".

Jurisdictional Wetland / Wetland Habitat Assessment

Based on the jurisdictional delineation, a total of 0.70 acres of wetlands were identified on the site. Of this total, 0.32 acres are considered isolated, resulting in 0.38 acres of jurisdictional wetlands.

PROJECT ALTERNATIVES ANALYSIS

As defined by the Clean Water Act, limestone mining is a non-water dependent operation. As such, upland alternatives to impacting streams and wetlands the USACE has determined it has jurisdiction ("Jurisdictional Waters"). These alternatives must be analyzed in detail to determine the practicability of mining and its impact on jurisdictional waters. The analysis will first address various risks associated mining, methods of mining, and then generally describe each of the three alternatives, namely Preferred, Minimal and Non-Degradation.

How well a company manages the variety of risk factors inherent in a coal mining determines its level of success. Many risk factors can be identified and managed; others, such as weather, changing regulatory standards and the unknowns of what lies beneath the ground surface largely

cannot be identified with certainty and thus cannot be managed. Furthermore, unmanageable risks, if or when encountered, often influence other manageable risks to the extent of making what was manageable now unmanageable. Unmanageable risks lead to uncertainty and uncertainty leads to higher costs. Costs have many forms, such as manpower, legal, environmental, material to name a few, but regardless of its form, "cost" ultimately is defined in economic terms.

A company that weighs the benefits versus the costs of a proposed venture will only prudently proceed with that venture after first identifying the risks and devising a strategy to manage those risks. Once satisfied that its business plan is sound, the company proceeds to implement its plan. Call this Plan A or the Preferred Plan or Alternative. All good companies are aware that unknown risks can often suddenly and unexpectedly appear to skew the intentions of the Preferred Plan. A company will have developed a backup plan which because it must address unmanageable risks, is obviously not the plan of choice, but is one that the company is willing to implement knowing it will likely not be as successful as the Preferred Plan. Call the backup plan, Plan B or the Minimal Plan. Again all good companies must have an exit strategy whereby it concludes Plan B is failing and to minimize further risks (i.e. costs) it is necessary to abandon the venture entirely. Call this situation the Antidegradation Plan. The company cannot bear the risks/costs any longer - they must stop degrading the value of the company less risk total failure.

As with any natural resource, limestone can only be mined where it geologically exists. Long before the formation of Sergeant Stone, limestone was mined in Southeastern Ohio and specifically the Brush Creek Limestone was mined within a half mile of IM-2429. In their due diligence, Sergeant identified the risks known or anticipated at that particular point in time and determined the risks were manageable. Sergeant entered into this venture knowing the risks, specifically the regulatory risks associated with impacting jurisdictional waters. The costs of impacting jurisdictional waters is high and Sergeant weighed that cost and determined the venture could be successful under Plan A (i.e. the Preferred Alternative). Sergeant would not

have invested in lease negotiations, legal services and engineering studies if they were not anticipating full recovery of the limestone reserve.

Under the Clean Water Act criteria for alternative analyses, limestone mining is considered no different than any other non-water dependent site development. This is hardly an accurate comparison. For example, in the cases of retail site developments or residential subdivisions, there may be numerous configurations of buildings, roads, parking areas and infrastructure that can be designed to avoid "waters". In fact, a developer's evaluation of the known and potential risks may determine a site to be too costly to develop, thus resulting in its abandonment in favor of a less costly more suitable site.

To fully understand the methodology by which alternatives are analyzed, one must understand the logistics and risks associated with each type of mining method and the nature of the mineral proposed for recovery. Significant advancements in limestone mining technologies have created new mining methods, improved existing ones and made the industry more efficient and safer. Today's technology includes computerized mine modeling, improved processing equipment, large scale earthmoving equipment, improved roof support and ventilation for underground mines, and superb reclamation.

From a macro viewpoint, limestone recovery is done either by surface or underground methods. Surface mining is also known as quarrying or strip mining. Underground extraction is done by the room and pillar method. A number of factors affect the method of mining, such as topography, and the limestone's thickness and structure. Conditions which are typically present for surface mining, include overburden to limestone ratio that does not exceed 4:1, overburden that can be readily removed without special equipment or handling. Conditions other than these may be more conducive to underground mining. Additionally, the feasibility of underground mining is dependent on the soundness of the overlying geologic structure and the thickness of the limestone. The overlying geologic structure must be capable of supporting the overburden.

Failure to do so may result in a collapse of roof material inside the mine which then could reflect to the ground surface resulting in a subsidence event. A limestone reserve that is too thick or too thin will complicate its removal using underground methods. Furthermore, a seam that is too thick will have difficulty providing adequate ventilation through such a large void.

The following describes a general sequence of events necessary to open and operate various types of limestone mines.

Surface Mining:

1. Simultaneously build the initial portion of the haul (access) road, remove topsoil from haul road area, stockpile topsoil and construct drainage controls from area affected by the above operations. Typically in this phase of mine development, an area is graded for employee parking and equipment maintenance.
2. Prior to affecting the watershed of the first pit, construct drainage controls (e.g. sediment pond) for that watershed. A sediment pond may be designed and built to handle the runoff from multiple pits.
3. With the first and subsequent pits, remove and stockpile all topsoil. Remove and stockpile all subsoil. When bedrock is encountered, the use of explosives is necessary to break the rock into sizes that can be moved by the mining equipment. A drill bench is graded and a road leading to the drill bench is constructed. A pre-determined blasting plan is initiated by drilling a pattern of holes, loading the holes with explosives and detonating the charge.
4. The earthmoving equipment returns to the drill bench and begins loading and removing the shot overburden. The soil and rock material overlying the mineral is called overburden and once it is removed it is called spoil. Large excavators load the spoil onto off road trucks and the spoil is hauled and dumped. The dumping or placement of spoil is a critical in the successful operation of a surface coal mine. Spoil cannot be commingled with stockpiled topsoil and subsoil.

5. Typically with a surface mine, spoil from the second pit is used to backfill the first pit; and spoil from the third pit is used to backfill the second and so on. Disposal of spoil from the first pit, however, is challenging. Usually there is not a convenient place to put this material such as in a preceding pit from the active operation or a pit from an abandoned mine. Compounding the disposal of first pit spoil is the fact that the spoil experiences a swell factor of about 15% once it is removed. In other words, the volume of broken rock is greater than in-place rock.
6. Depending on the depth of overburden and the specifics of the blasting plan (e.g. rock hardness, protection of sensitive structures) additional blasts may be necessary in the pit.
7. Once the overburden is completely removed, the top of the limestone is exposed. The top of the exposed limestone is then drilled for blasting. Explosives fracture the limestone facilitating its removal.
8. Limestone is hauled to the on-site portable crusher where it is crushed and screened into common sizes ready for sale.
9. Following limestone removal, a four sided pit typically remains which is generally configured as having a shear rock face, called a highwall, on two adjacent sides, a road leading into the pit on the third side and the fourth side is either a smaller rock face called a low-wall or is spoil from the preceding pit. Of the two highwalls, one is usually on the uphill side of the pit and the other is on the side in the direction of the next pit.
10. The second pit is developed in a similar manner as the first. Topsoil and subsoil are removed and stockpiled. Overburden is blasted, as needed, and spoil hauled to backfill the preceding pit. The haul road is regraded as the old pit is backfilled and the new pit is created. Limestone is removed and the resultant pit is configured similarly to the preceding pit.
11. The process is repeated for each subsequent pit. Drainage controls must be built in advance of a watershed's disturbance.
12. The last pit is either partially graded and the highwalls eliminated to create an impoundment or spoil placed in previous pits is hauled to backfill the pit.

13. All disturbed areas are resoiled with topsoil and subsoil. Depending on the post-mining landuse, the appropriate revegetation plan is implemented. Sediment ponds must remain functional until vegetation is deemed established. Other reclamation measures such as wetland mitigation and stream reconstruction are typically completed during final reclamation activities

Underground Mining:

Underground mining is typically done by the room and pillar method and is developed into an existing highwall. Underground mining is done when conditions are not feasible for surface mining, primarily due to excessive depth of overburden. Underground mining may also be done to avoid directly affecting surface features; however, a sound geologic structure overlying the limestone is imperative to preclude subsidence and its associated hazards. Room and pillar mining creates a pattern of entries and cross cuts that result in forming a pillar between cross cuts and two entries. The term "rooms " is a misnomer since rooms are not created. The coal that is removed from the entries and the cross cuts result in a void which is called a "room". The pillars along with mechanically driven roof bolts provide long term support that minimizes the potential for subsidence. As a result of leaving pillars, mineral recovery is usually less than 60% of the reserve. With room and pillar mining, maintaining proper ventilation, power supply, conveyance and worker safety is absolutely mandatory with no measure of compromise.

A drift entry, which is also referred to as a slope entry, is essentially a surface mine pit into which underground entries are made into the final highwall. The drift entry area has to be large enough to accommodate a ventilation fan, power supply, conveyors, and limestone stockpile, as well as providing sufficient space for maneuvering equipment. Creation of the drift entry pit essentially involves Steps 1 through 8 of the surface mining process. The spoil material must be temporarily placed for eventual backfill of the pit once the reserve is exhausted. Steps 10 through 12 of the surface mining process are also

applicable.

Within close proximity of the Sergeant Stone Deavertown Mine, are two abandoned underground limestone mines and one active underground mine. Columbia Cement operated its mine on the north side of East Fultonham, Ohio for many years before closing in 1981. Sidwell Materials operated its "Black 17" mine at White Cottage, Ohio for only a couple of years, closing it in 2012. With the closing of the Sidwell mine, Shelly Materials opened and continues to operate an underground limestone mine at the site of their surface mining operation south of East Fultonham. All three of these mines were/are in the Maxville limestone, which has a mineable thickness of about 18 to 20 feet and a sound roof structure.

The Brush Creek Limestone cannot be feasibly be underground mined. The seam thickness ranges from 2 to 10 feet, making it too thin to justify the expense of developing and operating an underground mine. Furthermore, the geologic structure overlying the reserve does not have the strength, soundness or uniformity to provide adequate roof support.

The above described surface mining processes demonstrate the importance of maintaining a continually advancing highwall and pit sequence. Such a process enhances all aspects of the mining operation, in particular earthmoving, blasting, spoil storage, drainage controls, haul road construction and maintenance, and reclamation activities. On the other hand, interruption of the continual sequence of pits, compounds logistics, introduces risks and results in a costlier mining operation. Individually and collectively these issues work to compromise the success of the mining operation and ultimately jeopardize final reclamation.

The intent of this alternative analysis is to identify the least environmentally damaging practicable alternative. Various alternatives are shown to avoid streams and avoiding a stream causes an interruption in the continual sequence of pits. Moreover, considering the massive volume of earthmoving, the large size of the mining equipment, the already committed

avoidance of “waters” and the confined topographic setting, an interruption of the continual sequence of pits creates an impracticable mining scenario. Introducing interruptions by avoiding streams will only work to compromise reclamation and mitigation efforts.

Sergeant has developed a practicable mining plan that demonstrates avoidance and minimization of impacts to “waters”. This plan will maximize limestone recovery, result in an efficient and safe mining operation and achieve environmentally sound reclamation and mitigation. Over protection by further avoidance of “waters” will stifle the mining operation and work contrary to the goal of achieving sound environmental reclamation.

PROJECT ALTERNATIVES ANALYSIS

The Section 401 permitting processes involve identifying and permitting the least environmentally damaging project alternative that meets the project purpose. As previously stated, the purpose of the project is to recover the Brush Creek Limestone in a manner that is environmentally responsible, economically feasible and safely done for the protection of employees and the general public.

Over the last several years Sergeant Stone, Inc. has made a considerable investment to perform exploratory drilling, acquire land, evaluate the extent of environmental concerns, including the presence of waters of the United States, soil sampling, engineering, and an evaluation of the potential environmental impacts and mitigative measures.

As part of their due diligence, Sergeant has determined the Brush Creek Limestone reserve extends in all directions from the subject Deavertown site. The geologic bedding plane tends to dip to the southeast and rise to the northwest. The thickness, generally, ranges from 8 to 10 feet.

The Deavertown site was selected as the initial mine site for several reasons. At its position in the reserve, the Deavertown site is situated where the limestone transitions from below major

drainage to above major drainage. The southern end of the Deavertown site is below drainage as the limestone dips to the southeast. Conversely, the northern end of the Deavertown site is above drainage as the limestone rises to the northwest. Impacts to “waters” can be avoided or minimized with the mining operation located above drainage. Furthermore, in the general transitional area, the depth of overburden is minimal resulting in favorable earthmoving conditions in terms of expense and logistics. The location of State Route 555 also is an important factor. Unlike nearby narrow aggregate based township roads, visibility from and access to the paved state highway enhances customer access and getting the limestone product to market.

The delineation of waters identified a broad range of streams and wetlands, including isolated and jurisdictional perennial, intermittent and ephemeral streams, as well as, isolated and jurisdictional wetlands. None of these aquatic features are considered high value.

Sergeant Stone, Inc. proposes the Preferred Alternative as the one that is the least environmentally damaging while still meeting the project purpose. This mining plan avoids and minimizes impacts to the higher quality aquatic features. Moreover, in developing the mining plan consideration was also given to avoiding or minimizing impacts to cultural and natural resources. As such the area of impact will be limited to only those areas for which it is economically feasible to conduct surface mining and reclamation operations. Unavoidable impacts are summarized the OEPA Jurisdictional Stream Impact/Avoidance Summary Table and the OEPA Jurisdictional Wetland Impact/Avoidance Summary Table submitted collectively as Table 2.

Jurisdictional stream impacts were determined to be unavoidable for the economically feasible extraction of the limestone resource. Discharge of fill material into such jurisdictional streams is required for temporary overburden storage, the construction of drainage controls, limestone extraction, and reclamation activities. Sergeant anticipates all surface mining and reclamation

activities will be completed within the initial ten-year term of the DMRM permit.

Project Purpose

The purpose of the proposed activity is to mine and remove the Brush Creek limestone by surface mining methods. To the extent practicable, the mining plan avoids and/or minimizes impacts to “waters”. Nevertheless, even with efficient implementation of the mining plan, there are unavoidable impacts to stream and wetland habitats with earthdisturbing activities that include topsoil and subsoil removal and stockpiling, overburden removal, mineral extraction, and reclamation of disturbed areas. Reclamation activities involve backfilling, grading, re-distribution of resoiling material, revegetation, and mitigation of affected aquatic features.

Project Impacts

The entire area within each of the Preferred, Minimal and Non-Degradation Alternatives has been previously impacted by farming, pond construction and rural residential activities. In fact, several of the aquatic features identified in the Waters of the U.S. Delineation are a direct result of these impacts. Due to its stratigraphic position and the surface topography, recovery of the limestone results in unavoidable impact to these aquatic features.

Project Benefits

The proposed mining operation will not only recover limestone that will be used for commercial and residential roads, driveways and construction projects, but it will also result in the reclamation of a small previously unreclaimed surface mine area. Furthermore, the operation will provide an economic boost by creating jobs and tax revenues for the local economy. All mitigation activities, moreover, will occur on-site to the benefit of the Bennett Run and Black Fork watersheds.

Preferred Alternative

The Preferred Alternative maximizes limestone recovery while only affecting those waters on

which impact cannot be practicably avoided or minimized. The total area of this alternative is 69.8 acres, but due to avoidance and minimization of impacts to “waters” only about 48 acres yielding an estimated 1,440,000 tons of limestone are recoverable.

The Preferred Alternative was compiled to minimize and avoid jurisdictional waters to the extent practicable. Therefore, the following aquatic features will be avoided:

- **Bennett Run (Stream 8 perennial) 1,059 lf:** At the downstream-most section of the delineated stream, the limestone outcrops in the stream bed. This creates an existing crossing that has been and is currently used by farming equipment. Since no dredging or filling is required to implement this crossing in the proposed mining plan, the entire delineated footage is considered avoided. The limestone at the crossing and underlying the rest of the stream channel within the study area will not be mined. The existing crossing, however, will be utilized to gain access to the east side of Bennett Run.

Significant mitigation costs would be incurred if the above referenced feature were to be impacted. Limestone underlies the stream and the overburden thickness is the least of any location on-site. As a result, mining the limestone under Stream 8 would be quite profitable. Nevertheless, Sergeant Stone recognizes that the mitigation liability outweighs the benefits, and impact to this feature will be avoided, and for this reason, avoidance of Stream 8 is included in the preferred alternative.

- **Stream 6 (ephemeral) 550 lf; Stream 9 (intermittent) 1,110 lf; Stream 10 (ephemeral) 320 lf; Wetlands G (0.05 ac) and H (0.27 ac):** The overburden thickness near these features ranges from roughly 18 to 22 feet, and due to the fact that the limestone is below drainage, mining conditions are very likely to be wet and muddy. These conditions will complicate earthmoving and maintenance of effective drainage controls, as well as compromising the quality of the produced limestone.

- **Stream 7 (ephemeral) 811 lf:** In addition to the same reasons for avoidance cited for Streams 6, 9 and 10, Stream 7's close proximity to the property line does not warrant its impact for a marginal amount of recoverable limestone.
- **Stream 11 (intermittent) 713 lf:** The overburden thickness on the west side of this stream is not prohibitive; however, on the east side, the overburden thickness quickly increases. Such a condition does not warrant impacting the stream.

Refer to Fig. 1 for mapping the Preferred Alternative and Table 2 for a detailed list of impacts and avoidances.

Minimal Degradation Alternative

The Minimal Alternative is the same as the Preferred Alternative except that it removes approximately 4 acres of recoverable limestone from the northwest corner of the permit area, resulting in approximately 44 limestone acres and roughly 1,320,000 tons. Impacts to Jurisdictional waters under this alternative is the same as the Preferred Alternative except that all of Stream 1 Upper and Lower and Stream 2 are avoided and 25 feet of Stream 3 is avoided. Eliminating this area significantly compromises Sergeant's ability to advance its mining operation further to the northwest and reduces the area in which to temporarily store overburden material.

Refer to Fig. 2 for mapping the Minimal Alternative and Table 2 for a detailed list of impacts and avoidances.

Non-Degradation Alternative (No Action Alternative)

The non-degradation alternative requires total avoidance of surface waters on the project site. Under this alternative the mining area is split into three small areas, namely, about 10 acres are

located west of SR-555, about 5 acres are located east of SR-555 and west of Bennett Run (Stream 8), and 25 acres are located east of Bennett Run. The 10 acres located west of SR-555 is the location of crushing and screening activities. Limestone underlies this area, but it cannot be recovered until the crushing and screening operation is moved to another location. The 5 acres located between SR-555 and Bennett Run can be mined, but requires truck haulage to the crushing and screening site. The 25 acres located east of Bennett Run can be mined, but at this location earthmoving would be complicated by the volume of overburden and limited area to place it. Also, mined stoned would have to be trucked to the processing area.

The alternative is not proposed for approval due to limited resource recovery and complicated logistics.

Refer to Fig. 3 for mapping the Non-Degradation Alternative.

CUMULATIVE IMPACT ASSESSMENT

Introduction

Within the ODNR surface mining permit, all 83.1 acres are underlain with Brush Creek limestone; however, prudent development of the Preferred Alternative results in avoiding or minimizing impacts to cultural and natural resources. As such the area of impact will be limited to only those areas for which there is substantial economic justification. Removal of limestone, as proposed, will impact only 2,734 feet of jurisdictional ephemeral streams and 0.38 acres of jurisdictional wetlands.

The site is drained locally by Stream 8 (Bennett Run) which is tributary to Black Fork. Affected stream lengths were determined to be unavoidable for the economically viable extraction of the limestone resource. Placement of fill into “waters” is primarily required for overburden storage, the construction of drainage controls, construction of a haul road, limestone extraction, and reclamation activities. The life of the ODNR DMRM mining permit is ten years and may be

renewed in ten year increments. For this particular site, Sergeant Stone anticipates all mining and reclamation activities will be completed within the initial ten year period.

Sediment ponds will benefit the project area both during and after mining. Through detention, the ponds will reduce sedimentation and discharge within appropriate effluent limits; thereby not adversely impacting the Black Fork watershed. The recognized and accepted method of treatment and disposal of runoff from limestone quarries is through the use of sediment ponds. Treatment will be through detention and settlement, which should be appropriate since the proposed quarry does not present any unusual or abnormal operational conditions. All ponds are proposed as temporary.

Evaluation of Cumulative Effects Previous and Current Land Use/Cover

This Cumulative Impact Assessment (CIA) is prepared in accordance with the Clean Water Act Section 404 (b)(1) guidelines to evaluate the potential cumulative impacts associated with limestone mining within the Black Fork watershed.

The headwaters of Black Fork are in Morgan County, but the majority of its watershed lies in Perry County. The ODNR DMRM industrial minerals permit that is the subject of this application is located within 1.5 miles of the headwaters of Black Fork and located within HUC #05040004-050.

According to the Gazetteer of Ohio Streams (Second Edition, August 2001), the Black Fork watershed encompasses 28.7 square miles, and the source and mouth elevations are 997 and 739 (msl), respectively. Having a length of 7.7 miles, Black Fork has an average gradient of 33.5 ft/mile. At the permit site the elevation is 860 (msl).

The Black Fork watershed has been impacted by surface and underground coal mining. Although the majority of the previously affected ground has been properly reclaimed, areas of

abandoned surface mine lands and acid mine drainage from abandoned underground mines are causing significant adverse impact.

The pre-mining landuse is primarily agricultural with adjacent rural residential and undeveloped lands. The post mining landuse will return the land to its agricultural use. The agricultural lands will be placed in the production of hay. Surrounding rural residences will not be affected.

There are no existing land use policies or plans by governmental agencies for the land area. The ODNR DMRM mining permit was issued on August 8, 2014 and will be valid for an initial ten year period. The DMRM permit is renewable in ten year increments, but the life of the mine is expected to be less than ten years.

Evaluation of Past, Present and Reasonably Foreseeable Future Impacts

Past

ODNR Division of Oil and Gas records indicate there are three active oil/gas wells inside or within 25 feet of the delineation area, one of which is within the Preferred Alternative area. Within the Black Fork watershed there are over a hundred active or abandoned oil and gas wells. A minor field collection line runs through the western side of the area proposed for mining.

The Black Fork watershed, particularly within Perry County, has been affected by coal mining. Affected areas are comprised of surface and underground mining operations from before and after the Surface Mining Control and Reclamation Act, 1977 ("SMCRA"). Of greatest impact, is acid mine drainage (AMD) from abandoned underground mines, such as the Tropic Mine at Rose Farm. Although ODNR abandoned mine land (AML) projects have been constructed to alleviate the impacts of AMD, the results have been limited at best.

Within the area of delineation, but outside the area of the Preferred Alternative pre-SMCRA underground mining activities have caused significant adverse impact to surface waters. It is

believed the slope entry into abandoned mine Mn-10 is capturing Stream 9; consequently, the entire Stream 9 watershed (100 acres) is considered isolated.

On-site, limestone surface mining has created jurisdictional Wetland F. The time period in which this mining took place is unknown, but judging from the appearance of natural succession, it is a reasonable assumption that this activity took place at least 60 years ago.

Agricultural activities both on-site and on surrounding lands caused impacts. On-site, the lands of Bennett Creek Farm have been in alternating production of corn and soybeans for at least the last 40 years. Agricultural uses of surrounding lands include production of crops and livestock. To achieve these agricultural uses the land had to have been clear-cut, and erosion control practices were not implemented. Wetlands A and B have developed in former livestock pond that has not been maintained for many years.

The site is essentially bisected by State Route 555. Stream 5 basically originates at the discharge end of a culvert that carries flow from the highway road ditch under the state route. Stream 4 is also culverted under the road.

Present

Impacts resulting from the previously described Past activities are continuing.

Future

The extent of future impacts cannot be known with certainty; nevertheless, the existing producing oil and gas well will not be affected by the proposed mining operation and is expected to continue production. Development of deeper oil/gas reserves is possible as technology develops.

Following reclamation, the post mining use of the land will support agricultural, aquatic and

wildlife environments.

It is assumed that the impacts within the Black Fork watershed that are outside the project area, will continue.

Summary

By using the best available technology and management practices and implementing mitigation techniques, only minimal individual and cumulative adverse impacts on the environment are expected from this project site. Mining and reclamation practices will be implemented to effectively and efficiently extract mineral resources, while minimizing and avoiding impacts to the watershed. Sediment ponds, diversion ditches and other drainage controls that will be constructed during mining will assist in preventing deleterious effects on the Black Fork watershed. Sound mining and management practices implemented by Sergeant Stone will achieve the project's purpose without long term adverse impact to the immediate and greater watershed.

OHIO EPA ANTI-DEGRADATION ADDENDUM

10a) Provide a detailed description of any construction work, fill or other structures to occur or to be placed in or near the surface water. Identify all substances to be discharged, including the cubic yardage of dredged or fill material to be discharged to the surface water. (OAC 3745-1-05(B)(2)(b))

PREFERRED and MINIMAL DEGRADATION ALTERNATIVES

Construction work, fill or other structures proposed to occur for the Preferred and Minimal Degradation Alternative are the same, except that a greater amount of fill will be placed in “waters” under the Preferred Alternative than under the Minimal.

All surface waters proposed for impact are underlain by recoverable limestone. Material that would be placed in surface waters is primarily soft shale and cohesive soil overburden. The limestone fragments remaining after mining shows a considerable neutralizing potential and significantly reduce the risk of post mining acid mine drainage.

Activities which result in the placement of material into surface waters include construction of a haul road, construction of Sediment Ponds 002 and 004 under the Preferred Alternative and only Sediment Pond 004 under the Minimal Alternative, and mining.

The haul road will impact Stream 4 Lower and Stream 5. Stream 5 is essentially a continuation of the SR-555 road ditch. At the time the haul road is constructed, Stream 5 will be temporarily diverted into Stream 4 Lower. A culvert will be placed in Stream 4 Lower and the haul road constructed over the culvert. Near the completion of mining on the east side SR-555, the culvert will be removed and the underlying limestone will be mined.

Sediment pond design is based on DMRM criteria, the two most important of which address sediment storage and spillway design. Sediment storage volume below the principal spillway must be no less than 0.2 acre-foot per disturbed watershed acre. The open channel spillways

must be able to pass the routed runoff from the 25 year 24 hour storm.

Reclamation grading will create a land form that will be a vegetated landscape graded to blend reclamation contours into surrounding contours. Stream channels will be reconstructed and their associated riparian areas/buffer zones will be planted with native vegetation.

Lengths and areas of impacts to “waters” are provided in the tables submitted in Appendix B. The volume of fill to be placed in jurisdictional waters is provided in Block 8c.

NON-DEGRADATION ALTERNATIVE

Not applicable. This alternative does not propose to affect water resources.

10b) Describe the magnitude of the proposed lowering of water quality. Include the anticipated impact of the proposed lowering of water quality on aquatic life and wildlife, including threatened and endangered species (include written comments from Ohio Department of Natural Resources and U.S. Fish and Wildlife Service), important commercial or recreational sport fish species, other individual species, and the overall aquatic community structure and function. Include a Corps of Engineers approved wetland delineation. (OAC 3745-1-05(C)(6)(a, b) and OAC 3745-1-54)

PREFERRED and MINIMAL DEGRADATION ALTERNATIVES

The Corps of Engineers Jurisdictional Determination, Aquatic Features Map, and corresponding “water” evaluation sheets are submitted in Appendix A. The delineation did not identify the presence of important commercial or sport fish species, threatened or endangered species, or the presence of any high value aquatic habitat. Also, the site is not in close proximity to existing or proposed nature preserves or scenic rivers.

Limestone is a natural alkaline mineral having an insignificant acid producing potential. Furthermore, with this site the overburden is non-acidic. Unlike concerns typically raised by coal mining, this particular limestone quarry will not create post-mining acid mine drainage. The only contaminant that has the potential to be problematic is total suspended solids. As

required by Ohio's surface mining laws, mine operators are required to construct sediment ponds to capture sediment laden runoff from disturbed areas. Although both alternatives will impact the same quantity of jurisdictional waters, the Preferred alternative will, in addition, impact isolated waters consisting of 1,430 feet of stream and 0.32 acres of wetland

Runoff from disturbed areas will be directed to a sediment detention structure for treatment before discharge until vegetation has been re-established. All off-site discharges will meet applicable effluent limitations. All sediment detention structures are considered to be temporary.

Because the "waters" proposed for impact are not high quality and, in fact are relatively low value, it is believed that a temporary lowering of water quality associated with surface mining activities is necessary for important social and economic development in this area of the State. The lowering of water quality will not be permanent as water quality and ecological function is restored during reclamation activities and mitigation of impacted streams and wetlands.

NON-DEGRADATION ALTERNATIVE

Not applicable. This alternative does not propose to affect any water resources.

(j+k) **10c) Include a discussion of the technical feasibility, cost effectiveness, and availability. In addition, the reliability of each alternative shall be addressed (including potential recurring operational and maintenance difficulties that could lead to increased surface water degradation.) (OAC 3745-1-05(C)(6)(h, j-k) and OAC 3745-1-54)**

PREFERRED, MINIMAL and NON-DEGRADATION ALTERNATIVES

The project is technically feasible, cost effective and ready to proceed once all necessary permits have been obtained. Sergeant has the financial resources, equipment, personnel and experience to mine and reclaim the proposed area in accordance with applicable regulations.

Recurring operational and maintenance difficulties are not expected. This site does not have any

of the features which could lead to on-going operational and maintenance problems. Such features include long haul roads, interception of abandoned deep mines, acid producing overburden, archeologically or historically sensitive structures, and high quality waters.

The recognized and accepted method of protection against surface water degradation from limestone quarries is through the use of sediment ponds. Treatment will be through detention and settlement, which should be appropriate since the proposed quarry does not present any unusual or abnormal operational conditions.

The overburden and limestone are characteristically alkaline. Although coal mining has occurred in the general vicinity, the limestone is stratigraphically situated above the coal; consequently, the typical acid producing runoff associated with coal mining will not be encountered. Therefore, as is typical with this type of operation, total suspended solids is the primary constituent requiring treatment.

Maintenance measures are expected to be focused on the sediment ponds and will include:

- maintaining a grassed vegetative cover on the embankment and area surrounding the pond,
- repair of erosion within the pond watershed or on the embankment,
- plugging or sealing of muskrat holes and/or controlling animals (eg. beavers) which can damage ponds and spillway structures,
- cleaning of debris from the spillway structures, and,
- maintaining the integrity and operating capacity of the spillway structures.

(i) 10d) For regional sewage collection and treatment facilities, include a discussion of the technical feasibility, cost effectiveness and availability, and long-range plans outlined in state or local water quality management planning documents and applicable facility planning documents. (OAC 3745-1-05(C)(6)(i))

PREFERRED, MINIMAL AND NON-DEGRADATION ALTERNATIVES

Not applicable. The project does not involve the collection and treatment of sewage.

10e) To the extent that information is available, list and describe any government and/or privately sponsored conservation projects that exist or may have been formed to specifically target improvement of water quality or enhancement of recreational opportunities on the affected water resource. (OAC 3745-1-05(B)(2)(g))

PREFERRED AND MINIMAL DEGRADATION ALTERNATIVES

There are no known government and/or privately sponsored conservation projects that exist or may have been formed to specifically target improvement of water quality or enhancement of recreational opportunities on the affected water resource.

NON-DEGRADATION DESIGN ALTERNATIVES

Not applicable. This alternative does not propose to affect water resources.

10f) Provide an outline of the costs of water pollution controls associated with the proposed activity. This may include the cost of best management practices to be used during construction and operation of the project. (OAC 3745-01-05(C)(6)(g))

PREFERRED ALTERNATIVE				MINIMAL ALTERNATIVE			
Item	Total Est'd Const. Cost (\$)	Annual O&M (\$)	Cost to Remove (\$)	Item	Total Est'd Const. Cost (\$)	Annual O&M (\$)	Cost to Remove (\$)
Sediment Ponds (6)	30,000	2,400	15,000	Sediment Ponds (6)	30,000	2,400	15,000
Diversions	10,000	1,000	5,000	Diversions	10,000	1,000	5,000
Temp. Erosion Control	25,000	12,000	12,500	Temp. Erosion Control	25,000	12,000	12,500
Stream Reconstruction				Stream Reconstruction			
Stream 1	15,500	2,500	N/A	Stream 1	-0-	-0-	N/A
Stream 2	5,600	1,000	N/A	Stream 2	-0-	-0-	N/A
Stream 3	8,000	1,300	N/A	Stream 3	7,500	1,200	N/A
Stream 4	18,000	3,000	N/A	Stream 4	50,000	5,000	N/A
Stream 5	7,000	1,200	N/A	Stream 5	20,000	2,000	N/A
Stream 8	-0-	-0-	N/A	Stream 8	-0-	-0-	N/A
Wetland Mitigation	15,000	2,000	N/A	Wetland Mitigation	15,000	2,000	N/A
TOTAL	430,000	52,900	170,000	TOTAL	410,000	51,700	170,000

NON-DEGRADATION ALTERNATIVE

Not applicable. This alternative does not propose to affect water resources.

10g) Describe any impacts on human health and the overall quality and value of the water resource. (OAC 3745-1-05(C)(6)(c) and OAC 3745-1-54)

PREFERRED AND MINIMAL DEGRADATION ALTERNATIVES

Temporarily impacting these water resources will not adversely impact human health. The water bodies are not sources of recreation or used for any commercial or industrial purpose. The quality and value of the aquatic resources are described in the delineation of waters of the United States.

NON-DEGRADATION ALTERNATIVE

Not applicable. This alternative does not propose to affect water resources.

10h) Describe and provide an estimate of the important social and economic benefits to be realized through this project. Include the number and types of jobs created and tax revenues generated and a brief discussion on the condition of the local economy. (OAC 3745-1-5(B)(2)(e), and OAC 3745-1-05(C)(6)(i))

Sergeant Stone, Inc. is a privately owned company striving to wisely harvest and use Ohio's limestone resources. The limestone that will be produced will be for use in such construction materials as road base, site developments, pipe bedding and backfill, asphalt, concrete, and riprap. In order to meet market demand, Sergeant Stone must constantly permit areas with sufficient reserves at a reasonable depth for surface mining. Typically, the development of a mine site involves investigating an area for several years to determine the feasibility of mining. Once an area is identified as a future mining site, preparation of the various permit applications can take upwards of two years. The time for the various regulatory agencies to review applications is an important consideration as this may take an additional two years. As the limestone from a mining operation is exhausted, it is crucial that other areas be ready for mining in order to ensure the steady supply to meet market demand.

As taken from the most recent report, namely the *2012 Report on Ohio Mineral Industries: An*

Annual Summary of the State's Economic Geology.

Limestone and dolomite are Ohio's most versatile industrial minerals. Both are used by the construction industry as aggregate, as an essential ingredient in the cement industry, to produce lime, as a flux in the steel and glass industries, as a filler in a multitude of products, as an agricultural supplement, in water purification, and as a building stone. Ohio has long been a national leader in the production of lime and construction aggregates. In 2012 the primary use for crushed and broken limestone and dolomite was road construction/resurfacing. Other major uses for various forms of limestone and dolomite included stone for asphaltic concrete and Portland cement concrete, commercial building construction, and the production of lime. Since 2011, there has been a significant increase in the railroad transportation of aggregates and other industrial minerals in Ohio, largely to support the development of hydrocarbons in eastern Ohio.

Limestone and dolomite were reported sold and/or produced by 56 companies at 103 operations in 50 Ohio counties during 2012. Reported production totaled 58,305,506 tons. Ohio ranks fourth in the production of crushed stone (which includes crushed sandstone) out of 50 producing states. The top five states in the production of crushed stone, in descending order, are Texas, Pennsylvania, Missouri, Ohio, and Illinois. Ohio had the second highest increase in production compared to 2011, both as a percentage and total tonnage, trailing only Texas.

Estimated sales of limestone and dolomite totaled 58,188,739 tons, up 8.6 percent from 2011. Wyandot, Ottawa, Erie, Franklin, and Sandusky Counties accounted for 41.1 percent of those sales. The total value of limestone and dolomite sold in 2012 was \$494,626,494. Average price was \$8.50 per ton. An annual average of 1,040 employees worked an average of 192 days to produce limestone and dolomite. Total wages of \$69,573,897 were paid to a total of 1,347 employees (1,040 production employees and 307 non-production employees). The average annual wage, based on those employees for

whom wages were reported, was \$51,651.

Mining is a basic industry. Not only does it create production and non-production jobs in the industry itself, but it also creates jobs in ancillary businesses. Most directly, equipment suppliers and manufacturers, fuel companies, the highway and excavating contractors, and others who provide mining supplies and services will benefit. Additional employment will be created from downstream operations, including transportation, handling, and processing of the limestone products. The majority of these jobs will pay more than the average pay for the area. The local housing, food, clothing, and other retail businesses will benefit. Economic studies have shown that for every direct mining job, 3 to 7 ancillary jobs are created. An estimated 8 full time jobs will be created under each alternative. Obviously, jobs (direct and indirect) created under the Preferred Alternative will be supported the longest while those under the Non-Deg Alternative will be supported the shortest. As shown in the Perry County profile in Appendix C, wages in the Natural Resource and Mining sector are the second highest of any other sector, trailing only construction.

Ohio Administrative Code 3745-1-50(II) defines "Public need" as an activity or project that provides important tangible and intangible gains to society that satisfies the expressed or observed needs of the public where accrued benefits significantly outweigh reasonably foreseeable detriments. The proposed temporary lowering of water quality is necessary to accommodate important economic development and to meet a demonstrated public need. This operation will generate a significant amount of tax revenue for state, local and federal governments. Of particular importance will be the total amount of sales tax which could range from close to \$200,000 under the Preferred Alternative to about \$50,000 under the Non-Degradation Alternative. The social benefits are also significant. Increased tax revenues to local governments relate to better roads, schools, etc. Individuals valuation of self worth is increased when one knows he is a positive contributor to the betterment of the community.

(e) **10i) Describe and provide an estimate of the important social and economic benefits that may be lost as a result of this project. Include the effect on commercial and recreational use of the water resource, including effects of lower water quality on recreation, tourism, aesthetics, or other use and enjoyment by humans. (OAC 3745-1-05(B)(2)(e,f), and OAC 3745-1-05(C)(6)(e))**

PREFERRED AND MINIMAL DEGRADATION ALTERNATIVES

The economic impact statistics described above would be lost if the proposed mining operation does not take place. There is no current commercial or recreational use of the water resources associated with this site, which means the project does not jeopardize any current social and economic benefits potentially realized by those activities..

NON-DEGRADATION ALTERNATIVE

This alternative does not plan to affect any waters onsite, nor is there any current commercial or recreational use associated with this site.

(b) **10j) Describe environmental benefits, including water quality, lost and gained as a result of this project. Include the effects on the aquatic life, wildlife, threatened or endangered species. (OAC 3745-1-05 (B)(2)(e,f), OAC 3745-1-05 (C)(6)(b) and OAC 3745-1-54)**

PREFERRED and MINIMAL DEGRADATION ALTERNATIVES

The retention time created by sediment ponds will slightly reduce downstream flooding within the immediate Bennett Creek watershed, given the large size of its watershed. There are no downstream users or critical structures that will be impacted by the proposed mining operation. Furthermore, alteration of drainage patterns will not occur.

There are no threatened or endangered species which may be present in and around the project area.

The reclamation plan calls for the area, that is proposed to be affected, to be reclaimed to support "agriculture". The planting plan includes grasses and legumes that can be used in hay or crop

production. Furthermore, the riparian planting plan specifies tree planting along the Stream 8 corridor and wetland mitigation area.

Final reclamation will create a stable land surface that blends into surrounding contours. All mitigation activities will be done on-site. These measures will help support the overall protection of the hydrologic balance.

Table 3 show the aquatic feature Gain-Loss Summaries of the Preferred Alternate for Impoundments, Jurisdictional Wetlands and Jurisdictional Streams.

NON-DEGRADATION ALTERNATIVE

Not applicable. This alternative does not propose to affect water resources.

10k) Describe mitigation techniques proposed (except for the Non-Degradation Alternative):

- **Describe proposed Wetland Mitigation (see OAC 3745-1-54 and Primer)**
- **Describe proposed Stream, Lake, Pond Mitigation (see Primer)**

Refer to Appendix G, Compensatory Mitigation Plan.

MANAGEMENT AND MAINTENANCE

Site maintenance and management during mining and post mining will be conducted by Sergeant and/or subcontractors. Specifications for any necessary repairs will be developed as needed for the site.

CONCLUSIONS

A permit application requesting authorization for impacts to waters of the United States on a mineral extraction project has been prepared for Sergeant Stone, Inc. This document provides information to address permit requirements for a Section 404 - Individual Permit from the U. S. Army Corps of Engineers and a Section 401 Water Quality Certification from the Ohio Environmental Protection Agency. An alternatives analysis in the form of information required by Ohio's Anti-Degradation Rule is also provided. Information requested by the USACE and Ohio EPA was presented for Preferred Design, Minimal Degradation, and Non-Degradation alternatives and mitigation techniques were proposed for site impacts. The alternative for which this 401-404 proposal for authorization is sought is the Preferred Degradation alternative.

Mitigation will take place on-site. Stream mitigation will result in a greater length than that which will be disturbed to account for temporal loss and restore connectivity to the 100 acre Stream 9 watershed. Wetland mitigation will occur at one site (WMA #1), which will abut the west side of Stream 8.

The mining and reclamation plan together with the measures proposed in this request for 401 and 404 authorization demonstrates that Sergeant Stone, Inc. can not only extract the limestone in an environmentally safe manner, but also reclaim previously abandoned mine lands, achieve on-site mitigation, and return the land to productive use.

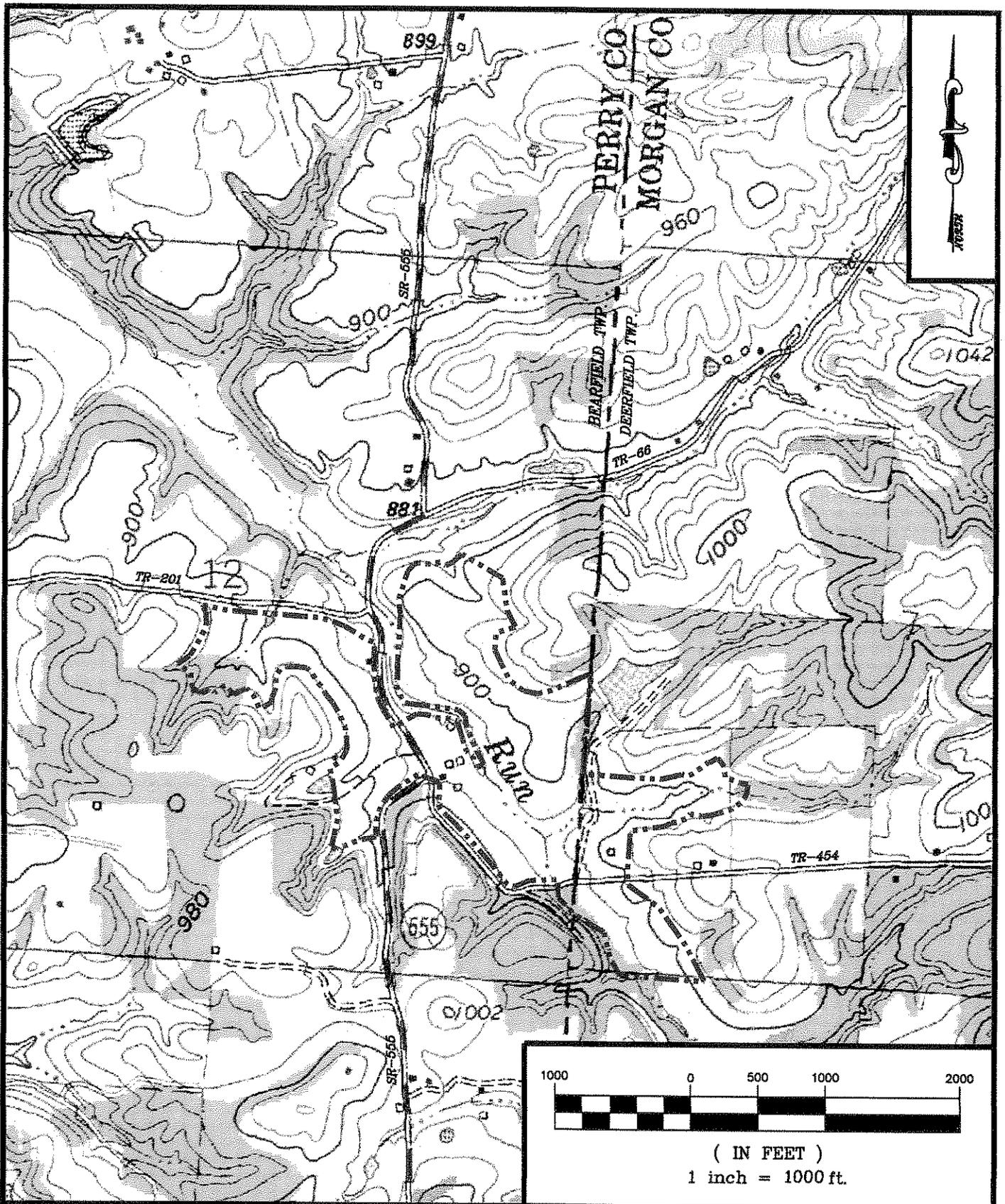
FIGURES

Fig. 1: Location Map

Fig. 2: Preferred Alternative Map

Fig. 3: Minimal Alternative Map

Fig. 4: Non-Degradation Alternative Map



LAT: 39° 42' 00"N LONG: 82° 01' 50"W
 Source: USGS 7.5 minute Deavertown quadrangle

 STUDY AREA, 99 acres

Figure 1: SITE LOCATION MAP
 SERGEANT STONE, INC.
 PERRY and MORGAN COUNTIES, OHIO
 DATE: 11/29/11 SCALE: 1" = 1000'

SHEET 1 OF 6



Linn Engineering, Inc. 740-452-7434
 Civil Engineering Consultants
 P.O. Box 2086 Zanesville, Ohio 43702-2086



LAT: 39° 42' 00.35823"N LONG: 82° 01' 49.63496"W
 Source: NRCS Web Soil <http://websoilsurvey.nrcs.usda.gov/app/>

 STUDY AREA, 92 acres

Figure 2: NRCS SOILS MAP
 SERGEANT STONE, INC.
 PERRY and MORGAN COUNTIES, OHIO
 DATE: 9/10/10 SCALE: 1" = 500'

PAGE 1 of 2



Linn Engineering, Inc. 740-452-7434
 Civil Engineering Consultants
 P.O. Box 2086 Zanesville, Ohio 43702-2086

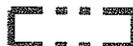
Map Unit Legend

Morgan County, Ohio (OH116)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BdF	Berks channery silt loam, 35 to 70 percent slopes	1.4	1.0%
Ne	Newark silt loam, frequently flooded	7.6	5.1%
WeC2	Wellston silt loam, 6 to 12 percent slopes, eroded	0.0	0.0%
WfB	Westgate silt loam, 2 to 6 percent slopes	3.3	2.2%
WfC2	Westgate silt loam, 6 to 12 percent slopes, eroded	16.8	11.2%
WgD2	Westmoreland-Guernsey complex, 12 to 20 percent slopes, eroded	8.7	5.8%
WgE2	Westmoreland-Guernsey complex, 20 to 35 percent slopes, eroded	0.1	0.1%
ZnB	Zanesville silt loam, 2 to 6 percent slopes	4.2	2.8%
Subtotals for Soil Survey Area		42.2	28.2%
Totals for Area of Interest		149.5	100.0%

Perry County, Ohio (OH127)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BvF	Brownsville silt loam, 40 to 70 percent slopes	11.7	7.8%
Ne	Newark silt loam, frequently flooded	18.3	12.2%
W	Water	0.4	0.3%
WhC	Wellston silt loam, 8 to 15 percent slopes	33.9	22.6%
ZnB	Zanesville silt loam, 1 to 8 percent slopes	20.9	14.0%
ZnC	Zanesville silt loam, 8 to 15 percent slopes	22.3	14.9%
Subtotals for Soil Survey Area		107.4	71.8%
Totals for Area of Interest		149.6	100.0%



LAT: 39° 42' 00.35823"N LONG: 82° 01' 49.63496"W
 Source: NRCS Web Soil <http://websoilsurvey.nrcs.usda.gov/app/>



STUDY AREA, 92 acres

Figure 3: HYDRIC SOILS MAP
 SERGEANT STONE, INC.
 PERRY and MORGAN COUNTIES, OHIO
 DATE: 9/10/10 SCALE: 1" = 600'

PAGE 1 of 3



Linn Engineering, Inc. 740-452-7434
 Civil Engineering Consultants
 P.O. Box 2086 Zanesville, Ohio 43702-2086

MAP LEGEND

Area of Interest (AOI)
 Area of Interest (AOI)

Soils
 Soil Map Units
Soil Ratings
 All Hydric
 Partially Hydric
 Not Hydric
 Unknown Hydric
 Not rated or not available

Political Features
 Cities

Water Features
 Oceans
 Streams and Canals

Transportation
 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

MAP INFORMATION

Map Scale: 1:7,730 if printed on A size (8.5" x 11") sheet.
 The soil surveys that comprise your AOI were mapped at 1:15,840.
 Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: UTM Zone 17N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Morgan County, Ohio
 Survey Area Data: Version 8, Jan 9, 2009
 Soil Survey Area: Perry County, Ohio
 Survey Area Data: Version 8, Jan 9, 2009

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Date(s) aerial images were photographed: 9/11/2004

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydric Rating by Map Unit

Hydric Rating by Map Unit— Summary by Map Unit — Morgan County, Ohio				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BdF	Berks channery silt loam, 35 to 70 percent slopes	Unknown Hydric	2.7	1.7%
Ne	Newark silt loam, frequently flooded	Partially Hydric	7.9	5.1%
WeC2	Wellston silt loam, 6 to 12 percent slopes, eroded	Unknown Hydric	0.5	0.3%
WfB	Westgate silt loam, 2 to 6 percent slopes	Unknown Hydric	3.5	2.3%
WfC2	Westgate silt loam, 6 to 12 percent slopes, eroded	Unknown Hydric	17.1	11.0%
WgD2	Westmoreland-Guernsey complex, 12 to 20 percent slopes, eroded	Unknown Hydric	9.3	6.0%
WgE2	Westmoreland-Guernsey complex, 20 to 35 percent slopes, eroded	Unknown Hydric	0.0	0.0%
ZnB	Zanesville silt loam, 2 to 6 percent slopes	Unknown Hydric	4.3	2.8%
Subtotals for Soil Survey Area			45.3	29.2%
Totals for Area of Interest			155.0	100.0%

Hydric Rating by Map Unit— Summary by Map Unit — Perry County, Ohio				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BvF	Brownsville silt loam, 40 to 70 percent slopes	Unknown Hydric	12.5	8.1%
Ne	Newark silt loam, frequently flooded	Partially Hydric	18.3	11.8%
W	Water	Unknown Hydric	0.6	0.4%
WhC	Wellston silt loam, 8 to 15 percent slopes	Unknown Hydric	34.6	22.3%
ZnB	Zanesville silt loam, 1 to 8 percent slopes	Unknown Hydric	21.1	13.6%
ZnC	Zanesville silt loam, 8 to 15 percent slopes	Unknown Hydric	22.5	14.5%
Subtotals for Soil Survey Area			109.7	70.8%
Totals for Area of Interest			155.0	100.0%

Rating Options

Aggregation Method: Absence/Presence

Tie-break Rule: Lower





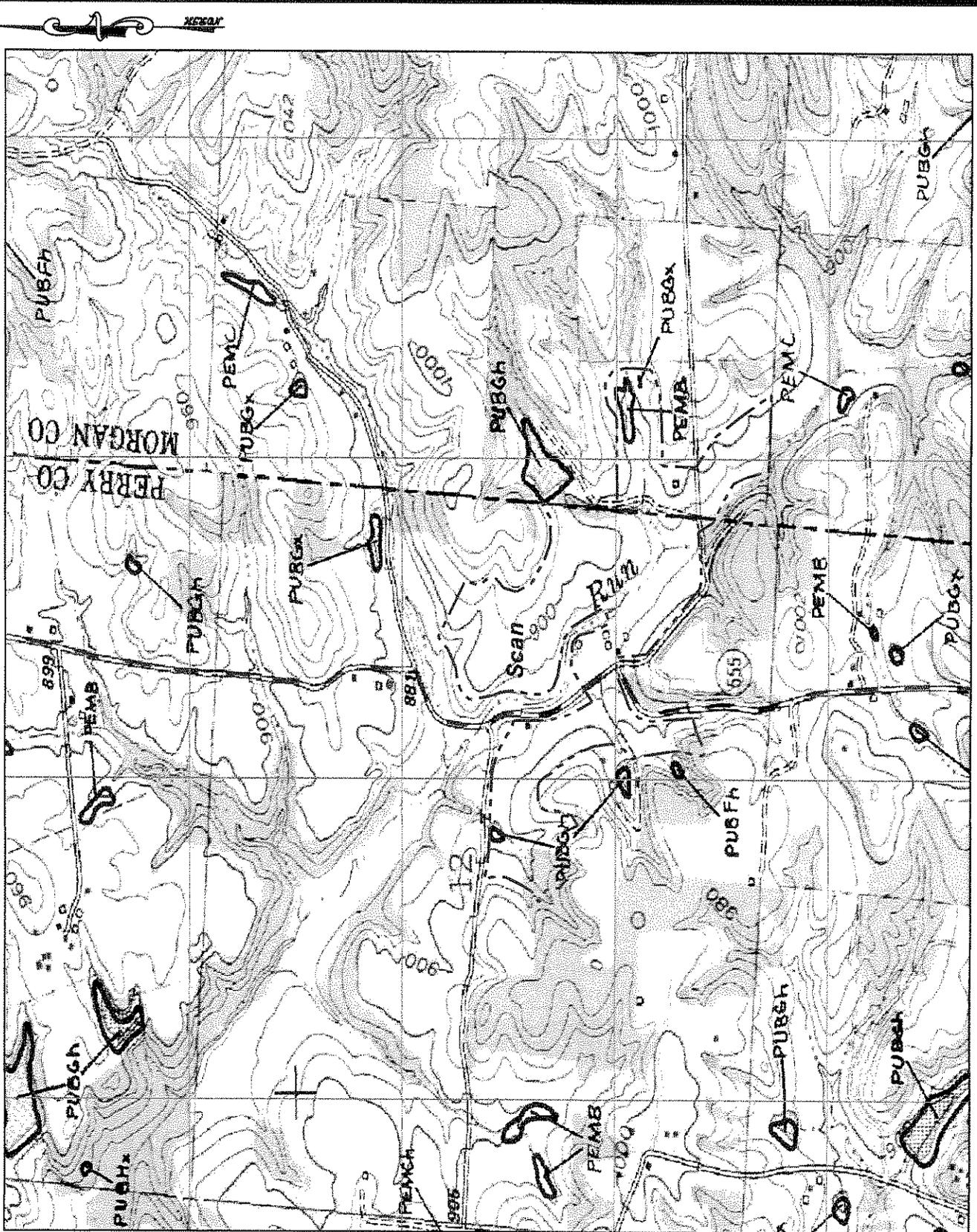
LAT: 39° 42' 00.35823"N LONG: 82° 01' 49.63496"W
 Source: Ohio Department of Transportation, 2006

 STUDY AREA, 92 acres

Figure 4: AERIAL PHOTO
 SERGEANT STONE, INC.
 PERRY and MORGAN COUNTIES, OHIO
 DATE: 9/10/10 SCALE: 1" = 1000'



Linn Engineering, Inc. 740-462-7434
 Civil Engineering Consultants
 P.O. Box 2086 Zanesville, Ohio 43702-2086



LAT: 39° 42' 00.35823"N LONG: 82° 01' 49.63496"W
 Source: <http://www.fws.gov/wetlands/data/index.html>

 STUDY AREA, 92 acres

Figure 5: NATIONAL WETLAND INVENTORY MAP
 SERGEANT STONE, INC.
 PERRY and MORGAN COUNTIES, OHIO
 DATE: 9/10/10 SCALE: 1" = 500'



Linn Engineering, Inc. 740-452-7434
 Civil Engineering Consultants
 P.O. Box 2086 Zanesville, Ohio 43702-2086

SERGEANT STONE, INC.
DEAVERTOWN LIMESTONE MINE SITE
Proposal for Section 401 Permit

APPENDIX A

USACE Jurisdictional Determination Letter

Aquatic Features Map

Site Photographs

Wetland Data Forms: Ohio Rapid Assessment Method (ORAM)

Stream Data Forms: Primary Headwater Habitat Evaluation Form (HHEI)



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
HUNTINGTON DISTRICT, CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON, WEST VIRGINIA 25701-2070

MAR 18 2011

Operations and Readiness Division
Regulatory Branch
2010-930-MUS

Mr. Tim Linn
Sergeant Stone, Inc.
Post Office Box 2086
Zanesville, Ohio 43702-2086

Dear Mr. Linn:

I refer to a "Jurisdictional Waters Delineation Report Deavertown Site... Sergeant Stone...." and dated September 10, 2010, the site visit conducted by members of Ms. Teresa Spagna and Mr. Jim Spence on November 10, 2010, and subsequent revisions to the delineation report dated November 17, 2010. The preceding information is concerning potential waters of the United States for the approximate 98 acre study area known as the Deavertown Site. The study area (Latitude N38°42'00" and Longitude W81°01'50") is bisected by State Route 555 and is located approximately 2.5 miles south of Deavertown and 1.5 miles north of Porterville, in the Bearfield Township of Perry County and Deerfield Township of Morgan County, Ohio. A total of 21 potential waters of the United States was identified on the 98-acre study area: 13 channels (Stream 1 Lower, Stream 1 Upper, Stream 2, Stream 3, Stream 4, Stream 5, Stream 6, Stream 6-9, Stream 7, Stream 8, Stream 9, Stream 10 and Stream 11) and 8 wetlands (Wetlands A through H).

The United States Army Corps of Engineers (USACE) authority to regulate waters of the United States is based on the definitions and limits of jurisdiction contained in 33 CFR 328 and 33 CFR 329. Section 404 of the Clean Water Act requires that a Department of the Army (DA) permit be obtained prior to placing dredged or fill material into waters of the United States, including wetlands. Section 10 of the Rivers and Harbors Act of 1899 requires that a DA permit be obtained for any work in, on, over or under a navigable water. Our December 2, 2008 headquarters guidance entitled "Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States" was followed in the final verification of Clean Water jurisdiction.

Based on a review of the submitted information, a site visit conducted on November 10, 2010 and other information available to us, it has been determined that the following aquatic resources are waters of the United States subject to federal regulation under Section 404 of the Clean Water Act: 1,059 linear feet of perennial flowing relatively permanent waters (RPW) (Stream 8-Bennett Run); 713 linear feet of intermittent-seasonally flowing RPW (Stream 11); 5,315 linear feet of ephemeral flowing non-RPW (Streams 1 Lower, 1 Upper, 2, 3, 4, 5, 6, 6-9, and 7); and 0.38 acre of wetlands (Wetlands A, B, C, D, E, and F).

Stream 8 is an indirect tributary to a traditionally navigable water (TNW), the Muskingum River, and is jurisdictional by definition. Wetland F is located adjacent to Stream 8 and has been determined to have a significant nexus to the Muskingum River. Stream 11 exhibits a surface water connection to Stream 8, a perennial RPW, and is an indirect tributary to the Muskingum River and is therefore jurisdictional. Streams 1 Upper, 1 Lower, 2, 3, 4, 5, 6, 7 and 6-9 are ephemeral non-RPW that exhibit surface water connections to Stream 8 and have been determined to have a significant nexus to the Muskingum River and are therefore jurisdictional. Wetlands A, B, C, all of which abut Stream 1 Lower, Wetland D, which abuts Stream 4, and Wetland E, which abuts Stream 5, have also been determined to have a significant nexus to the Muskingum River and are therefore jurisdictional. The 10 streams totaling 7,087 linear feet and 6 wetlands totaling 0.38 acre have been correctly delineated as illustrated on revised "Aquatic Features Map" dated November 17, 2010, and are waters of the United States, subject to regulation under Section 404 of the Clean Water Act.

Wetland G (0.05 acre) is a fringe wetland around the perimeter of a man-made farm pond. Wetland H (0.27 acre) is an emergent wetland immediately downgrade of an oil-gas well. Wetlands G and H are surrounded by uplands, with no surface water connection to a water of the United States and no tie to interstate or foreign commerce. Based on the absence of a hydrological connection or adjacency to a water of the United States, the wetlands are determined to be isolated. Isolated waters are only regulated under Section 404 of the Clean Water Act when the use, degradation or destruction of which could affect interstate or foreign commerce. Channels 9 Upper, 9 Lower and 10 are not part of a tributary system and are not considered water of the United States. No Section 404 Clean Water Act authorization would be required from this office for the discharge of dredged or fill material into Wetlands G and H and Channels 9 Upper, 9 Lower and 10. However, you should contact the Ohio Environmental Protection Agency, Division of Surface Water at 614-644-2000, to determine state permit requirements.

In accordance with the June 5, 2007 Joint Memorandum between the United States Environmental Protection Agency (USEPA) and the USACE and the January 28, 2008 USACE Memorandum regarding coordination on jurisdictional determinations, this determination was coordinated with the USEPA Region 5 and USACE Headquarters, with coordination completed on January 19, 2011. Attachment 1 of this letter provides tables that list each jurisdictional and non-jurisdictional wetlands and streams delineated in the 98 acre study area.

Based on the information provided, your delineation is verified. This jurisdictional verification is valid for a period of five years from the date of this letter unless new information warrants revision of the delineation prior to the expiration date. This letter contains an approved jurisdictional determination for the subject site. If you object to this determination, you may request an administrative appeal under USACE regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the Great Lakes and Ohio River Division Office at the following address:

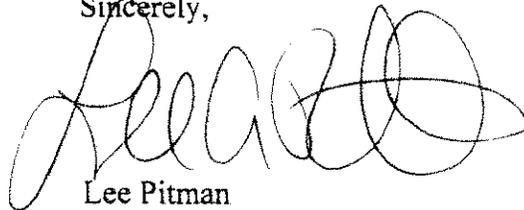
Appeal Review Officer
United States Army Corps of Engineers
Great Lakes and Ohio River Division
550 Main Street, Room 10524
Cincinnati, Ohio 45202-3222
Phone: (513) 684-6212 Fax: (513) 684-2460

In order for an RFA to be accepted by the USACE, the USACE must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by MAY 20 2011. **It is not necessary to submit an RFA form to the Division office if you do not object to the determination in this letter.**

This determination has been conducted to identify the limits of the USACE's Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are United States Department of Agriculture (USDA) program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

If you have any questions concerning the above, please contact Teresa Spagna of the North Regulatory Section at 304-399-5210 or teresa.d.spagna@usace.army.mil.

Sincerely,



Lee Pitman
Regulatory Project Manager
North Regulatory Section

Enclosure

Copy furnish letter only to:

Mr. Tom Harcarik
Ohio EPA
Lazarus Government Building
PO Box 1049
Columbus, OH 43216-3669

Applicant: Sergeant Stone		File Number: 2010-930	Date: 18 2011
Attached is:			See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
	PROFFERED PERMIT (Standard Permit or Letter of permission)		B
	PERMIT DENIAL		C
x	APPROVED JURISDICTIONAL DETERMINATION		D
	PRELIMINARY JURISDICTIONAL DETERMINATION		E

SECTION II: The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 321.

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

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

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

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

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

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

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

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

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

POINT OF CONTACT FOR QUESTIONS OR INFORMATION

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

Ginger Mullins, Chief, Regulatory Branch, 304-399-5710
Rebecca Rutherford, Chief, North Regulatory Section, 304-399-5210
Mark Taylor, Chief, Energy Resource Section, 304-399-5610
LuAnne Conley, Chief, South Regulatory Section, 304-399-5710
Address: U.S. Army Corps of Engineers
Regulatory Branch
502 8th Street
Huntington, WV 25701

If you only have questions regarding the appeal process you may also contact:

Pauline Thorndike
U.S. Army Corps of Engineers
Great Lakes and Ohio River Division
550 Main Street, Room 10032
Cincinnati, OH 45202-3222
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RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.

Date:

Telephone number:



PHOTOGRAPH 1
Wetland A



PHOTOGRAPH 2
Wetland B and Stream 1 (lower)



PHOTOGRAPH 3
Wetland C



PHOTOGRAPH 4
Stream 2 (looking upstream)



PHOTOGRAPH 5
Stream 1 (upper looking upstream)



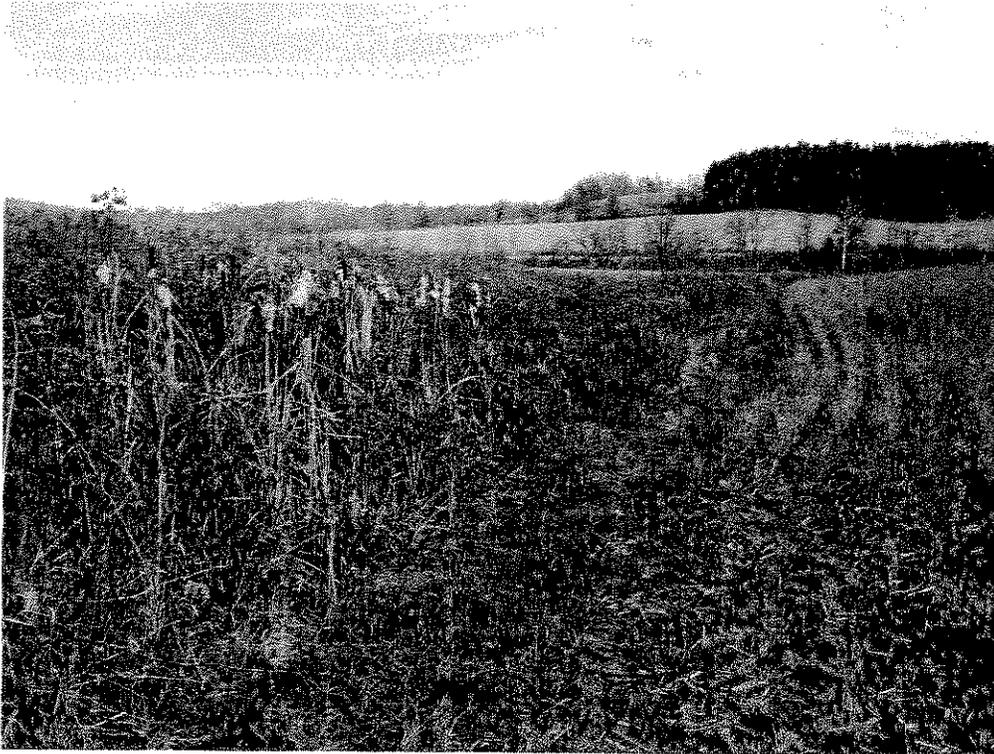
PHOTOGRAPH 6
Stream 3 (looking upstream)



PHOTOGRAPH 7
Stream 8 (Bennett Run) at Stream 4



PHOTOGRAPH 8
Wetland D and Stream 4 (lower)



PHOTOGRAPH 9
Wetland D and Stream 4 (looking downstream)



PHOTOGRAPH 10
Stream 5 at Bennett Run (looking downstream)



PHOTOGRAPH 11
Wetland E



PHOTOGRAPH 12
Stream 6 (looking upstream)



PHOTOGRAPH 23
Stream 11 Intermittent (looking downstream)



PHOTOGRAPH 24
Wetland F

Version 5.0	Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: <http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx>

Background Information

Name: Jason Plummer	
Date: 10-14-14	
Affiliation: Linn Engineering, Inc.	
Address: 534 Market Street; Zanesville, Ohio 43701	
Phone Number: (740) 452-7434	
e-mail address: jplummer@linnengineering.net	
Name of Wetland: WTL-A	
Vegetation Community(ies):	
HGM Class(es):	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc. Please refer to Figure 1: Site Location Map	
Lat/Long or UTM Coordinate	Lat: 39.7032 N, Long: 82.0347 W
USGS Quad Name	Deavertown
County	Perry / Morgan
Township	Bearfield / Deerfield
Section and Subsection	12 / 7
Hydrologic Unit Code	050400040500
Site Visit	
National Wetland Inventory Map	Figure 5
Ohio Wetland Inventory Map	
Soil Survey	Figure 2
Delineation report/map	

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	Y	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	Y	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	Y	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	Y	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	Y	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	Y	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Check one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 2	NO <input checked="" type="checkbox"/> Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 3	NO <input checked="" type="checkbox"/> Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 4	NO <input checked="" type="checkbox"/> Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 5	NO <input checked="" type="checkbox"/> Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES <input type="checkbox"/> Wetland is a Category 1 wetland Go to Question 6	NO <input checked="" type="checkbox"/> Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 7	NO <input checked="" type="checkbox"/> Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 8a	NO <input checked="" type="checkbox"/> Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 8b	NO <input checked="" type="checkbox"/> Go to Question 8b

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO <input checked="" type="checkbox"/> Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES <input type="checkbox"/> Go to Question 9b	NO <input checked="" type="checkbox"/> Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 10	NO <input type="checkbox"/> Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES <input type="checkbox"/> Go to Question 9d	NO <input type="checkbox"/> Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 10	NO <input type="checkbox"/> Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 10	NO <input type="checkbox"/> Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 11	NO <input checked="" type="checkbox"/> Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO <input checked="" type="checkbox"/> Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanithus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: WTL-A	Rater(s): THL, NL	Date: 11-14-09
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0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- >50 acres (>20.2ha) (6 pts)
- 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- 10 to <25 acres (4 to <10.1ha) (4 pts)
- 3 to <10 acres (1.2 to <4ha) (3 pts)
- 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

3	3
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

8	11
max 30 pts.	subtotal

Metric 3. Hydrology.

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

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

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

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

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

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

3b. Connectivity. Score all that apply.

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

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

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed	
<input type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input	<input type="checkbox"/> point source (non-stormwater) <input type="checkbox"/> filling/grading <input type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input checked="" type="checkbox"/> other farming

6	17
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

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

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

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

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

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

Check all disturbances observed	
<input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants	<input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input checked="" type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

17
subtotal this page

Site: WTL-A	Rater(s): THL, NL	Date: 11-14-09
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17
subtotal first page

0	17
max 10 pts.	subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- Bog (10)
- Fen (10)
- Old growth forest (10)
- Mature forested wetland (5)
- Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- Lake Erie coastal/tributary wetland-restricted hydrology (5)
- Lake Plain Sand Prairies (Oak Openings) (10)
- Relict Wet Prairies (10)
- Known occurrence state/federal threatened or endangered species (10)
- Significant migratory songbird/water fowl habitat or usage (10)
- Category 1 Wetland. See Question 1 Qualitative Rating (-10)

20

3	19
max 20 pts.	subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- 1 Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other

6b. Horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high (4)
- Moderate (3)
- Moderately low (2)
- Low (1)
- None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

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

23

23
19

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		check answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input type="checkbox"/> NO <input type="checkbox"/>	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="checkbox"/> NO <input type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	3	
	Metric 3. Hydrology	8	
	Metric 4. Habitat	6	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	2	
	TOTAL SCORE	19	Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Check one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES <input type="checkbox"/> Wetland is categorized as a Category 3 wetland	NO <input checked="" type="checkbox"/>	Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status	NO <input checked="" type="checkbox"/>	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES <input type="checkbox"/> Wetland is categorized as a Category 1 wetland	NO <input checked="" type="checkbox"/>	Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES <input checked="" type="checkbox"/> Wetland is assigned to the appropriate category based on the scoring range	NO <input type="checkbox"/>	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES <input type="checkbox"/> Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO <input checked="" type="checkbox"/>	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES <input type="checkbox"/> Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO <input checked="" type="checkbox"/> Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one Category 1 Category 2 Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: <http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx>

Background Information

Name: Jason Plummer	
Date: 10-14-14	
Affiliation: Linn Engineering, Inc.	
Address: 534 Market Street; Zanesville, Ohio 43701	
Phone Number: (740) 452-7434	
e-mail address: jplummer@linnengineering.net	
Name of Wetland: WTL-B	
Vegetation Community(ies):	
HGM Class(es):	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc. Please refer to Figure 1: Site Location Map	
Lat/Long or UTM Coordinate	Lat: 39.7029 N, Long: 82.0349 W
USGS Quad Name	Deavertown
County	Perry / Morgan
Township	Bearfield / Deerfield
Section and Subsection	12 / 7
Hydrologic Unit Code	050400040500
Site Visit	
National Wetland Inventory Map	Figure 5
Ohio Wetland Inventory Map	
Soil Survey	Figure 2
Delineation report/map	

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	Y	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	Y	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	Y	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	Y	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	Y	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	Y	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Check one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 2	NO <input checked="" type="checkbox"/> Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 3	NO <input checked="" type="checkbox"/> Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 4	NO <input checked="" type="checkbox"/> Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 5	NO <input checked="" type="checkbox"/> Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES <input type="checkbox"/> Wetland is a Category 1 wetland Go to Question 6	NO <input checked="" type="checkbox"/> Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 7	NO <input checked="" type="checkbox"/> Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 8a	NO <input checked="" type="checkbox"/> Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 8b	NO <input checked="" type="checkbox"/> Go to Question 8b

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO <input checked="" type="checkbox"/> Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES <input type="checkbox"/> Go to Question 9b	NO <input checked="" type="checkbox"/> Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 10	NO <input type="checkbox"/> Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES <input type="checkbox"/> Go to Question 9d	NO <input type="checkbox"/> Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 10	NO <input type="checkbox"/> Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 10	NO <input type="checkbox"/> Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 11	NO <input checked="" type="checkbox"/> Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO <input checked="" type="checkbox"/> Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: WTL-B	Rater(s): THL, NL	Date: 11-14-09
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0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- >50 acres (>20.2ha) (6 pts)
- 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- 10 to <25 acres (4 to <10.1ha) (4 pts)
- 3 to <10 acres (1.2 to <4ha) (3 pts)
- 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

3	3
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

5	8
max 30 pts.	subtotal

Metric 3. Hydrology.

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

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

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

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

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

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

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

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

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

Check all disturbances observed	
<input type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input	<input type="checkbox"/> point source (non-stormwater) <input type="checkbox"/> filling/grading <input type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input checked="" type="checkbox"/> other farming

3	11
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

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

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

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

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

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

Check all disturbances observed	
<input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants	<input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input checked="" type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

14
11
subtotal this page

Site: WTL-B	Rater(s): THL, NL	Date: 11-14-09
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11

subtotal first page

0	11
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max 10 pts. subtotal

14

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- Bog (10)
- Fen (10)
- Old growth forest (10)
- Mature forested wetland (5)
- Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- Lake Erie coastal/tributary wetland-restricted hydrology (5)
- Lake Plain Sand Prairies (Oak Openings) (10)
- Relict Wet Prairies (10)
- Known occurrence state/federal threatened or endangered species (10)
- Significant migratory songbird/water fowl habitat or usage (10)
- Category 1 Wetland. See Question 1 Qualitative Rating (-10)

20

6	17
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max 20 pts. subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- 2 Emergent
- 0 Shrub
- Forest
- Mudflats
- Open water
- Other _____

6b. Horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high(4)
- Moderate (3)
- Moderately low (2)
- Low (1)
- None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list.

Add or deduct points for coverage

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

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

20

17

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		check answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input type="checkbox"/> NO <input type="checkbox"/>	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="checkbox"/> NO <input type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	3	
	Metric 3. Hydrology	5	
	Metric 4. Habitat	3	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	6	
	TOTAL SCORE	17	Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Check one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one Category 1 Category 2 Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: <http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx>

Background Information

Name: Jason Plummer	
Date: 10-14-14	
Affiliation: Linn Engineering, Inc.	
Address: 534 Market Street; Zanesville, Ohio 43701	
Phone Number: (740) 452-7434	
e-mail address: jplummer@linnengineering.net	
Name of Wetland: WTL-C	
Vegetation Community(ies):	
HGM Class(es):	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc. Please refer to Figure 1: Site Location Map	
Lat/Long or UTM Coordinate	Lat: 39.7024 N, Long: 82.0358 W
USGS Quad Name	Deavertown
County	Perry / Morgan
Township	Bearfield / Deerfield
Section and Subsection	12 / 7
Hydrologic Unit Code	050400040500
Site Visit	
National Wetland Inventory Map	Figure 5
Ohio Wetland Inventory Map	
Soil Survey	Figure 2
Delineation report/map	

Name of Wetland: WTL-C	
Wetland Size (acres, hectares): 0.03 acre	
<p>Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc. Refer to Figure 1: Site Location Map, or the Aquatic Features Map</p>	
<p>Comments, Narrative Discussion, Justification of Category Changes:</p>	
Final score : 50.5	Category: 2

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	Y	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	Y	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	Y	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	Y	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	Y	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	Y	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Check one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 2	NO <input checked="" type="checkbox"/> Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 3	NO <input checked="" type="checkbox"/> Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 4	NO <input checked="" type="checkbox"/> Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 5	NO <input checked="" type="checkbox"/> Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES <input type="checkbox"/> Wetland is a Category 1 wetland Go to Question 6	NO <input checked="" type="checkbox"/> Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 7	NO <input checked="" type="checkbox"/> Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 8a	NO <input checked="" type="checkbox"/> Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 8b	NO <input checked="" type="checkbox"/> Go to Question 8b

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO <input checked="" type="checkbox"/> Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES <input type="checkbox"/> Go to Question 9b	NO <input checked="" type="checkbox"/> Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 10	NO <input type="checkbox"/> Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES <input type="checkbox"/> Go to Question 9d	NO <input type="checkbox"/> Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 10	NO <input type="checkbox"/> Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 10	NO <input type="checkbox"/> Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 11	NO <input checked="" type="checkbox"/> Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO <input checked="" type="checkbox"/> Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: WTL-C	Rater(s): THL, NL	Date: 11-14-09
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0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- >50 acres (>20.2ha) (6 pts)
- 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- 10 to <25 acres (4 to <10.1ha) (4 pts)
- 3 to <10 acres (1.2 to <4ha) (3 pts)
- 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

9 9

10.5	10.5
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

27

18	28.5
max 30 pts.	subtotal

Metric 3. Hydrology.

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

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

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

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

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

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

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

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

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

Check all disturbances observed	
<input type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input	<input type="checkbox"/> point source (non-stormwater) <input type="checkbox"/> filling/grading <input type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input type="checkbox"/> other

41

14	42.5
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

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

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

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

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

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

Check all disturbances observed	
<input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input checked="" type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants	<input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input checked="" type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

41

42.5
subtotal this page

Site: WTL-C	Rater(s): THL, NL	Date: 11-14-09
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42.5 subtotal first page

0 max 10 pts.	42.5 subtotal
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Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- Bog (10)
- Fen (10)
- Old growth forest (10)
- Mature forested wetland (5)
- Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- Lake Erie coastal/tributary wetland-restricted hydrology (5)
- Lake Plain Sand Prairies (Oak Openings) (10)
- Relict Wet Prairies (10)
- Known occurrence state/federal threatened or endangered species (10)
- Significant migratory songbird/water fowl habitat or usage (10)
- Category 1 Wetland. See Question 1 Qualitative Rating (-10)

41

8 max 20 pts.	50.5 subtotal
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Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- 2 Emergent
- 0 Shrub
- Forest
- Mudflats
- Open water
- Other _____

6b. Horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high(4)
- Moderate (3)
- Moderately low (2)
- Low (1)
- None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

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

6d. Microtopography.

Score all present using 0 to 3 scale.

- 2 Vegetated hummucks/tussucks
- 0 Coarse woody debris >15cm (6in)
- 0 Standing dead >25cm (10in) dbh
- Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

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

9 50

50 50.5

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		check answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input type="checkbox"/> NO <input type="checkbox"/>	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="checkbox"/> NO <input type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.
Question 10. Oak Openings	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	10.5	
	Metric 3. Hydrology	18	
	Metric 4. Habitat	14	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	8	
	TOTAL SCORE	50.5	Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Check one		Evaluation of Categorization Result of ORAM
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10</p>	<p>YES <input type="checkbox"/></p> <p>Wetland is categorized as a Category 3 wetland</p>	<p>NO <input checked="" type="checkbox"/></p>	<p>Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM</p>
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 1, 8b, 9b, 9e, 11</p>	<p>YES <input type="checkbox"/></p> <p>Wetland should be evaluated for possible Category 3 status</p>	<p>NO <input checked="" type="checkbox"/></p>	<p>Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.</p>
<p>Did you answer "Yes" to</p> <p>Narrative Rating No. 5</p>	<p>YES <input type="checkbox"/></p> <p>Wetland is categorized as a Category 1 wetland</p>	<p>NO <input checked="" type="checkbox"/></p>	<p>Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM</p>
<p>Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?</p>	<p>YES <input checked="" type="checkbox"/></p> <p>Wetland is assigned to the appropriate category based on the scoring range</p>	<p>NO <input type="checkbox"/></p>	<p>If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.</p>
<p>Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?</p>	<p>YES <input type="checkbox"/></p> <p>Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria</p>	<p>NO <input checked="" type="checkbox"/></p>	<p>Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).</p>
<p>Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?</p>	<p>YES <input type="checkbox"/></p> <p>Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form</p>	<p>NO <input checked="" type="checkbox"/></p> <p>Wetland is assigned to category as determined by the ORAM.</p>	<p>A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.</p>

Final Category

Choose one Category 1 Category 2 Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: <http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx>

Background Information

Name: Jason Plummer	
Date: 10-14-14	
Affiliation: Linn Engineering, Inc.	
Address: 534 Market Street; Zanesville, Ohio 43701	
Phone Number: (740) 452-7434	
e-mail address: jplummer@linnengineering.net	
Name of Wetland: WTL-D	
Vegetation Community(ies):	
HGM Class(es):	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc. Please refer to Figure 1: Site Location Map	
Lat/Long or UTM Coordinate	Lat: 39.7004 N, Long: 82.0319 W
USGS Quad Name	Deavertown
County	Perry / Morgan
Township	Bearfield / Deerfield
Section and Subsection	12 / 7
Hydrologic Unit Code	050400040500
Site Visit	
National Wetland Inventory Map	Figure 5
Ohio Wetland Inventory Map	
Soil Survey	Figure 2
Delineation report/map	

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	Y	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	Y	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	Y	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	Y	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	Y	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	Y	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Check one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 2	NO <input checked="" type="checkbox"/> Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 3	NO <input checked="" type="checkbox"/> Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 4	NO <input checked="" type="checkbox"/> Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 5	NO <input checked="" type="checkbox"/> Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES <input type="checkbox"/> Wetland is a Category 1 wetland Go to Question 6	NO <input checked="" type="checkbox"/> Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 7	NO <input checked="" type="checkbox"/> Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 8a	NO <input checked="" type="checkbox"/> Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 8b	NO <input checked="" type="checkbox"/> Go to Question 8b

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO <input checked="" type="checkbox"/> Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES <input type="checkbox"/> Go to Question 9b	NO <input checked="" type="checkbox"/> Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 10	NO <input type="checkbox"/> Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES <input type="checkbox"/> Go to Question 9d	NO <input type="checkbox"/> Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 10	NO <input type="checkbox"/> Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 10	NO <input type="checkbox"/> Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 11	NO <input checked="" type="checkbox"/> Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO <input checked="" type="checkbox"/> Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: WTL-D	Rater(s): THL, NL	Date: 11-14-09
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1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- >50 acres (>20.2ha) (6 pts)
- 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- 10 to <25 acres (4 to <10.1ha) (4 pts)
- 3 to <10 acres (1.2 to <4ha) (3 pts)
- 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

3	4
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

7	11
max 30 pts.	subtotal

Metric 3. Hydrology.

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

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/Intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

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

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

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

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

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

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

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

Check all disturbances observed	
<input type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input	<input type="checkbox"/> point source (non-stormwater) <input type="checkbox"/> filling/grading <input type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input checked="" type="checkbox"/> other farming

3.5	14.5
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

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

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

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

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

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

Check all disturbances observed	
<input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants	<input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input checked="" type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

14.5
subtotal this page

Site: WTL-D	Rater(s): THL, NL	Date: 11-14-09
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14.5
subtotal first page

0	14.5
max 10 pts.	subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- Bog (10)
- Fen (10)
- Old growth forest (10)
- Mature forested wetland (5)
- Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- Lake Erie coastal/tributary wetland-restricted hydrology (5)
- Lake Plain Sand Prairies (Oak Openings) (10)
- Relict Wet Prairies (10)
- Known occurrence state/federal threatened or endangered species (10)
- Significant migratory songbird/water fowl habitat or usage (10)
- Category 1 Wetland. See Question 1 Qualitative Rating (-10)

4	18.5
max 20 pts.	subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- 1 Emergent
- 0 Shrub
- Forest
- Mudflats
- Open water
- Other _____

6b. Horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high(4)
- Moderate (3)
- Moderately low (2)
- Low (1)
- None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

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

18.5

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		check answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input type="checkbox"/> NO <input type="checkbox"/>	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="checkbox"/> NO <input type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	1	
	Metric 2. Buffers and surrounding land use	3	
	Metric 3. Hydrology	7	
	Metric 4. Habitat	3.5	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	4	
	TOTAL SCORE	18.5	Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Check one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES <input type="checkbox"/> Wetland is categorized as a Category 3 wetland	NO <input checked="" type="checkbox"/>	Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status	NO <input checked="" type="checkbox"/>	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES <input type="checkbox"/> Wetland is categorized as a Category 1 wetland	NO <input checked="" type="checkbox"/>	Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES <input checked="" type="checkbox"/> Wetland is assigned to the appropriate category based on the scoring range	NO <input type="checkbox"/>	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES <input type="checkbox"/> Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO <input checked="" type="checkbox"/>	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic <i>OR</i> habitat, <i>OR</i> recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES <input type="checkbox"/> Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO <input checked="" type="checkbox"/> Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one Category 1 Category 2 Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: <http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx>

Background Information

Name: Jason Plummer	
Date: 10-14-14	
Affiliation: Linn Engineering, Inc.	
Address: 534 Market Street; Zanesville, Ohio 43701	
Phone Number: (740) 452-7434	
e-mail address: jplummer@linnengineering.net	
Name of Wetland: WTL-E	
Vegetation Community(ies):	
HGM Class(es):	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc. Please refer to Figure 1: Site Location Map	
Lat/Long or UTM Coordinate	Lat: 39.7005 N, Long: 82.0304 W
USGS Quad Name	Deavertown
County	Perry / Morgan
Township	Bearfield / Deerfield
Section and Subsection	12 / 7
Hydrologic Unit Code	050400040500
Site Visit	
National Wetland Inventory Map	Figure 5
Ohio Wetland Inventory Map	
Soil Survey	Figure 2
Delineation report/map	

Name of Wetland: WTL-E	
Wetland Size (acres, hectares): 0.01 acre	
<p>Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc. Refer to Figure 1: Site Location Map, or the Aquatic Features Map</p>	
<p>Comments, Narrative Discussion, Justification of Category Changes:</p>	
Final score : 15	Category: 1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	Y	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	Y	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	Y	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	Y	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	Y	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	Y	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Check one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 2	NO <input checked="" type="checkbox"/> Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 3	NO <input checked="" type="checkbox"/> Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 4	NO <input checked="" type="checkbox"/> Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 5	NO <input checked="" type="checkbox"/> Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES <input type="checkbox"/> Wetland is a Category 1 wetland Go to Question 6	NO <input checked="" type="checkbox"/> Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 7	NO <input checked="" type="checkbox"/> Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 8a	NO <input checked="" type="checkbox"/> Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 8b	NO <input checked="" type="checkbox"/> Go to Question 8b

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO <input checked="" type="checkbox"/> Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES <input type="checkbox"/> Go to Question 9b	NO <input checked="" type="checkbox"/> Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 10	NO <input type="checkbox"/> Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES <input type="checkbox"/> Go to Question 9d	NO <input type="checkbox"/> Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 10	NO <input type="checkbox"/> Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 10	NO <input type="checkbox"/> Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 11	NO <input checked="" type="checkbox"/> Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO <input checked="" type="checkbox"/> Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinarum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: WTL-E	Rater(s): THL, NL	Date: 11-14-09
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0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- >50 acres (>20.2ha) (6 pts)
- 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- 10 to <25 acres (4 to <10.1ha) (4 pts)
- 3 to <10 acres (1.2 to <4ha) (3 pts)
- 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

3	3
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

11	14
max 30 pts.	subtotal

Metric 3. Hydrology.

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

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

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

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

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

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

3b. Connectivity. Score all that apply.

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

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

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed	
<input type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input	<input type="checkbox"/> point source (non-stormwater) <input type="checkbox"/> filling/grading <input type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input checked="" type="checkbox"/> other farming

6	20
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

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

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

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

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

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

Check all disturbances observed	
<input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants	<input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input checked="" type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

20
subtotal this page

Site: WTL-E	Rater(s): THL, NL	Date: 11-14-09
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20
subtotal first page

0	20
max 10 pts.	subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- Bog (10)
- Fen (10)
- Old growth forest (10)
- Mature forested wetland (5)
- Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- Lake Erie coastal/tributary wetland-restricted hydrology (5)
- Lake Plain Sand Prairies (Oak Openings) (10)
- Relict Wet Prairies (10)
- Known occurrence state/federal threatened or endangered species (10)
- Significant migratory songbird/water fowl habitat or usage (10)
- Category 1 Wetland. See Question 1 Qualitative Rating (-10)

-5	15
max 20 pts.	subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other _____

6b. Horizontal (plan view) interspersions.

Select only one.

- High (5)
- Moderately high (4)
- Moderate (3)
- Moderately low (2)
- Low (1)
- None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

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

16

15

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		check answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES <input type="checkbox"/> NO <input type="checkbox"/>	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="checkbox"/> NO <input type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	3	
	Metric 3. Hydrology	11	
	Metric 4. Habitat	6	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	-5	
	TOTAL SCORE	15	Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Check one		Evaluation of Categorization Result of ORAM
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10</p>	<p>YES <input type="checkbox"/></p> <p>Wetland is categorized as a Category 3 wetland</p>	<p>NO <input checked="" type="checkbox"/></p>	<p>Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM</p>
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 1, 8b, 9b, 9e, 11</p>	<p>YES <input type="checkbox"/></p> <p>Wetland should be evaluated for possible Category 3 status</p>	<p>NO <input checked="" type="checkbox"/></p>	<p>Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.</p>
<p>Did you answer "Yes" to</p> <p>Narrative Rating No. 5</p>	<p>YES <input type="checkbox"/></p> <p>Wetland is categorized as a Category 1 wetland</p>	<p>NO <input checked="" type="checkbox"/></p>	<p>Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM</p>
<p>Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?</p>	<p>YES <input checked="" type="checkbox"/></p> <p>Wetland is assigned to the appropriate category based on the scoring range</p>	<p>NO <input type="checkbox"/></p>	<p>If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.</p>
<p>Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?</p>	<p>YES <input type="checkbox"/></p> <p>Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria</p>	<p>NO <input checked="" type="checkbox"/></p>	<p>Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).</p>
<p>Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?</p>	<p>YES <input type="checkbox"/></p> <p>Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form</p>	<p>NO <input checked="" type="checkbox"/></p> <p>Wetland is assigned to category as determined by the ORAM.</p>	<p>A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.</p>

Final Category

Choose one Category 1 Category 2 Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: <http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx>

Background Information

Name: Jason Plummer	
Date: 10-14-14	
Affiliation: Linn Engineering, Inc.	
Address: 534 Market Street; Zanesville, Ohio 43701	
Phone Number: (740) 452-7434	
e-mail address: jplummer@linnengineering.net	
Name of Wetland: WTL-F	
Vegetation Community(ies):	
HGM Class(es):	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc. Please refer to Figure 1: Site Location Map	
Lat/Long or UTM Coordinate	Lat: 39.7011 N, Long: 82.0293 W
USGS Quad Name	Deavertown
County	Perry / Morgan
Township	Bearfield / Deerfield
Section and Subsection	12 / 7
Hydrologic Unit Code	050400040500
Site Visit	
National Wetland Inventory Map	Figure 5
Ohio Wetland Inventory Map	
Soil Survey	Figure 2
Delineation report/map	

Name of Wetland: WTL-F	
Wetland Size (acres, hectares): 0.06 acre	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc. Refer to Figure 1: Site Location Map, or the Aquatic Features Map	
Comments, Narrative Discussion, Justification of Category Changes:	
Final score : 22	Category: 1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	Y	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	Y	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	Y	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	Y	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	Y	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	Y	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Check one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 2	NO <input checked="" type="checkbox"/> Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 3	NO <input checked="" type="checkbox"/> Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 4	NO <input checked="" type="checkbox"/> Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 5	NO <input checked="" type="checkbox"/> Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES <input type="checkbox"/> Wetland is a Category 1 wetland Go to Question 6	NO <input checked="" type="checkbox"/> Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 7	NO <input checked="" type="checkbox"/> Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 8a	NO <input checked="" type="checkbox"/> Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 8b	NO <input checked="" type="checkbox"/> Go to Question 8b

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO <input checked="" type="checkbox"/> Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES <input type="checkbox"/> Go to Question 9b	NO <input checked="" type="checkbox"/> Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 10	NO <input type="checkbox"/> Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES <input type="checkbox"/> Go to Question 9d	NO <input type="checkbox"/> Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 10	NO <input type="checkbox"/> Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 10	NO <input type="checkbox"/> Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 11	NO <input checked="" type="checkbox"/> Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO <input checked="" type="checkbox"/> Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Nejas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: WTL-F	Rater(s): THL, NL	Date: 03-27-10
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0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- >50 acres (>20.2ha) (6 pts)
- 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- 10 to <25 acres (4 to <10.1ha) (4 pts)
- 3 to <10 acres (1.2 to <4ha) (3 pts)
- 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

4	4
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

10.5	14.5
max 30 pts.	subtotal

Metric 3. Hydrology.

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

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

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

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

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

1.5

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

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

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

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

Check all disturbances observed	
<input type="checkbox"/> ditch	<input type="checkbox"/> point source (non-stormwater)
<input type="checkbox"/> tile	<input type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input checked="" type="checkbox"/> other old stone quarry pit / farming

5.5	20
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

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

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

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

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

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

Check all disturbances observed	
<input type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input type="checkbox"/> woody debris removal	<input checked="" type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

20
subtotal this page

Site: WTL-F	Rater(s): THL, NL	Date: 03-27-10
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20 subtotal first page

0 max 10 pts.	20 subtotal
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Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- Bog (10)
- Fen (10)
- Old growth forest (10)
- Mature forested wetland (5)
- Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- Lake Erie coastal/tributary wetland-restricted hydrology (5)
- Lake Plain Sand Prairies (Oak Openings) (10)
- Relict Wet Prairies (10)
- Known occurrence state/federal threatened or endangered species (10)
- Significant migratory songbird/water fowl habitat or usage (10)
- Category 1 Wetland. See Question 1 Qualitative Rating (-10)

2 max 20 pts.	22 subtotal
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Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- Aquatic bed
- 2 Emergent
- 0 Shrub
- Forest
- Mudflats
- Open water
- Other _____

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

- High (5)
- Moderately high(4)
- Moderate (3)
- Moderately low (2)
- Low (1)
- None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

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

6d. Microtopography.
Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

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

2 checked?

22

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		check answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input type="checkbox"/> NO <input type="checkbox"/>	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="checkbox"/> NO <input type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	4	
	Metric 3. Hydrology	10.5	
	Metric 4. Habitat	5.5	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	2	
	TOTAL SCORE	22	Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Check one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES <input type="checkbox"/> Wetland is categorized as a Category 3 wetland	NO <input checked="" type="checkbox"/>	Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status	NO <input checked="" type="checkbox"/>	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES <input type="checkbox"/> Wetland is categorized as a Category 1 wetland	NO <input checked="" type="checkbox"/>	Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES <input checked="" type="checkbox"/> Wetland is assigned to the appropriate category based on the scoring range	NO <input type="checkbox"/>	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES <input type="checkbox"/> Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO <input checked="" type="checkbox"/>	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES <input type="checkbox"/> Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO <input checked="" type="checkbox"/> Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one Category 1 Category 2 Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: <http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx>

Background Information

Name: Jason Plummer	
Date: 10-14-14	
Affiliation: Linn Engineering, Inc.	
Address: 534 Market Street; Zanesville, Ohio 43701	
Phone Number: (740) 452-7434	
e-mail address: jplummer@linnengineering.net	
Name of Wetland: WTL-G	
Vegetation Community(ies):	
HGM Class(es):	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc. Please refer to Figure 1: Site Location Map	
Lat/Long or UTM Coordinate	Lat: 39.6995 N, Long: 82.0229 W
USGS Quad Name	Deavertown
County	Perry / Morgan
Township	Bearfield / Deerfield
Section and Subsection	12 / 7
Hydrologic Unit Code	050400040500
Site Visit	
National Wetland Inventory Map	Figure 5
Ohio Wetland Inventory Map	
Soil Survey	Figure 2
Delineation report/map	

Name of Wetland: WTL-G	
Wetland Size (acres, hectares): 0.05 acre	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc. Refer to Figure 1: Site Location Map, or the Aquatic Features Map	
Comments, Narrative Discussion, Justification of Category Changes:	
Final score : 11	Category: 1

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	Y	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	Y	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	Y	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	Y	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	Y	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	Y	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Check one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 2	NO <input checked="" type="checkbox"/> Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 3	NO <input checked="" type="checkbox"/> Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 4	NO <input checked="" type="checkbox"/> Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 5	NO <input checked="" type="checkbox"/> Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES <input type="checkbox"/> Wetland is a Category 1 wetland Go to Question 6	NO <input checked="" type="checkbox"/> Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 7	NO <input checked="" type="checkbox"/> Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 8a	NO <input checked="" type="checkbox"/> Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 8b	NO <input checked="" type="checkbox"/> Go to Question 8b

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO <input checked="" type="checkbox"/> Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES <input type="checkbox"/> Go to Question 9b	NO <input checked="" type="checkbox"/> Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 10	NO <input type="checkbox"/> Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES <input type="checkbox"/> Go to Question 9d	NO <input type="checkbox"/> Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 10	NO <input type="checkbox"/> Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 10	NO <input type="checkbox"/> Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 11	NO <input checked="" type="checkbox"/> Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO <input checked="" type="checkbox"/> Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- >50 acres (>20.2ha) (6 pts)
- 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- 10 to <25 acres (4 to <10.1ha) (4 pts)
- 3 to <10 acres (1.2 to <4ha) (3 pts)
- 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

4	4
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

8	12
max 30 pts.	subtotal

Metric 3. Hydrology.

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

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/Intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

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

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

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or double check.

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

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

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

Check all disturbances observed

- | | |
|---|---|
| <input type="checkbox"/> ditch | <input type="checkbox"/> point source (non-stormwater) |
| <input type="checkbox"/> tile | <input type="checkbox"/> filling/grading |
| <input type="checkbox"/> dike | <input type="checkbox"/> road bed/RR track |
| <input type="checkbox"/> weir | <input type="checkbox"/> dredging |
| <input type="checkbox"/> stormwater input | <input checked="" type="checkbox"/> other man-made pond |

3	15
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

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

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

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

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

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

Check all disturbances observed

- | | |
|---|---|
| <input type="checkbox"/> mowing | <input type="checkbox"/> shrub/sapling removal |
| <input type="checkbox"/> grazing | <input type="checkbox"/> herbaceous/aquatic bed removal |
| <input type="checkbox"/> clearcutting | <input type="checkbox"/> sedimentation |
| <input type="checkbox"/> selective cutting | <input type="checkbox"/> dredging |
| <input type="checkbox"/> woody debris removal | <input type="checkbox"/> farming |
| <input type="checkbox"/> toxic pollutants | <input type="checkbox"/> nutrient enrichment |

15
subtotal this page

Site: WTL-G	Rater(s): THL, NL	Date: 03-27-10
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15

subtotal first page

0	15
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max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- Bog (10)
- Fen (10)
- Old growth forest (10)
- Mature forested wetland (5)
- Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- Lake Erie coastal/tributary wetland-restricted hydrology (5)
- Lake Plain Sand Prairies (Oak Openings) (10)
- Relict Wet Prairies (10)
- Known occurrence state/federal threatened or endangered species (10)
- Significant migratory songbird/water fowl habitat or usage (10)
- Category 1 Wetland. See Question 1 Qualitative Rating (-10)

-4	11
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max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- 1 Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other _____

6b. Horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high(4)
- Moderate (3)
- Moderately low (2)
- Low (1)
- None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

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

11

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		check answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input type="checkbox"/> NO <input type="checkbox"/>	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="checkbox"/> NO <input type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	4	
	Metric 3. Hydrology	8	
	Metric 4. Habitat	3	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	-4	
	TOTAL SCORE	11	Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Check one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES <input type="checkbox"/> Wetland is categorized as a Category 3 wetland	NO <input checked="" type="checkbox"/>	Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status	NO <input checked="" type="checkbox"/>	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES <input type="checkbox"/> Wetland is categorized as a Category 1 wetland	NO <input checked="" type="checkbox"/>	Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES <input checked="" type="checkbox"/> Wetland is assigned to the appropriate category based on the scoring range	NO <input type="checkbox"/>	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES <input type="checkbox"/> Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO <input checked="" type="checkbox"/>	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES <input type="checkbox"/> Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO <input checked="" type="checkbox"/> Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one Category 1 Category 2 Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization	
	Background Information Scoring Boundary Worksheet Narrative Rating Field Form Quantitative Rating ORAM Summary Worksheet Wetland Categorization Worksheet	Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: <http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx>

Background Information

Name: Jason Plummer	
Date: 10-14-14	
Affiliation: Linn Engineering, Inc.	
Address: 534 Market Street; Zanesville, Ohio 43701	
Phone Number: (740) 452-7434	
e-mail address: jplummer@linnengineering.net	
Name of Wetland: WTL-H	
Vegetation Community(ies):	
HGM Class(es):	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc. Please refer to Figure 1: Site Location Map	
Lat/Long or UTM Coordinate	Lat: 39.6995 N, Long: 82.0237 W
USGS Quad Name	Deavertown
County	Perry / Morgan
Township	Bearfield / Deerfield
Section and Subsection	12 / 7
Hydrologic Unit Code	050400040500
Site Visit	
National Wetland Inventory Map	Figure 5
Ohio Wetland Inventory Map	
Soil Survey	Figure 2
Delineation report/map	

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	Y	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	Y	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	Y	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	Y	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	Y	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.	Y	

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Check one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 2	NO <input checked="" type="checkbox"/> Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 3	NO <input checked="" type="checkbox"/> Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 4	NO <input checked="" type="checkbox"/> Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 5	NO <input checked="" type="checkbox"/> Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES <input type="checkbox"/> Wetland is a Category 1 wetland Go to Question 6	NO <input checked="" type="checkbox"/> Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 7	NO <input checked="" type="checkbox"/> Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 8a	NO <input checked="" type="checkbox"/> Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 8b	NO <input checked="" type="checkbox"/> Go to Question 8b

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO <input checked="" type="checkbox"/> Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES <input type="checkbox"/> Go to Question 9b	NO <input checked="" type="checkbox"/> Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 10	NO <input type="checkbox"/> Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES <input type="checkbox"/> Go to Question 9d	NO <input type="checkbox"/> Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES <input type="checkbox"/> Wetland is a Category 3 wetland Go to Question 10	NO <input type="checkbox"/> Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Go to Question 10	NO <input type="checkbox"/> Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES <input type="checkbox"/> Wetland is a Category 3 wetland. Go to Question 11	NO <input checked="" type="checkbox"/> Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO <input checked="" type="checkbox"/> Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohtoensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: WTL-H	Rater(s): THL, NL	Date: 03-27-10
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1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- >50 acres (>20.2ha) (6 pts)
- 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- 10 to <25 acres (4 to <10.1ha) (4 pts)
- 3 to <10 acres (1.2 to <4ha) (3 pts)
- 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

3	4
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

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

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

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

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

9	13
max 30 pts.	subtotal

Metric 3. Hydrology.

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

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

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

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

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

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

3b. Connectivity. Score all that apply.

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

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

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed	
<input type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input	<input type="checkbox"/> point source (non-stormwater) <input type="checkbox"/> filling/grading <input type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input checked="" type="checkbox"/> other oil-gas well

6	19
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

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

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

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

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

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

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

Check all disturbances observed	
<input checked="" type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants	<input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

19
subtotal this page

Site: WTL-H	Rater(s): THL, NL	Date: 03-27-10
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19
subtotal first page

0	19
max 10 pts.	subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- Bog (10)
- Fen (10)
- Old growth forest (10)
- Mature forested wetland (5)
- Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- Lake Erie coastal/tributary wetland-restricted hydrology (5)
- Lake Plain Sand Prairies (Oak Openings) (10)
- Relict Wet Prairies (10)
- Known occurrence state/federal threatened or endangered species (10)
- Significant migratory songbird/water fowl habitat or usage (10)
- Category 1 Wetland. See Question 1 Qualitative Rating (-10)

6	25
max 20 pts.	subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- 2 Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other _____

6b. Horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high(4)
- Moderate (3)
- Moderately low (2)
- Low (1)
- None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

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

25

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		check answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input type="checkbox"/> NO <input type="checkbox"/>	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="checkbox"/> NO <input type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, Category 3
Question 11. Relict Wet Prairies	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	1	
	Metric 2. Buffers and surrounding land use	3	
	Metric 3. Hydrology	9	
	Metric 4. Habitat	6	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersion, microtopography	6	
	TOTAL SCORE	25	Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Check one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES <input type="checkbox"/> Wetland is categorized as a Category 3 wetland	NO <input checked="" type="checkbox"/>	Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES <input type="checkbox"/> Wetland should be evaluated for possible Category 3 status	NO <input checked="" type="checkbox"/>	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES <input type="checkbox"/> Wetland is categorized as a Category 1 wetland	NO <input checked="" type="checkbox"/>	Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES <input checked="" type="checkbox"/> Wetland is assigned to the appropriate category based on the scoring range	NO <input type="checkbox"/>	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES <input type="checkbox"/> Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO <input checked="" type="checkbox"/>	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit <i>moderate OR superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES <input type="checkbox"/> Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO <input checked="" type="checkbox"/> Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one Category 1 Category 2 Category 3

End of Ohio Rapid Assessment Method for Wetlands.

SITE NAME/LOCATION **ST-1 lower**

SITE NUMBER _____ RIVER BASIN **Muskingum** DRAINAGE AREA (m²) _____

LENGTH OF STREAM REACH (ft) **200** LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE **11/14/09** SCORER **THL** COMMENTS **lower portion of stream, open farm field**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.)

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> SILT [3 pt]	80%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input checked="" type="checkbox"/> FINE DETRITUS [3 pts]	20%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%** (A) 100% (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6 TOTAL NUMBER OF SUBSTRATE TYPES: 2

2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS **no pools** MAXIMUM POOL DEPTH (centimeters): _____

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **entrenched** AVERAGE BANKFULL WIDTH (meters): 0.30

HHEI Metric Points

Substrate Max = 40

8

A + B

Pool Depth Max = 30

0

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH	FLOODPLAIN QUALITY	
L R (Per Bank)	L R (Most Predominant per Bank)	L R
<input type="checkbox"/> Wide >10m	<input type="checkbox"/> Mature Forest, Wetland	<input checked="" type="checkbox"/> Conservation Tillage
<input checked="" type="checkbox"/> Moderate 5-10m	<input type="checkbox"/> Immature Forest, Shrub or Old Field	<input type="checkbox"/> Urban or Industrial
<input type="checkbox"/> Narrow <5m	<input type="checkbox"/> Residential, Park, New Field	<input type="checkbox"/> Open Pasture, Row Crop
<input type="checkbox"/> None	<input type="checkbox"/> Fenced Pasture	<input type="checkbox"/> Mining or Construction

COMMENTS: _____

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS: _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

Flat (0.5 ft/100 ft) Flat to Moderate Moderate (2 ft/100 ft) Moderate to Severe Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? Yes No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

WWH Name: _____ Distance from Evaluated Stream _____
 CWH Name: _____ Distance from Evaluated Stream _____
 EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Deavertown NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____
County: Parry Township / City: Bearfield Twp.

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 10/31/09 Quantity: 0.51

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N): Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

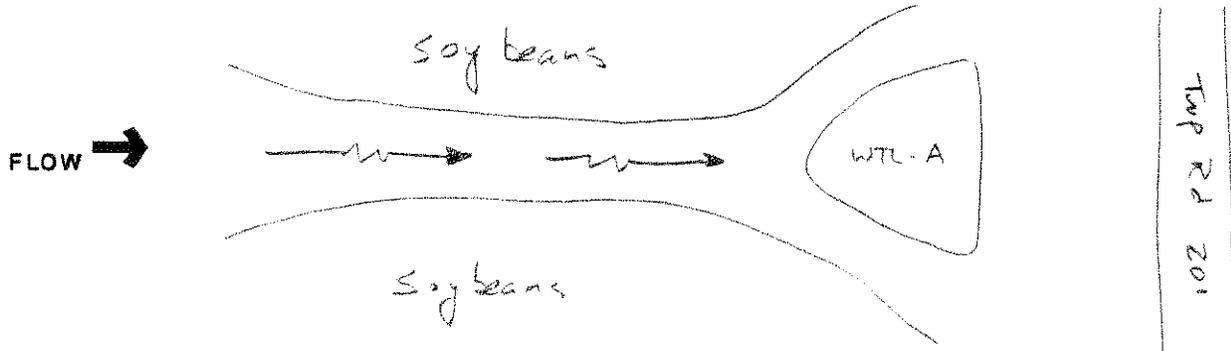
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N): N Voucher? (Y/N): N Salamanders Observed? (Y/N): N Voucher? (Y/N): N
Frogs or Tadpoles Observed? (Y/N): N Voucher? (Y/N): N Aquatic Macroinvertebrates Observed? (Y/N): N Voucher? (Y/N): N

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **ST-1 upper**

SITE NUMBER

RIVER BASIN: **Muskingum**

DRAINAGE AREA (mi²)

LENGTH OF STREAM REACH (ft) **200**

LAT.

LONG.

RIVER CODE

RIVER MILE

DATE **11/14/09**

SCORER **THL**

COMMENTS **upper portion of stream, above WTL-C**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	80%
<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> <input checked="" type="checkbox"/> FINE DETRITUS [3 pts]	15%
<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%** (A) 100% (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6** TOTAL NUMBER OF SUBSTRATE TYPES: **3**

2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS **no pools** MAXIMUM POOL DEPTH (centimeters):

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS AVERAGE BANKFULL WIDTH (meters): **0.90**

HHEI Metric Points

Substrate Max = 40

9

A + B

Pool Depth Max = 30

0

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH		FLOODPLAIN QUALITY			
L	R	L	R	L	R
<input checked="" type="checkbox"/>	<input type="checkbox"/>				
Wide >10m		Mature Forest, Wetland		Conservation Tillage	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moderate 5-10m		Immature Forest, Shrub or Old Field		Urban or Industrial	
<input type="checkbox"/>	<input type="checkbox"/>				
Narrow <5m		Residential, Park, New Field		Open Pasture, Row Crop	
<input type="checkbox"/>	<input type="checkbox"/>				
None		Fenced Pasture		Mining or Construction	

COMMENTS:

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS:

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

Flat (0.5 ft/100 ft) Flat to Moderate Moderate (2 ft/100 ft) Moderate to Severe Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? Yes No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

WWH Name: _____ Distance from Evaluated Stream _____
 CWH Name: _____ Distance from Evaluated Stream _____
 EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Deavertown NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____
County: Perry Township / City: Bearfield Twp.

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 10/31/09 Quantity: 0.51

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 10%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N): Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

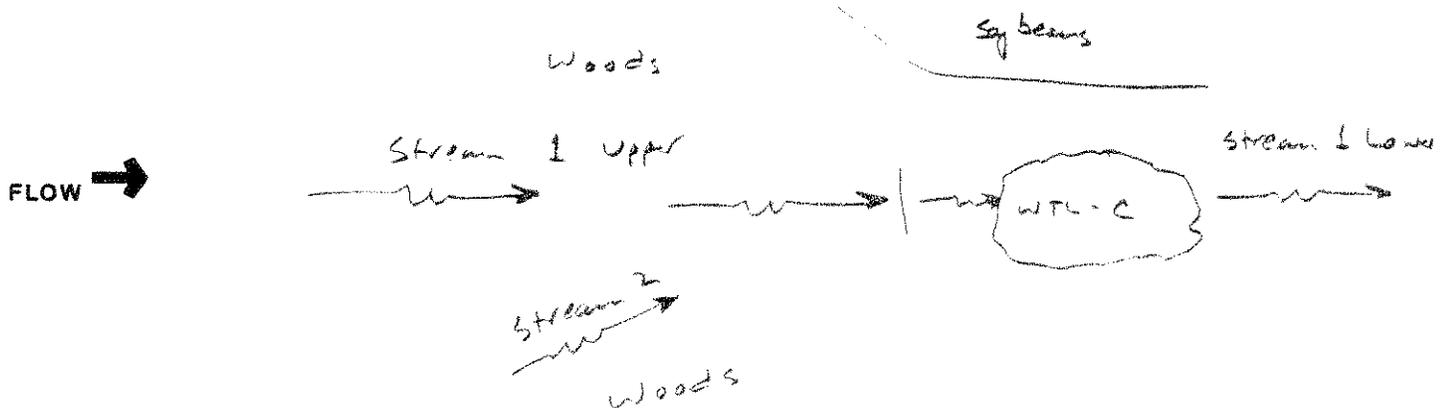
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N): N Voucher? (Y/N): N Salamanders Observed? (Y/N): N Voucher? (Y/N): N
Frogs or Tadpoles Observed? (Y/N): N Voucher? (Y/N): N Aquatic Macroinvertebrates Observed? (Y/N): N Voucher? (Y/N): N

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **ST-2**

SITE NUMBER _____ RIVER BASIN **Muskingum** DRAINAGE AREA (mi²) _____

LENGTH OF STREAM REACH (ft) **200** LAT. _____ LONG. _____ RIVER CODE: _____ RIVER MILE _____

DATE **11/14/09** SCORER **THL** COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.)

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	80%
<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> <input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	20%
<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%** (A) 100% (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6** TOTAL NUMBER OF SUBSTRATE TYPES: **2**

2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS **no pools** MAXIMUM POOL DEPTH (centimeters): _____

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): **0.80**

HHEI Metric Points

Substrate Max = 40

8

A + B

Pool Depth Max = 30

0

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH		FLOODPLAIN QUALITY	
L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Wide >10m		Mature Forest, Wetland	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moderate 5-10m		Immature Forest, Shrub or Old Field	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Narrow <5m		Residential, Park, New Field	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None		Fenced Pasture	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Conservation Tillage	
		Urban or Industrial	
		Open Pasture, Row Crop	
		Mining or Construction	

COMMENTS: _____

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS: _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

Flat (0.5 ft/100 ft) Flat to Moderate Moderate (2 ft/100 ft) Moderate to Severe Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This information Must Also be Completed):

QHEI PERFORMED? Yes No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

WWH Name: _____ Distance from Evaluated Stream: _____
 CWH Name: _____ Distance from Evaluated Stream: _____
 EWH Name: _____ Distance from Evaluated Stream: _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Deavertown NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____
County: Perry Township / City: Bearfield Twp.

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 10/31/09 Quantity: 0.51

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 10%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N): Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

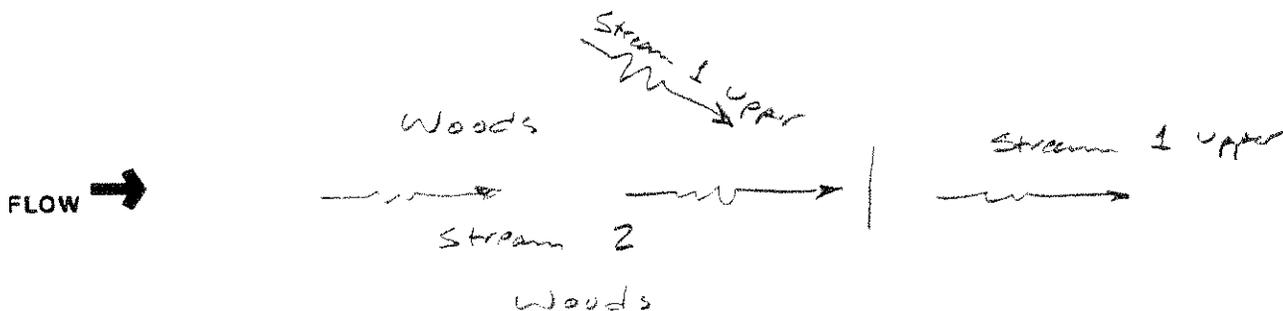
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N): N Voucher? (Y/N): N Salamanders Observed? (Y/N): N Voucher? (Y/N): N
Frogs or Tadpoles Observed? (Y/N): N Voucher? (Y/N): N Aquatic Macroinvertebrates Observed? (Y/N): N Voucher? (Y/N): N

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **ST-3**

SITE NUMBER _____ RIVER BASIN **Muskingum** DRAINAGE AREA (mi²) _____

LENGTH OF STREAM REACH (ft) **200** LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE **11/14/09** SCORER **THL** COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.)

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	60%
<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	5%
<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	5%	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> <input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	30%	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%** (A) 100% (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **9** TOTAL NUMBER OF SUBSTRATE TYPES: **4**

2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS **no pools** MAXIMUM POOL DEPTH (centimeters): **0**

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **entrenched** AVERAGE BANKFULL WIDTH (meters): **0.70**

HHEI Metric Points

Substrate Max = 40

13

A + B

Pool Depth Max = 30

0

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH		FLOODPLAIN QUALITY	
L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (Per Bank) Wide >10m	<input type="checkbox"/>	<input type="checkbox"/> (Most Predominant per Bank) Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/> Moderate 5-10m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/> Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/> Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/> None	<input type="checkbox"/>	<input type="checkbox"/> Fenced Pasture
		<input type="checkbox"/>	<input type="checkbox"/> Conservation Tillage
		<input type="checkbox"/>	<input type="checkbox"/> Urban or Industrial
		<input type="checkbox"/>	<input type="checkbox"/> Open Pasture, Row Crop
		<input type="checkbox"/>	<input type="checkbox"/> Mining or Construction

COMMENTS **nearby farming**

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bands per 61 m (200 ft) of channel) (Check ONLY one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

Flat (0.5 ft/100 ft) Flat to Moderate Moderate (2 ft/100 ft) Moderate to Severe Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? Yes No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

<input type="checkbox"/> WWH Name:	_____	Distance from Evaluated Stream
<input type="checkbox"/> CWH Name:	_____	Distance from Evaluated Stream
<input type="checkbox"/> EWH Name:	_____	Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Deavertown NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____
 County: Perry Township / City: Bearfield Twp.

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 10/31/09 Quantity: 0.51

Photograph Information: 006

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N): Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

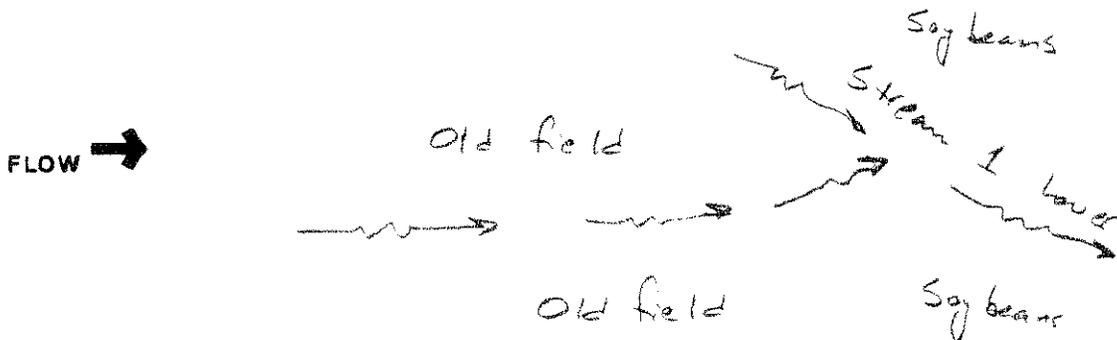
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N): N Voucher? (Y/N): N Salamanders Observed? (Y/N): N Voucher? (Y/N): N
 Frogs or Tadpoles Observed? (Y/N): N Voucher? (Y/N): N Aquatic Macroinvertebrates Observed? (Y/N): N Voucher? (Y/N): N

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



HHEI Score (sum of metrics 1, 2, 3):

SITE NAME/LOCATION **ST-4 lower**

SITE NUMBER _____ RIVER BASIN **Muskingum** DRAINAGE AREA (mi²) _____

LENGTH OF STREAM REACH (ft) **200** LAT _____ LONG _____ RIVER CODE _____ RIVER MILE _____

DATE **11/14/09** SCORER **THL** COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.)

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> SILT [3 pt]	80%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	10%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	10%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%** (A) 100% (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **12** TOTAL NUMBER OF SUBSTRATE TYPES: **3**

2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS **no pools** MAXIMUM POOL DEPTH (centimeters): **0**

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **upper portion entrenched** AVERAGE BANKFULL WIDTH (meters): **0.40**

HHEI Metric Points

Substrate Max = 40

15

A + B

Pool Depth Max = 30

0

Bankfull Width Max=30

5

This information must also be completed
RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH		FLOODPLAIN QUALITY	
L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wide >10m		Mature Forest, Wetland	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Moderate 5-10m		Immature Forest, Shrub or Old Field	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Narrow <5m		Residential, Park, New Field	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None		Fenced Pasture	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Conservation Tillage	
		Urban or Industrial	
		Open Pasture, Row Crop	
		Mining or Construction	

COMMENTS **channel loses definition over last 100'**

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

Flat (0.5 ft/100 ft) Flat to Moderate Moderate (2 ft/100 ft) Moderate to Severe Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? Yes No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

WWH Name: _____ Distance from Evaluated Stream: _____
 CWH Name: _____ Distance from Evaluated Stream: _____
 EWH Name: _____ Distance from Evaluated Stream: _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Deavertown NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____
County: Perry Township / City: Bearfield Twp.

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 10/31/09 Quantity: 0.51

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N): Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

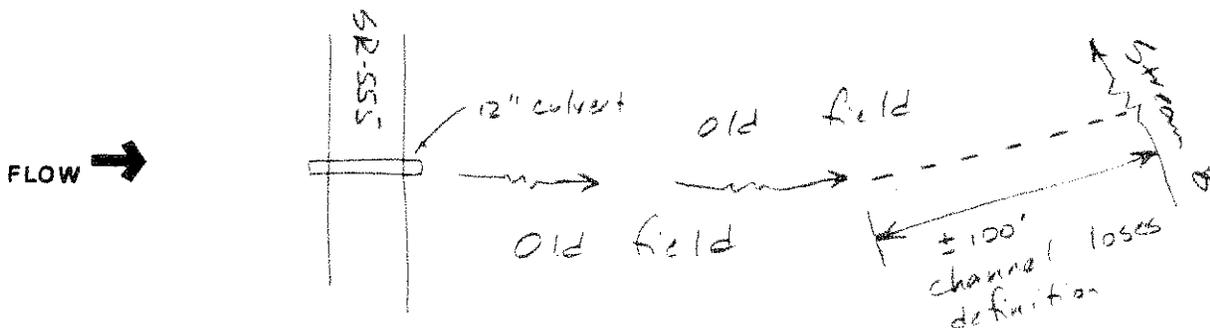
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual!)

Fish Observed? (Y/N): N Voucher? (Y/N): N Salamanders Observed? (Y/N): N Voucher? (Y/N): N
Frogs or Tadpoles Observed? (Y/N): N Voucher? (Y/N): N Aquatic Macroinvertebrates Observed? (Y/N): N Voucher? (Y/N): N

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **ST-4 upper**

SITE NUMBER _____ RIVER BASIN **Muskingum** DRAINAGE AREA (mi²) _____

LENGTH OF STREAM REACH (ft) **200** LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE **11/14/09** SCORER **THL** COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.)

<table border="0"> <tr><th>TYPE</th><th>PERCENT</th></tr> <tr><td><input type="checkbox"/> BLDR SLABS [16 pts]</td><td>0%</td></tr> <tr><td><input type="checkbox"/> BOULDER (>256 mm) [16 pts]</td><td>0%</td></tr> <tr><td><input type="checkbox"/> BEDROCK [16 pt]</td><td>0%</td></tr> <tr><td><input type="checkbox"/> COBBLE (65-256 mm) [12 pts]</td><td>0%</td></tr> <tr><td><input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]</td><td>0%</td></tr> <tr><td><input type="checkbox"/> SAND (<2 mm) [6 pts]</td><td>5%</td></tr> </table>	TYPE	PERCENT	<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%	<input type="checkbox"/> SAND (<2 mm) [6 pts]	5%	<table border="0"> <tr><th>TYPE</th><th>PERCENT</th></tr> <tr><td><input checked="" type="checkbox"/> SILT [3 pt]</td><td>75%</td></tr> <tr><td><input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]</td><td>0%</td></tr> <tr><td><input checked="" type="checkbox"/> FINE DETRITUS [3 pts]</td><td>20%</td></tr> <tr><td><input type="checkbox"/> CLAY or HARDPAN [0 pt]</td><td>0%</td></tr> <tr><td><input type="checkbox"/> MUCK [0 pts]</td><td>0%</td></tr> <tr><td><input type="checkbox"/> ARTIFICIAL [3 pts]</td><td>0%</td></tr> </table>	TYPE	PERCENT	<input checked="" type="checkbox"/> SILT [3 pt]	75%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%	<input checked="" type="checkbox"/> FINE DETRITUS [3 pts]	20%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%	<input type="checkbox"/> MUCK [0 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%	<p>HHEI Metric Points</p> <p>Substrate Max = 40</p> <div style="border: 1px solid black; padding: 5px; text-align: center; font-size: 24px;">9</div> <p>A + B</p>
TYPE	PERCENT																													
<input type="checkbox"/> BLDR SLABS [16 pts]	0%																													
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%																													
<input type="checkbox"/> BEDROCK [16 pt]	0%																													
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%																													
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%																													
<input type="checkbox"/> SAND (<2 mm) [6 pts]	5%																													
TYPE	PERCENT																													
<input checked="" type="checkbox"/> SILT [3 pt]	75%																													
<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%																													
<input checked="" type="checkbox"/> FINE DETRITUS [3 pts]	20%																													
<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%																													
<input type="checkbox"/> MUCK [0 pts]	0%																													
<input type="checkbox"/> ARTIFICIAL [3 pts]	0%																													

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%** (A) 100% (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6** TOTAL NUMBER OF SUBSTRATE TYPES: **3**

2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input type="checkbox"/> > 30 centimeters [20 pts] <input type="checkbox"/> > 22.5 - 30 cm [30 pts] <input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts] <input checked="" type="checkbox"/> < 5 cm [5 pts] <input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]
--	--

COMMENTS **no pools** MAXIMUM POOL DEPTH (centimeters): **0**

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts] <input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] <input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] <input checked="" type="checkbox"/> ≤ 1.0 m (<=3' 3") [5 pts]
--	--

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): **0.60**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH		FLOODPLAIN QUALITY	
L	R	L	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(Per Bank)		(Most Predominant per Bank)	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Wide >10m		<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moderate 5-10m		<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Narrow <5m		<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None		<input type="checkbox"/>	<input type="checkbox"/>
COMMENTS <u>nearby farming</u>		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input type="checkbox"/> Stream Flowing <input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent) <input type="checkbox"/> Dry channel, no water (Ephemeral)
--	---

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input checked="" type="checkbox"/> None <input type="checkbox"/> 0.5	<input type="checkbox"/> 1.0 <input type="checkbox"/> 1.5	<input type="checkbox"/> 2.0 <input type="checkbox"/> 2.5	<input type="checkbox"/> 3.0 <input type="checkbox"/> >3
--	--	--	---

STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input checked="" type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	---	---	--	--

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? Yes No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

WWH Name: _____ Distance from Evaluated Stream _____
 CWH Name: _____ Distance from Evaluated Stream _____
 EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Deavertown NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____
 County: Perry Township / City: Bearfield Twp.

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 10/31/09 Quantity: 0.51

Photograph Information: 009

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C): _____ Dissolved Oxygen (mg/l): _____ pH (S.U.): _____ Conductivity (µmhos/cm): _____

Is the sampling reach representative of the stream (Y/N): Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

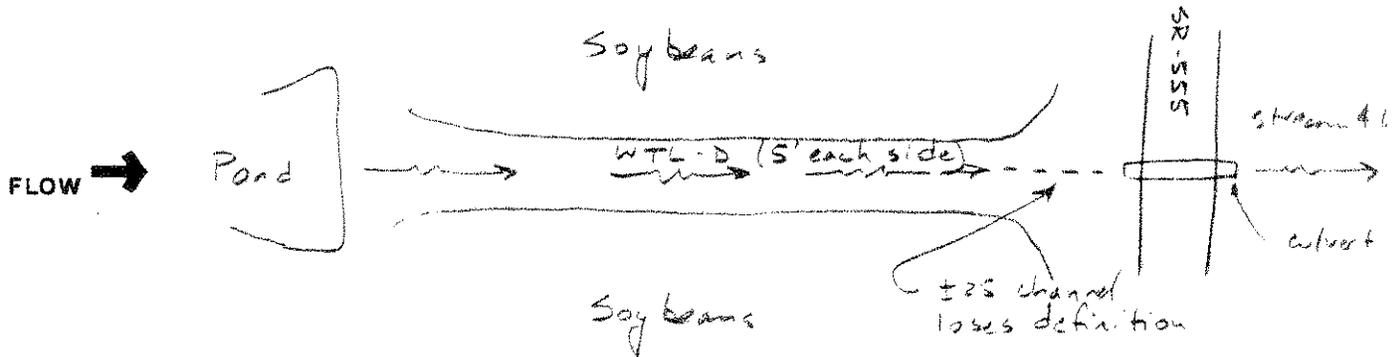
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N): N Voucher? (Y/N): N Salamanders Observed? (Y/N): N Voucher? (Y/N): N
 Frogs or Tadpoles Observed? (Y/N): N Voucher? (Y/N): N Aquatic Macroinvertebrates Observed? (Y/N): N Voucher? (Y/N): N

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



APPENDIX B

Tables

Table 1: Delineation Summary

Table 2: Stream and Wetland Impact Summary

Table 3: Gain-Loss Summary

Impoundments

Existing Pit Impoundment	Type of Impoundment	Wetland Fringe (ac)	Area (ac)	Approx. Water Depth (ft)	Volume of fill below OHWM (cy)	Isolated (X)
No impoundments were delineated onsite						
Total		Non-Isolated				
Total		Isolated				

Wetlands

Wetland	Designation	ORAM Score	ORAM Category	Area (ac)	Isolated	
					Yes	No
A	Emergent	19	1	0.09		X
B	Emergent	17	1	0.02		X
C	Emergent	50.5	2	0.03		X
D	Emergent	18.5	1	0.17		X
E	Emergent	15	1	0.01		X
F	Emergent	22	1	0.06		X
G	Emergent	11	1	0.05	X	
H	Emergent	25	1	0.27	X	
Total			Non-Isolated	0.38		
Total			Isolated	0.32		
Grand Total				0.70		

Jurisdictional Wetlands	Category 1	0.35
	Category 2	0.03
	Category 3	0.00

OEPA Stream Impact/Avoidance Summary Table

Applicant: Sergeant Stone, Inc.
Date: 9/5/2014

Project Name: Deavertown Quarry

Corps #: LRH-2010-930-MUS

Stream Id/Name	FH	FH	Total stream length on-site	Preferred Impacts		Describe proposed types of impacts	Minimal Impacts		Describe proposed types of impacts
				Impacted	Avoided		Impacted	Avoided	
ST-1 Lower		13	473	473	0	MT, PC	0	473	---
ST-1 Upper		14	310	310	0	MT	0	310	---
ST-2		13	278	278	0	MT	0	278	---
ST-3		18	420	420	0	MT	394	26	MT
ST-4 Lower		20	335	272	63	MT, HR	272	63	MT, HR
ST-4 Upper		14	700	634	66	MT	634	66	MT
ST-5		22	379	347	32	MT, HR, PC	347	32	MT, HR, PC
ST-6		29	550	0	550	---	0	550	---
ST-7		18	811	0	811	---	0	811	---
ST-8		38.5	1,059	0	1,059	---	0	1,059	---
ST-9 Lower		39	638	0	638	---	0	638	---
ST-9 Upper		29	472	0	472	---	0	472	---
ST-10		22	320	0	320	---	0	320	---
ST-11 Lower		28	589	0	589	---	0	589	---
ST-11 Upper		18	124	0	124	---	0	124	---
Total			7,458	2,734	4,724		1,647	5,811	

Impact Type:
 MT = Mine Through
 PC = Pond Construction
 HR = Haul Road
 RG = Reclamation Grading

SS = Spoil Storage
 ST = Sediment Transport
 TR = Temporary Relocation

WM = Wetland Mitigation
 RC = Reconstruction
 AV = Avoided

Table 2A OEPA Stream Impact

NON-JURISDICTIONAL

OEPA Wetlands Impact/Avoidance Summary Table

Applicant: Sergeant Stone, Inc.

Project Name: Deavertown Quarry

Page 2 of 2
Corps # LRH-2010-930-MUS

ORAM Version Used: 5.0

Date: 9/5/2014

Id #	ORAM Score	Total acres on-site	Type of Impact	Preferred Degradation Alternative (acres)			Avoidance			Minimal Degradation Alternative (acres)			Avoidance		
				Forested	Non-Forested	Total Impact	Forested	Non-Forested	Total Avoided	Forested	Non-Forested	Total Impact	Forested	Non-Forested	Total Avoided
Category 1															
G	11	0.05	AV	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.05
H	25	0.27	AV	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.27
Total		0.32		0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.32
Non-Jurisdictional															
Grand Total		0.32		0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.32

Impact Type:

- MT = Mine Through
- PC = Pond Construction
- HR = Haul Road
- RG = Reclamation Grading
- SS = Spoil Storage
- ST = Sediment Transport
- TR = Temporary Relocation
- WM = Wetland Mitigation
- RC = Reconstruction
- AV = Avoided

OEPA Wetlands Impact/Avoidance Summary Table

Applicant: Sergeant Stone, Inc.

Project Name: Deavertown Quarry (EPA# 144577)

Corps # LRH-2010-930-MUS

ORAM Version Used: 5.0

Date: Revised 1/14/2014

Id #	ORAM Score	Total acres on-site	Type of Impact	Preferred Degradation Alternative (acres)			Minimal Degradation Alternative (acres)							
				Impact		Avoidance	Impact		Avoidance					
				Forested	Non-Forested	Total Impact	Forested	Non-Forested	Total Impact	Forested	Non-Forested	Total Avoided		
Category 1														
A	19	0.09	MT, PC	0.00	0.09	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
B	17	0.02	MT	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
D	18.5	0.17	MT	0.00	0.17	0.17	0.00	0.00	0.00	0.17	0.17	0.00	0.00	0.00
E	15	0.01	MT	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00
F	22	0.06	MT	0.00	0.06	0.06	0.00	0.00	0.00	0.06	0.06	0.00	0.00	0.00
Total		0.35		0.00	0.35	0.35	0.00	0.00	0.00	0.24	0.24	0.00	0.00	0.11

Id #	ORAM Score	Total acres on-site	Type of Impact	Preferred Degradation Alternative (acres)			Minimal Degradation Alternative (acres)							
				Impact		Avoidance	Impact		Avoidance					
				Forested	Non-Forested	Total Impact	Forested	Non-Forested	Total Impact	Forested	Non-Forested	Total Avoided		
Category 2														
C	50.5	0.03	MT	0.00	0.03	0.03	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00
Total		0.03		0.00	0.03	0.03	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00

Jurisdictional														
Grand Total		0.38		0.00	0.38	0.38	0.00	0.00	0.00	0.27	0.27	0.00	0.00	0.11

Impact Type:
 MT = Mine Through
 PC = Pond Construction
 HR = Haul Road
 RG = Reclamation Grading

SS = Spoil Storage
 ST = Sediment Transport
 TR = Temporary Relocation
 WM = Wetland Mitigation
 RC = Reconstruction
 AV = Avoided

Table 2B OEPA Wetland Impact

Sergeant Stone, Inc.
Deavertown Quarry

Table 3A
Gain-Loss Summaries

BASED ON PREFERRED ALTERNATIVE

Impoundments

Existing Impoundment	Type of Impact	Loss Summary		
		Area (ac)	Approx. Wtr Depth (ft)	Volume of fill (cy)
	There were no impoundments delineated onsite			
Total				

Gain Summary		
Pond ID	Permanent (Y/N)	Normal Pool Area (ac)
002	Yes	0.56
Total		0.56

BASED ON PREFERRED ALTERNATIVE

Streams - perennial and intermittent			
Stream Designation	Flow Regime	Loss Summary	
		Stream Length On-site (ft)	HHEI / QHEI Score
NONE			PHWH Class
Loss Length (ft)		0	
Total (ft)		0	

Streams - ephemeral						
Stream Designation	Flow Regime	Stream Length On-site	HHEI Score	PHWH Class	Width (ft)	Area (ac)
1 Lower	Ephemeral	473	13	1	1.0	0.01
1 Upper	Ephemeral	310	14	1	1.0	0.01
2	Ephemeral	278	13	1	2.5	0.02
3	Ephemeral	430	18	1	2.0	0.02
4 Lower	Ephemeral	272	20	1	1.5	0.01
4 Upper	Ephemeral	634	14	1	1.5	0.02
5	Ephemeral	347	22	1	3.0	0.02
Loss Length (ft)		2,734				0.11

Streams		
Gain Summary	Stream	Flow Regime
	1 Lower	Ephemeral
	1 Upper	Ephemeral
	2	Ephemeral
	3	Ephemeral
	4 Lower	Ephemeral
	4 Upper	Ephemeral
	5	Ephemeral
<p>Comments</p> <p>Because only ephemeral streams are proposed for impact, stream mitigation will occur as additional acreage of wetland mitigation. Moreover, ephemeral channels will be constructed at their pre-mining locations at the time of final reclamation, but these channels will not be subject to monitoring nor be covered by the Protective Covenant.</p>		

Headwater sources are all located beyond the area proposed for impact; therefore headwater source ponds are not proposed. Note, that Stream 4 has an existing headwater source pond.

Table 3C
Gain-Loss Summaries

BASED ON PREFERRED ALTERNATIVE

Wetlands		Loss Summary			
Jurisdictional Wetlands	ORAM Score	ORAM Category	Designation	Hydrologic Connectivity	Acreage
A	19	1	Emergent	Yes	0.09
B	17	1	Emergent	Yes	0.02
C	50.5	2	Emergent	Yes	0.03
D	18.5	1	Emergent	Yes	0.17
E	15	1	Emergent	Yes	0.01
F	22	1	Emergent	Yes	0.06
Total Loss					0.38

Gain Proposed	
Mitigation Area #1	Acreage
	0.70
Total Gain	0.70

Gain Required	
	Acreage
Total Loss	0.38
Mitigation Factor	1.50
Req'd Gain	0.57
Ephemeral Streams	0.11
Total Req'd Gain	0.68

SERGEANT STONE, INC.
DEAVERTOWN LIMESTONE MINE SITE
Proposal for Section 401 Permit

APPENDIX C

Ohio County Unemployment Rates

Poverty Rates by County

Perry County Profile

July 2013 Ranking of Ohio County Unemployment Rates

(Not Seasonally Adjusted)

Among the state's 88 counties, July 2013 unemployment rates ranged from a low of 4.5 percent in Mercer County to a high of 12.3 percent in Meigs County. Rates declined in 68 of the 88 counties statewide. The comparable rate for Ohio was 7.3 percent in July. (See table on next page.)

Six counties had unemployment rates below 6.0 percent in July. The counties with the lowest rates, other than Mercer were: Holmes, 4.9 percent; Delaware, 5.2 percent; Auglaize, 5.3 percent; and Geauga and Union, 5.8 percent.

Meanwhile, five counties had unemployment rates at or above 11.0 percent in July. The counties with the highest rates, other than Meigs were: Pike, 12.1 percent; Scioto, 11.1 percent; and Huron and Morgan, 11.0 percent.

EDITOR'S NOTE: These estimates, prepared in cooperation with the Bureau of Labor Statistics, U.S. Department of Labor, are based on 2012 benchmark and geared to county of residence. Unemployment rates for all Ohio counties as well as cities with populations of 50,000 or more are presented in the monthly ODJFS **Civilian Labor Force Estimates** publication. For updated statewide historical data, visit <http://ohiolmi.com/asp/laus/vbLaus.htm>, or contact the Bureau of Labor Market Information at (614) 752-9494.

July 2013 unemployment rates and nonagricultural wage and salary data for Ohio will be released by ODJFS on Friday, September 20, 2013. Unemployment rates for counties, cities, and metropolitan areas will be available on Tuesday, September 24, 2013. This information and the monthly statistical summaries they are based on are also available at <http://ohiolmi.com/laus/releases.htm>.

Ranking Report
Ohio Unemployment Rates by County
July 2013

Rank (b)	County	Unemployment Rate	Rank (b)	County	Unemployment Rate
1	Meigs County	12.3	45	Ashland County	7.4
2	Pike County	12.1	46	Hocking County	7.3
3	Scioto County	11.1	47	Wood County	7.3
4	Morgan County	11.0	48	Stark County	7.3
5	Huron County	11.0	49	Greene County	7.2
6	Adams County	10.5	50	Clark County	7.2
7	Jefferson County	10.3	51	Carroll County	7.2
8	Monroe County	10.3	52	Belmont County	7.2
9	Noble County	9.9	53	Sandusky County	7.2
10	Clinton County	9.9	54	Miami County	7.2
11	Vinton County	9.7	55	Butler County	7.1
12	Coshocton County	9.7	56	Portage County	7.1
13	Highland County	9.6	57	Hamilton County	7.1
14	Muskingum County	9.4	58	Van Wert County	7.1
15	Jackson County	9.1	59	Morrow County	7.0
16	Perry County	9.0	60	Champaign County	7.0
17	Athens County	9.0	61	Knox County	7.0
18	Crawford County	8.9	62	Licking County	6.9
19	Ashtabula County	8.9	63	Summit County	6.9
20	Mahoning County	8.6	64	Erie County	6.9
21	Gallia County	8.5	65	Clermont County	6.8
22	Trumbull County	8.5	66	Washington County	6.8
23	Richland County	8.5	67	Fayette County	6.7
24	Lucas County	8.5	68	Wyandot County	6.7
25	Columbiana County	8.2	69	Paulding County	6.7
26	Fulton County	8.2	70	Tuscarawas County	6.5
27	Lorain County	8.2	71	Logan County	6.5
28	Allen County	8.1	72	Lake County	6.5
29	Ross County	8.1	73	Wayne County	6.4
30	Montgomery County	8.1	74	Madison County	6.4
31	Ottawa County	8.0	75	Darke County	6.4
32	Hardin County	7.9	76	Franklin County	6.3
33	Brown County	7.9	77	Fairfield County	6.3
34	Marion County	7.9	78	Putnam County	6.1
35	Williams County	7.9	79	Medina County	6.1
36	Harrison County	7.8	80	Warren County	6.1
37	Guernsey County	7.8	81	Hancock County	6.1
38	Lawrence County	7.7	82	Shelby County	6.0
39	Preble County	7.7	83	Union County	5.8
40	Seneca County	7.6	84	Geauga County	5.8
41	Cuyahoga County	7.5	85	Auglaize County	5.3
42	Defiance County	7.5	86	Delaware County	5.2
43	Henry County	7.5	87	Holmes County	4.9
44	Pickaway County	7.4	88	Mercer County	4.5

[a] These estimates, prepared in cooperation with the Bureau of Labor Statistics, U.S. Department of Labor, are based on 2012 benchmark, geared to county of residence, and NOT seasonally adjusted. (b) Rankings are based upon unrounded unemployment rates.

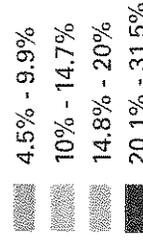
Ohio Department of Job and Family Services
Office of Workforce Development
Bureau of Labor Market Information
Columbus 43215

Ohio

Poverty in Ohio by County 2007-2011 American Community Survey

Statewide Poverty
1,654,193
14.8%

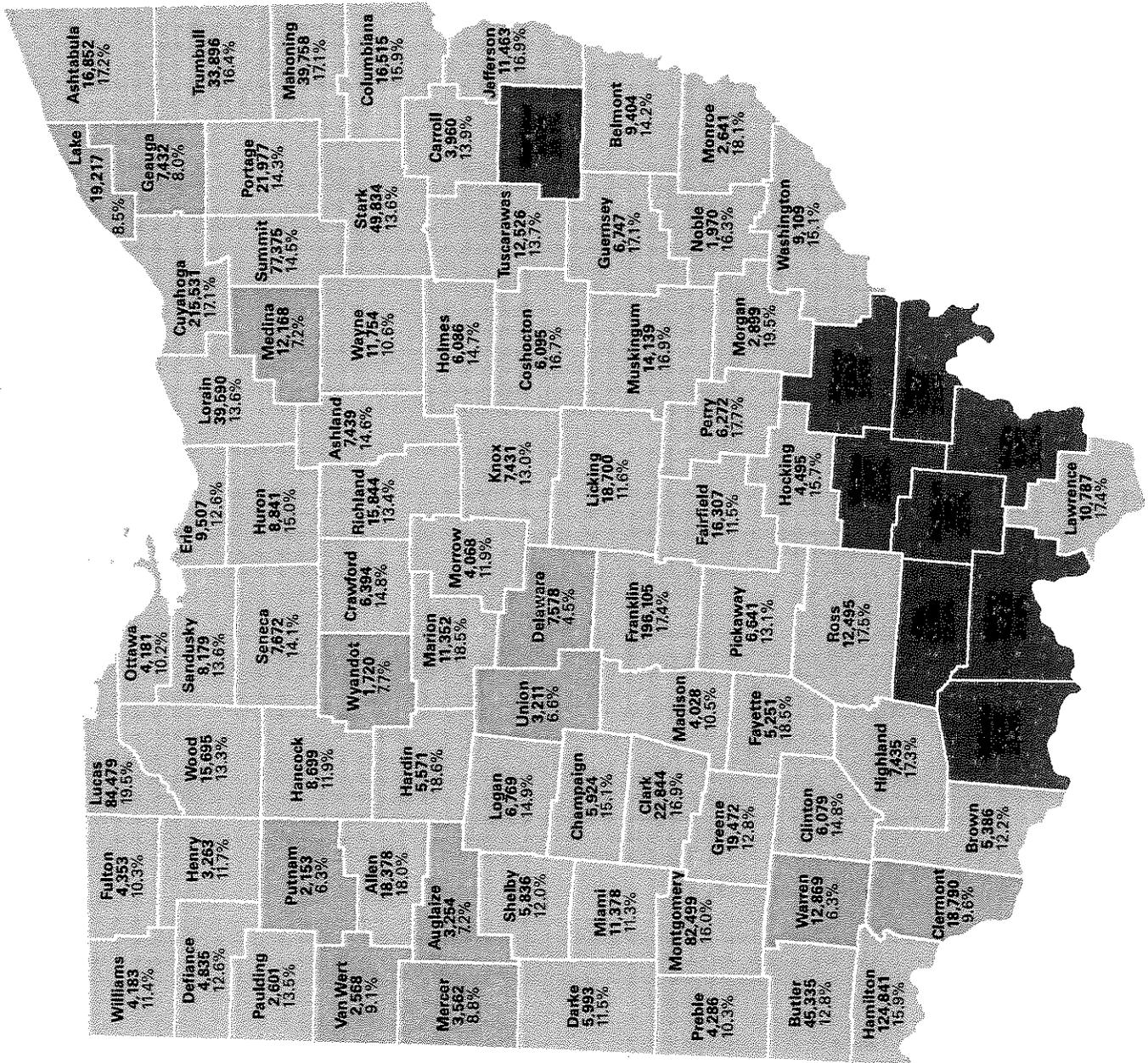
Percentage
County Population
in Poverty



This map shows the 2007-2011 American Community Survey estimates of the number and percentage of persons in poverty by county

Source:
2007-2011 American Community Survey,
U.S. Census Bureau

Prepared by:
Office of Research
Ohio Development Services Agency
February 2013



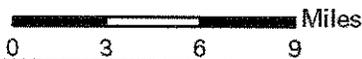
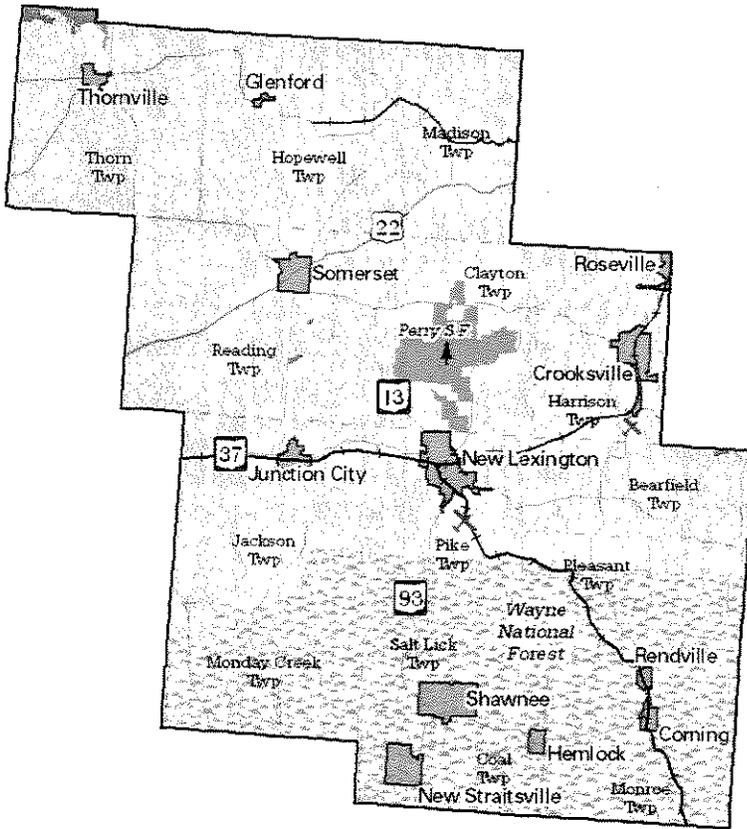
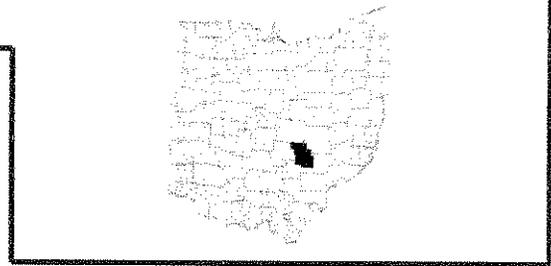
Ohio County Profiles



Prepared by the Office of Policy, Research and Strategic Planning

Perry County

Established: Act - March 1, 1818
2012 Population: 36,015
Land Area: 410.0 square miles
County Seat: New Lexington City
Named for: Commodore Oliver Hazard Perry, Battle of Lake Erie



Taxes

Taxable value of real property	\$479,566,350
Residential	\$357,362,760
Agriculture	\$76,327,820
Industrial	\$9,141,890
Commercial	\$33,787,500
Mineral	\$2,946,380
Ohio income tax liability	\$13,521,689
Average per return	\$957.83

Land Use/Land Cover

	Percent
Urban (Residential/Commercial/Industrial/Transportation and Urban Grasses)	0.88%
Cropland	21.57%
Pasture	6.43%
Forest	70.66%
Open Water	0.27%
Wetlands (Wooded/Herbaceous)	0.00%
Bare/Mines	0.19%

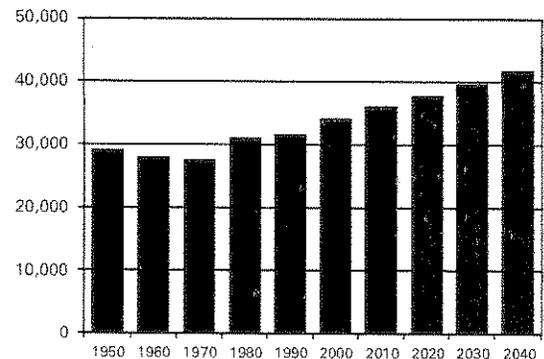
Largest Places

	Est. 2011	Census 2010
New Lexington vlg	4,791	4,731
Thorn twp UB	3,280	3,262
Reading twp UB	2,908	2,889
Crookville vlg	2,551	2,534
Hopewell twp UB	2,240	2,226
Pike twp UB	2,179	2,192
Jackson twp UB	2,051	2,037
Bearfield twp	1,688	1,677
Harrison twp UB	1,632	1,622
Clayton twp	1,576	1,565

UB: Unincorporated balance.

Total Population

Census		Estimated
1800		2012 36,015
1810		
1820	8,429	
1830	13,970	
1840	19,344	
1850	20,775	
1860	19,678	
1870	18,453	
1880	28,218	
1890	31,151	
1900	31,841	
	1910	35,396
	1920	36,098
	1930	31,445
	1940	31,087
	1950	28,999
	1960	27,864
	1970	27,434
	1980	31,032
	1990	31,557
	2000	34,078
	2010	36,058
	2020	37,610
	2030	39,690
	2040	41,710



Population by Race	Number	Percent
ACS Total Population	36,024	100.0%
White	35,251	97.9%
African-American	85	0.2%
Native American	86	0.2%
Asian	72	0.2%
Pacific Islander	0	0.0%
Other	28	0.1%
Two or More Races	502	1.4%
Hispanic (may be of any race)	121	0.3%
Total Minority	836	2.3%

Educational Attainment	Number	Percent
Persons 25 years and over	23,721	100.0%
No high school diploma	3,890	16.4%
High school graduate	11,539	48.6%
Some college, no degree	4,342	18.3%
Associate degree	1,704	7.2%
Bachelor's degree	1,360	5.7%
Master's degree or higher	886	3.7%

Family Type by Employment Status	Number	Percent
Total Families	9,711	100.0%
Married couple, husband and wife in labor force	4,108	42.3%
Married couple, husband in labor force, wife not	1,462	15.1%
Married couple, wife in labor force, husband not	689	7.1%
Married couple, husband and wife not in labor force	1,484	15.3%
Male householder, in labor force	361	3.7%
Male householder, not in labor force	182	1.9%
Female householder, in labor force	930	9.6%
Female householder, not in labor force	495	5.1%

Household Income	Number	Percent
Total Households	13,554	100.0%
Less than \$10,000	1,402	10.3%
\$10,000 to \$19,999	1,988	14.7%
\$20,000 to \$29,999	1,594	11.8%
\$30,000 to \$39,999	1,368	10.1%
\$40,000 to \$49,999	1,494	11.0%
\$50,000 to \$59,999	1,279	9.4%
\$60,000 to \$74,999	1,712	12.6%
\$75,000 to \$99,999	1,595	11.8%
\$100,000 to \$149,999	930	6.9%
\$150,000 to \$199,999	56	0.4%
\$200,000 or more	136	1.0%
Median household income	\$42,388	

Population by Age	Number	Percent
ACS Total Population	36,024	100.0%
Under 5 years	2,394	6.6%
5 to 17 years	6,987	19.4%
18 to 24 years	2,922	8.1%
25 to 44 years	9,073	25.2%
45 to 64 years	10,070	28.0%
65 years and more	4,578	12.7%
Median Age	38.0	

Family Type by Presence of Own Children Under 18	Number	Percent
Total Families	9,758	100.0%
Married-couple families with own children	3,074	31.5%
Male householder, no wife present, with own children	401	4.1%
Female householder, no husband present, with own children	920	9.4%
Families with no own children	5,363	55.0%

Poverty Status of Families By Family Type by Presence of Related Children	Number	Percent
Total Families	9,758	100.0%
Family income above poverty level	8,468	86.8%
Family income below poverty level	1,290	13.2%
Married couple, with related children	282	21.9%
Male householder, no wife present, with related children	150	11.6%
Female householder, no husband present, with related children	642	49.8%
Families with no related children	216	16.7%

Ratio of Income To Poverty Level	Number	Percent
Population for whom poverty status is determined	35,526	100.0%
Below 50% of poverty level	2,752	7.7%
50% to 99% of poverty level	3,520	9.9%
100% to 149% of poverty level	3,208	9.0%
150% to 199% of poverty level	4,462	12.6%
200% of poverty level or more	21,584	60.8%

Geographical Mobility	Number	Percent
Population aged 1 year and older	35,568	100.0%
Same house as previous year	30,548	85.9%
Different house, same county	3,453	9.7%
Different county, same state	1,343	3.8%
Different state	198	0.6%
Abroad	26	0.1%

Percentages may not sum to 100% due to rounding.

Travel Time To Work

	Number	Percent
Workers 16 years and over	14,530	100.0%
Less than 15 minutes	3,259	22.4%
15 to 29 minutes	3,362	23.1%
30 to 44 minutes	3,390	23.3%
45 to 59 minutes	2,230	15.3%
60 minutes or more	2,289	15.8%

Mean travel time 33.3 minutes

Housing Units

	Number	Percent
Total housing units	15,143	100.0%
Occupied housing units	13,762	90.9%
Owner occupied	10,016	72.8%
Renter occupied	3,746	27.2%
Vacant housing units	1,381	9.1%

Year Structure Built

	Number	Percent
Total housing units	15,143	100.0%
Built 2005 or later	686	4.5%
Built 2000 to 2004	1,291	8.5%
Built 1990 to 1999	2,376	15.7%
Built 1980 to 1989	1,525	10.1%
Built 1970 to 1979	1,986	13.1%
Built 1960 to 1969	902	6.0%
Built 1950 to 1959	947	6.3%
Built 1940 to 1949	804	5.3%
Built 1939 or earlier	4,626	30.5%

Median year built 1971

Value for Specified Owner-Occupied Housing Units

	Number	Percent
Specified owner-occupied housing units	10,016	100.0%
Less than \$20,000	499	5.0%
\$20,000 to \$39,999	870	8.7%
\$40,000 to \$59,999	993	9.9%
\$60,000 to \$79,999	1,193	11.9%
\$80,000 to \$99,999	1,641	16.4%
\$100,000 to \$124,999	1,193	11.9%
\$125,000 to \$149,999	923	9.2%
\$150,000 to \$199,999	1,284	12.8%
\$200,000 to \$299,999	1,124	11.2%
\$300,000 to \$499,999	169	1.7%
\$500,000 to \$999,999	111	1.1%
\$1,000,000 or more	16	0.2%

Median value \$97,500

House Heating Fuel

	Number	Percent
Occupied housing units	13,762	100.0%
Utility gas	6,735	48.9%
Bottled, tank or LP gas	2,077	15.1%
Electricity	3,613	26.3%
Fuel oil, kerosene, etc	315	2.3%
Coal, coke or wood	941	6.8%
Solar energy or other fuel	75	0.5%
No fuel used	6	0.0%

Percentages may not sum to 100% due to rounding.

Gross Rent

	Number	Percent
Specified renter-occupied housing units	3,746	100.0%
Less than \$100	7	0.2%
\$100 to \$199	201	5.4%
\$200 to \$299	249	6.6%
\$300 to \$399	292	7.8%
\$400 to \$499	544	14.5%
\$500 to \$599	482	12.9%
\$600 to \$699	383	10.2%
\$700 to \$799	516	13.8%
\$800 to \$899	294	7.8%
\$900 to \$999	213	5.7%
\$1,000 to \$1,499	159	4.2%
\$1,500 or more	0	0.0%
No cash rent	406	10.8%

Median gross rent \$579

Median gross rent as a percentage of household income 29.1

Selected Monthly Owner Costs for Specified Owner-Occupied Housing Units

	Number	Percent
Specified owner-occupied housing units with a mortgage	6,243	100.0%
Less than \$400	69	1.1%
\$400 to \$599	456	7.3%
\$600 to \$799	1,084	17.4%
\$800 to \$999	1,263	20.2%
\$1,000 to \$1,249	1,196	19.2%
\$1,250 to \$1,499	859	13.8%
\$1,500 to \$1,999	967	15.5%
\$2,000 to \$2,999	280	4.5%
\$3,000 or more	69	1.1%

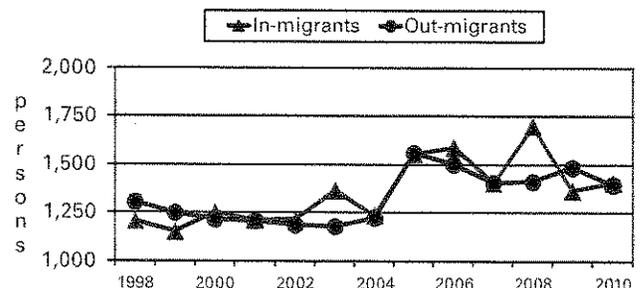
Median monthly owners cost \$1,052

Median monthly owners cost as a percentage of household income 22.6

Vital Statistics

	Number	Rate
Births / rate per 1,000 women aged 15 to 44	443	65.8
Teen births / rate per 1,000 females 15-19	56	42.2
Deaths / rate per 100,000 population	314	870.8
Marriages / rate per 1,000 population	235	6.5
Divorces / rate per 1,000 population	123	3.4

Migration



Agriculture

Land in farms (acres)	97,000
Number of farms	630
Average size (acres)	154
Total cash receipts	\$29,732,000
Per farm	\$47,194

Education

Public schools buildings	15
Students (Average Daily Membership)	5,839
Teachers (Full Time Equivalent)	393.1
Expenditures per student	\$10,719
Graduation rate	93.3
Non-public schools	2
Students	191
4-year public universities	0
Branches	0
2-year public colleges	0
Private universities and colleges	0
Public libraries (Main / Branches)	2 / 6

Transportation

Registered motor vehicles	42,467
Passenger cars	23,801
Noncommercial trucks	9,977
Total license revenue	\$1,115,327.92
Interstate highway miles	0.00
Turnpike miles	0.00
U.S. highway miles	14.27
State highway miles	170.99
County, township, and municipal road miles	769.97
Commercial airports	2

Voting

Number of registered voters	24,415
Voted in 2010 election	15,223
Percent turnout	62.4%

Health Care

Physicians (MDs & DOs)	11
Registered hospitals	0
Number of beds	0
Licensed nursing homes	3
Number of beds	230
Licensed residential care	0
Number of beds	0
Adults with employer-based insurance	47.6%
Children with employer-based insurance	46.3%

State Parks, Forests, Nature Preserves, And Wildlife Areas

Areas/Facilities	4
Acreage	5,552.54

Communications

Television stations	0
Radio stations	1
Daily newspapers	0
Circulation	0
Weekly newspapers	1
Circulation	3,800

Crime

Total crimes reported in Uniform Crime Report	375
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Finance

FDIC insured financial institutions (HQs)	2
Assets (000)	\$182,796
Branch offices	13
Institutions represented	9

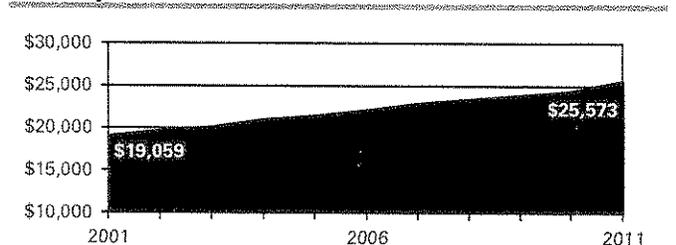
Transfer Payments

Total transfer payments	\$295,972,000
Payments to individuals	\$288,986,000
Retirement and disability	\$93,012,000
Medical payments	\$124,341,000
Income maintenance (Supplemental SSI, family assistance, food stamps, etc)	\$40,605,000
Unemployment benefits	\$16,966,000
Veterans benefits	\$5,635,000
Federal education and training assistance	\$6,338,000
Other payments to individuals	\$2,089,000
Total personal income	\$877,762,000
Dependency ratio	33.7%

Federal Expenditures

Direct expenditures or obligations	\$286,338,716
Retirement and disability	\$113,445,793
Other direct payments	\$97,824,881
Grant awards	\$68,672,423
Highway planning and construction	\$11,103,686
Temporary assistance to needy families	\$2,185,096
Medical assistance program	\$43,827,430
Procurement contract awards	\$1,379,152
Dept. of Defense	\$146,785
Salary and wages	\$5,016,467
Dept. of Defense	\$163,000
Other federal assistance	\$46,399,798
Direct loans	\$2,205,270
Guaranteed loans	\$19,451,106
Insurance	\$24,743,422

Per Capita Personal Income



Civilian Labor Force

	2007	2008	2009	2010	2011
Civilian labor force	16,300	16,300	16,800	16,700	16,400
Employed	15,100	14,900	14,600	14,600	14,600
Unemployed	1,200	1,400	2,200	2,200	1,800
Unemployment rate	7.3	8.5	13.2	12.9	11.2

Establishments, Employment, and Wages by Sector: 2011

Industrial Sector	Number of Establishments	Average Employment	Total Wages	Average Weekly Wage
Private Sector	421	3,915	\$133,331,739	\$655
Goods-Producing	86	1,296	\$71,940,040	\$1,068
Natural Resources and Mining	23	222	\$10,654,931	\$922
Construction	41	357	\$32,998,059	\$1,776
Manufacturing	22	716	\$28,287,050	\$760
Service-Providing	336	2,620	\$61,391,699	\$451
Trade, Transportation and Utilities	109	821	\$19,525,838	\$457
Information	8	30	\$1,153,732	\$742
Financial Services	36	189	\$5,353,002	\$544
Professional and Business Services	37	179	\$6,581,317	\$707
Education and Health Services	60	807	\$21,769,422	\$519
Leisure and Hospitality	50	432	\$4,322,338	\$192
Other Services	34	162	\$2,686,050	\$319
Federal Government		62	\$2,656,593	\$826
State Government		38	\$1,785,363	\$902
Local Government		1,850	\$52,966,317	\$551

Private Sector total includes Unclassified establishments not shown.

Change Since 2006

Private Sector	-4.8%	-11.7%	0.6%	13.9%
Goods-Producing	-15.7%	-32.0%	-8.9%	34.0%
Natural Resources and Mining	0.0%	-20.1%	-2.3%	22.3%
Construction	-30.5%	-39.3%	6.7%	75.5%
Manufacturing	10.0%	-31.2%	-23.8%	10.8%
Service-Producing	-1.2%	3.7%	14.5%	10.5%
Trade, Transportation and Utilities	-6.0%	0.4%	13.6%	13.1%
Information	14.3%	-16.7%	-24.6%	-8.4%
Financial Services	-14.3%	-18.5%	-2.7%	19.3%
Professional and Business Services	-9.8%	4.1%	16.7%	12.2%
Education and Health Services	30.4%	15.3%	22.3%	6.1%
Leisure and Hospitality	-3.8%	4.3%	24.3%	18.5%
Other Services	0.0%	5.2%	8.9%	3.2%
Federal Government		-19.5%	-3.4%	19.5%
State Government		-11.6%	13.1%	26.5%
Local Government		-0.1%	8.2%	8.5%

Business Numbers

	2008	2009	2010	2011	2012
Business starts	84	64	51	52	60
Active businesses	589	555	525	533	526

Residential

Construction	2008	2009	2010	2011	2012
Total units	53	23	30	20	24
Total valuation (000)	\$8,410	\$3,337	\$4,182	\$2,815	\$3,441
Total single-unit bldgs	51	21	23	16	20
Average cost per unit	\$160,901	\$149,166	\$160,159	\$150,426	\$151,624
Total multi-unit bldg units	2	2	7	4	4
Average cost per unit	\$102,007	\$102,007	\$71,147	\$102,007	\$102,007

Major Employers

Buckingham Coal	Mining
CerCo LLC	Mfg
Cooper-Standard Automotive	Mfg
Crooksville Exempted Village Schools	Govt
Eclipse Aluminum Trailer, LLC	Mfg
Ludowici Roof Tile	Mfg
New Lexington City Schools	Govt
Northern Local Schools	Govt
PCC Airfoils LLC	Mfg
Perry County Government	Govt
Shelly Materials Inc	Mining
Southern Local Schools	Govt

SERGEANT STONE, INC.
DEAVERTOWN LIMESTONE MINE SITE
Proposal for Section 401 Permit

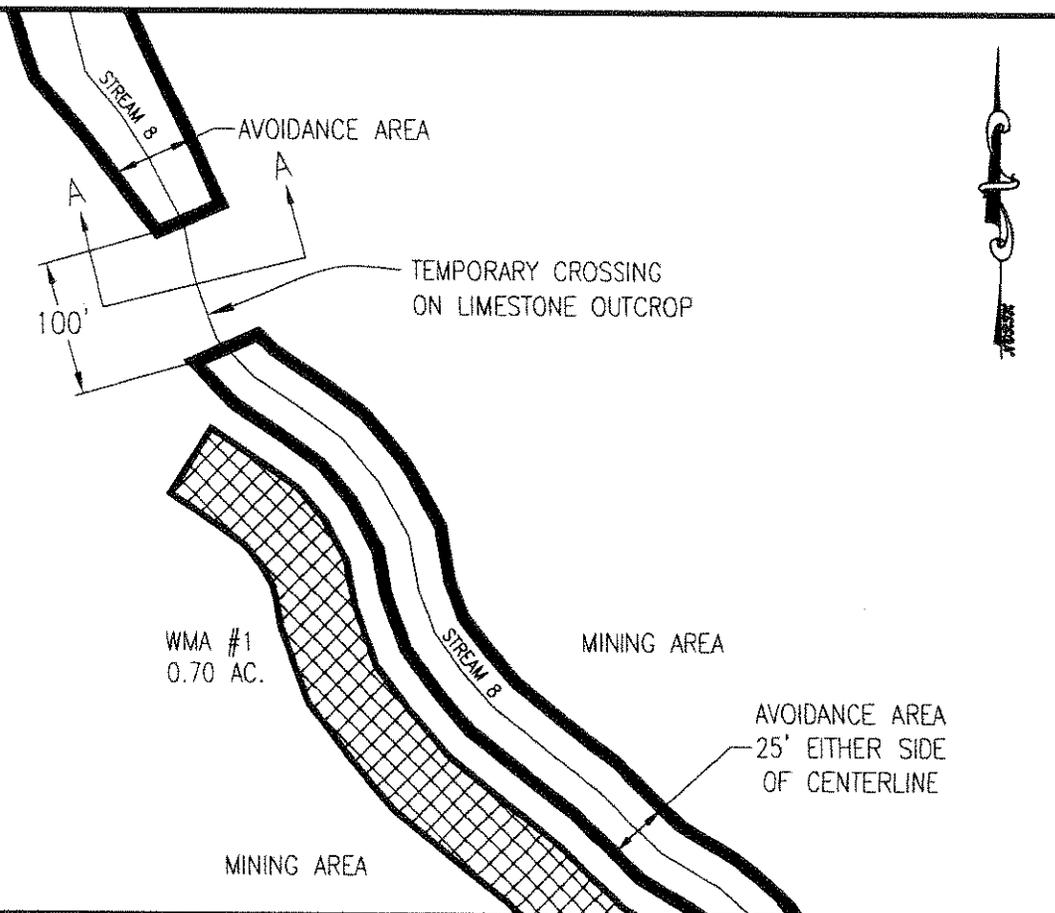
APPENDIX D

Reconstruction and Mitigation Map

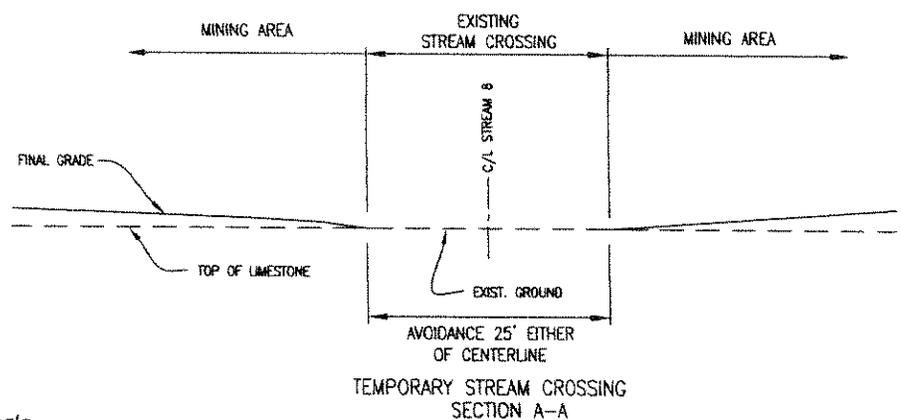
Temporary Stream Crossing

Wetland Mitigation Area #1

Stream Reconstruction Details



SCALE: not to scale

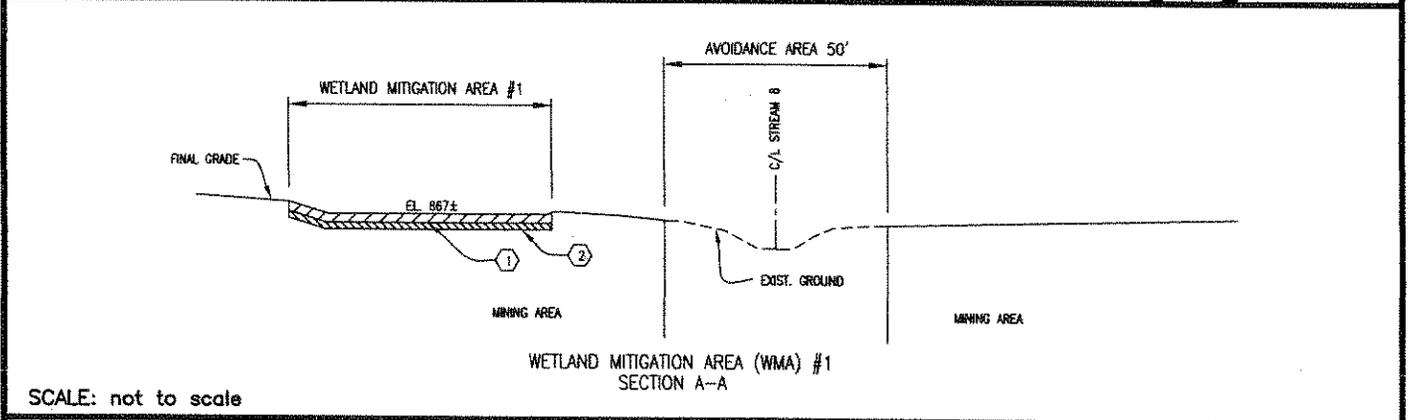
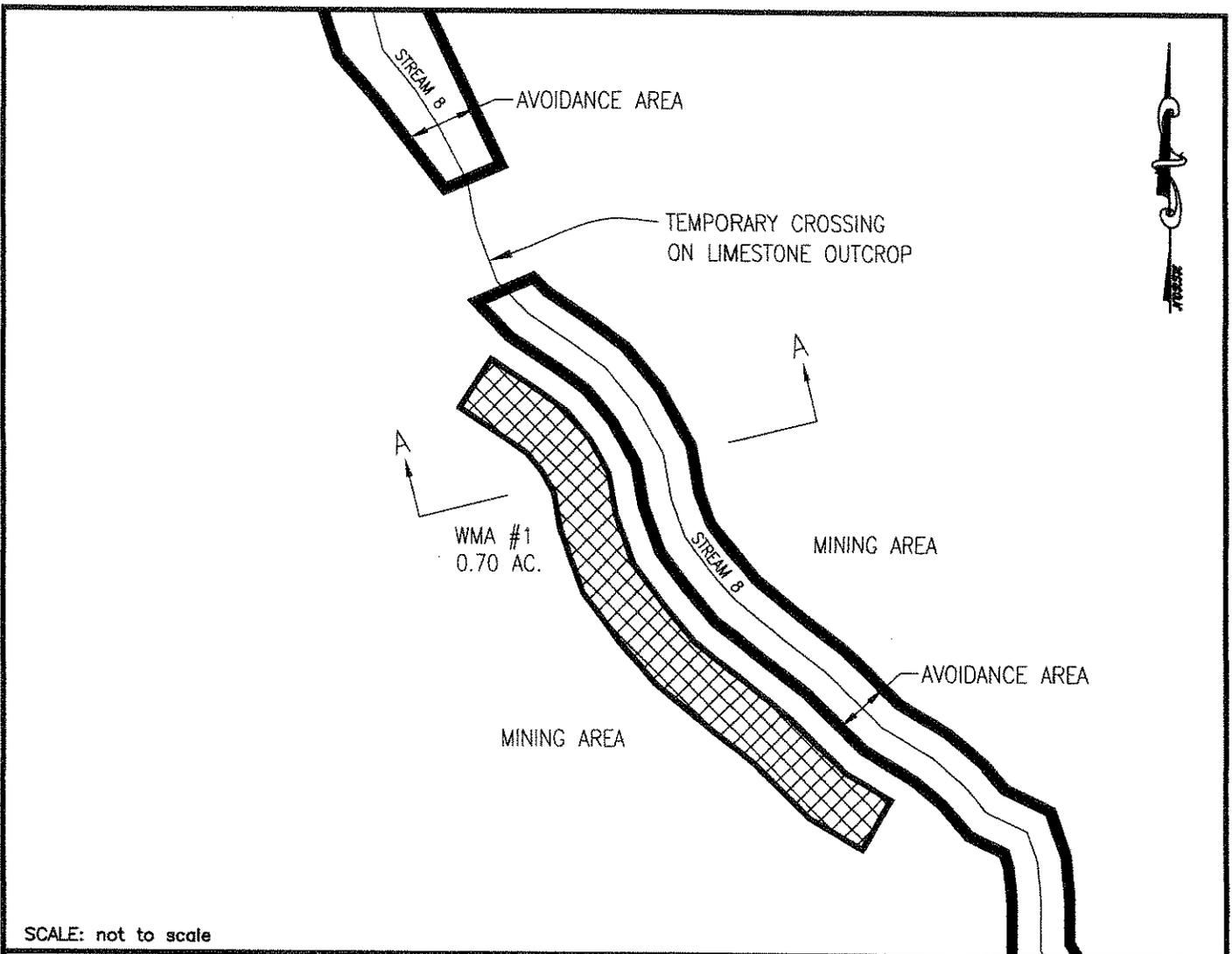


SCALE: not to scale

NOTES
 Temporary Stream Crossing
 No fill will be placed in the stream channel to create the crossing.
 The crossing already exists and is situated on the limestone outcrop.

SERGEANT STONE, INC.
 DEAVERTOWN MINE SITE
 TEMPORARY STREAM CROSSING
 DATE: 9/9/14

E Linn Engineering, Inc. 740-462-7434
 Civil Engineering Consultants
 P.O. Box 2086 Zanesville, Ohio 43702-2086



NOTES

Wetland Mitigation Area #1:
 WMA #1 will be built at the time of final reclamation.
 WMA #1 is supplied by the hydrology of Stream 8.
 Surface area = 0.70 ac. (min).
 Dimensions: 58'W x 525'L x 6"D
 Top of substrate = El. 867±.

KEYNOTES

1 Substrate: Substrate shall consist of organic rich loam and silt loam soils. Soils shall have adequate texture and organic matter to retain moisture, allow diffusion of oxygen and carbon dioxide, and retain nutrients for absorption through the plant roots.
 Place and spread substrate to a total thickness of 9". Do not compact.

2 Cohesive Soil: Material used to construct the liner shall be cohesive soil material obtained on-site. Material shall be placed in 8" max. loose lifts and compacted by repetitious passes of heavy earthmoving equipment. Total thickness shall not be less than 12".

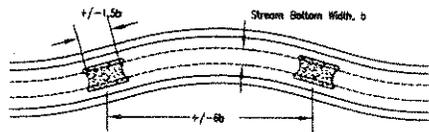
SERGEANT STONE, INC.
DEAVERTOWN MINE SITE
WETLAND MITIGATION AREA #1

DATE: 9/9/14

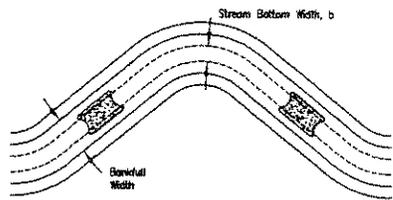


Linn Engineering, Inc.
Civil Engineering Consultants
 P.O. Box 2086 Zanesville, Ohio 43702-2086

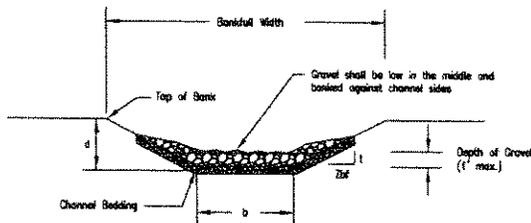
740-462-7434



Spacing of 5 to 7 Times Stream Bottom Width (b)
Length = +/- 1.5 Times Stream Bottom Width (b)



GRAVEL RIFFLE PLACEMENT AND SPACING



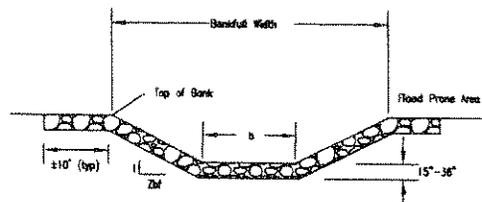
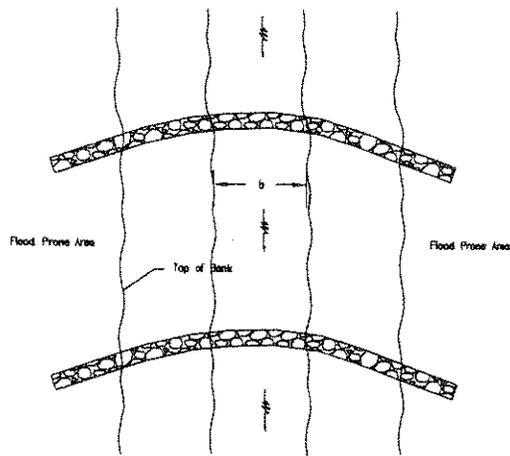
GRAVEL RIFFLE

The length of gravel riffle shall be equivalent to 1.5 times the stream bottom width, b.

The gravel shall NOT be placed so that it acts as a dam or creates a backwater pool. It shall be generally less than 1 ft. thick and no higher than the Max. Riffle Depth.

The gravel shall be placed so that it is slightly lower in the middle and higher by the streambanks.

Gravel size shall be similar to the substrate from the former stream channel. The gravel will be stable at bankfull flow but erodible at 0.100 flow.



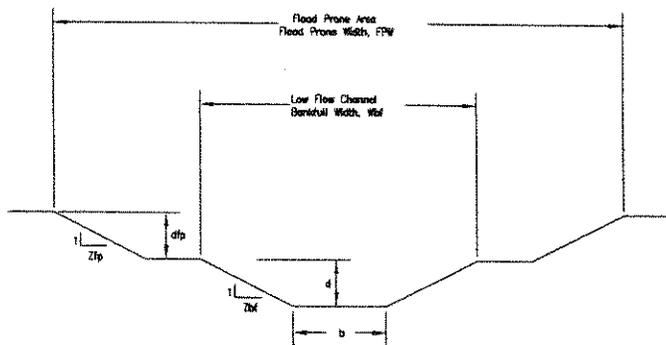
ROCK CHECK

DOT Type C rock (18" x 350 x 24") shall be used.

The ends shall extend from the top of the channel into the banks 10 ft. or a distance equal to about one-half the channel width, whichever is less.

The trench shall be 1 to 2 ft. wide and shall be dug to arc or form a vee pointing upstream with the midsection of the rock check farther upstream than where it meets the channel bank.

The rock check shall be flush with the channel so that the finished rock surface is on the same grade as the channel bottom and not creating a dam or ponding water.



TWO-STAGE CHANNEL

Low Flow Channel:

The capacity of the Low Flow Channel shall handle the 1.5 year 6 hour storm.

The flow length of the low flow channel should equal the original channel length.

Minimize use of riprap armored channels. If used, the riprap above the normal low flow should be covered with soil and planted.

Flood Prone Area:

The capacity of the Flood Prone Area plus the Low Flow Channel shall handle the 100 year 6 hour storm.

Encourage natural vegetation in the Flood Prone Area for the benefits of water quality, bank stability and wildlife.

Flood Prone Areas shall have side slopes approximating Zfp, however variable slopes are preferred.

NOTES :

1. For 4-10% and >10% channels, meander pattern is not specified; however, straight channels are discouraged. Reconstructed channels should include slight meanders which will introduce channel diversity.
2. In general, the steeper the slope, the fewer the meanders.
3. 4-10% channel, place Rock Check upstream and downstream of Gravel Riffle.
4. >10% channel, place Rock Check at 50' intervals and Gravel Riffle between every third or fourth Rock Check.

SERGEANT STONE, INC.
DEAVERTOWN MINE SITE
STREAM RECONSTRUCTION DETAILS

DATE: 9/9/14



Linn Engineering, Inc.
Civil Engineering Consultants

740-452-7434

P.O. Box 2086 Zanesville, Ohio 43702-2086

APPENDIX E

Threatened and Endangered Species
Archaeological and Cultural Resources

Tim Linn

From: Jeromy_Applegate@fws.gov
Sent: Tuesday, November 30, 2010 10:12 AM
To: Tim Linn
Subject: Proposed limestone quarry, Perry and Morgan Counties, Ohio
Attachments: pic08331.gif; Fig2 Aerial Photo.pdf; Fig1 Site Location Map.pdf

Tim,

I've reviewed the information you provided below regarding the proposed limestone quarry in Bearfield Township, Perry County, and Deerfield Township, Morgan County, Ohio. The approximately 100-acre site is primarily agricultural, with some wooded areas (approximately 10-15 acres) on portions of the project site. Although your description of the site indicates that agricultural fields are row-cropped, aerial photos from multiple years suggest that they are used for hay production.

As indicated in your email, the project is in townships that are within the range of the federally endangered American burying beetle (*Nicrophorus americanus*). However, the range of this species does not currently extend into proposed project area (it is limited to the southern portion of these two townships). Therefore, presence of American burying beetle on the proposed project site is unlikely.

The small wooded areas on the project site may contain suitable summer roosting and foraging habitat for Indiana bats. You have indicated that no suitable hibernacula are present. The project may result in removal of suitable summer habitat. However, it appears that, because only a small amount of tree clearing may be necessary, and similar forested habitat appears abundant in the adjacent landscape, significant impacts to Indiana bats through habitat removal are unlikely. Direct impacts to Indiana bat are possible, however, if roost trees are cut while occupied by bats. Therefore, we recommend that any unavoidable tree clearing occur only between September 30 and April 1, when bats would not be present. Doing so should ensure that any effects to Indiana bats are insignificant or discountable.

You are correct that the federally listed and proposed mussel species in Morgan County are present in the Muskingum River. They would not be found on the project site. In order to minimize indirect impacts to Federally listed and proposed mussels in the Muskingum River, we recommend that best management practices be used to reduce downstream sedimentation.

Feel free to contact me with any questions.

Jeromy

Jeromy Applegate
Fish and Wildlife Biologist
U S Fish and Wildlife Service
Ohio Ecological Services Field Office
4625 Morse Rd., Suite 104
Columbus, OH 43230
Phone: 614-416-8993 ext. 21
FAX: 614-416-8994

"Tim Linn" <timlinn@sbcglobal.net>

"Tim Linn"
<timlinn@sbcglobal.net>

To<Jeromy_Applegate@fws.gov>

11/14/2010 10:44 AM

cc

Subject: endangered species

Hi Jeromy,

I doubt you remember, but about a year ago we spoke about a proposed limestone quarry on the Perry-Morgan county line. At any rate, DMRM has approved the industrial minerals mining permit application. Applicant is Sergeant Stone, Inc. - app. #IM-10430. I am now going through the 401 and 404 process and in particular the need to address endangered species. I have attached a Site Location Map (USGS Deavertown quad) and an aerial photo. Except for a very small wooded area in Deerfield Twp, Morgan Co. the entire site is active cropland-alternating years of corn and soybeans. The wooded area has been impacted by an active oil-gas well. The Corp's comment is: The following endangered species are known to occur in Perry County: Indiana bat and American burying beetle. Also, the following endangered species are known to occur in Morgan County: Indiana bat, American burying beetle, fanshell, pink mucket pearly and snuffbox (Proposed Endangered in recent Federal Register) mussels. Actually the American burying beetle is known to occur in the subject townships where you propose to conduct limestone quarrying activities.

I have not had the project area professionally studied for the presence of these species for the following reasons. For the Indiana bat, hibernacula and valuable habitat are lacking. The vast majority of the project area is cropland. There are no caves, tunnels, bridges or flowing streams. For the burying beetle, pesticides have been used in the farming operation to control insects. The "waters of the US delineation" did not encounter any mussels as the project area simply does not have their habitat. I believe the area in Morgan County where mussels would be present would be along the Muskingum River.

Could you please offer your comments with respect to my assessment of the presence of these species and/or the need for further evaluation?

Thanks,
<<...>> <<...>>

Timothy H. Linn, PE, PS
Linn Engineering, Inc.
534 Market St.
Zanesville, Ohio 43701
740-452-7434 phone
740-452-5198 fax (See attached file: Fig2 Aerial Photo.pdf)(See attached file: Fig1 Site Location Map.pdf)

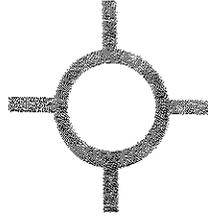
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Craig S. Keener, PhD.
5180 US 42 South
Plain City, Ohio 43064
Phone/Fax: (614) 733-0987
Email: pasteam@earthlink.net

11-30-10

#701

Timothy H. Linn
Linn Engineering, Inc.
534 Market St.
Zanesville, Ohio 43701

Dear Tim,

Professional Archaeological Services Team conducted an archival review to determine if potential cultural resources are present at a limestone quarry application situated on the west and east sides of State Route 555 in Bearfield Township, Perry County and Deerfield Township, Morgan County, Ohio (Figure 1). The proposed application area is 99 acres in size. The archival review investigated whether any archaeological or historical resources are located within the project and in two mile radius extending from the center of the application. The research was conducted at the request of Linn Engineering, Inc. The following information is what was obtained during the archival review.

Archival Review

Professional Archaeological Services Team (PAST) conducted an archaeological literature review of records at the Ohio Historic Preservation Office (OHPO) in November of 2010. Research was focused on obtaining archaeological information associated with the proposed project. Records that were checked included the National Register of Historic Places (NRHP) files, the National Register Historic Districts Existing and Potential List, the Mills Atlas, the Ohio Archaeological Inventory (OAI), the Ohio Historical Inventory (OHI), recorded cemeteries, county atlases/maps, county histories, and Cultural Resource Management (CRM) survey files. OHPO was contacted concerning this project and provided access to the archival booklets and files.

National Register of Historic Places (NRHP) files

The NRHP files did not contain any recorded archaeological or historical properties in the application or the study radius.

National Register of Historic Districts Existing and Potential List

This list does not contain any recorded archaeological district in the application or study radius.

Mills Atlas

Review of Mills' Atlas (1914) identified no recorded sites within the application area. However three sites are recorded within the study radius. One site, listed as a burial, is located in Sections 23 and 24 of Pleasant Township, Perry County (to the southwest of the proposed application). The second site, listed as a mound, is located in Section 1 of Bearfield Township, Perry County. The third site, listed as a mound, is located in Section 7 of Deerfield Township, Morgan County.

Ohio Historic Preservation Office (OHPO) topographic maps and Ohio Archaeological Inventory (OAI)

Review of the *OHPO 1961 (Photo-Revised 1975, Photo-Inspected 1983) Deavertown and 1961 (Photo-Revised 1975, Photo-Inspected 1984) Rokeby Lock Quadrangles, Ohio, 7.5 Minute Series* topographic maps and OAIs identified no archaeological sites within the application area. However, three were found within the study radius and are listed below (Figure 2).

Site Number	Temporal Period	Site Type
33-PE-509	Unassigned Prehistoric and Historic	Lithic Scatter/Historic Scatter
33-PE-617	Unassigned Prehistoric	Lithic Scatter
33-PE-716	Unassigned Prehistoric	Workshop

Two of the sites (33PE509 and 617) are located adjacent to the proposed application are, but do not appear to overlap. None of the sites are mounds.

Ohio Historical Inventory (OHI) files

The OHI files did not contain any recorded historical properties within the application area or the study radius.

Cultural Resource Management (CRM) files

A check of the CRM files found that one filed CRM survey lies adjacent to and may possibly slightly overlap the application area (Aument et al. 1995) (Figure 2). Three additional surveys fall within the study radius (Leary et al. 2002; Workman 2004, 2006).

Recorded Cemeteries

A check of the cemeteries files found that no cemeteries appear adjacent to or within the application area. However four appear within the study radius (Fletcher Chapel Methodist Episcopal-Holcomb, Hearing/Haring, Unnamed #1, and Zion Church)(see Figure 2).

County Histories

The Perry County histories indicate no historical events or historical significance associated with the application area (Lake 1875; Graham 1883; Martzloff 1902).

The Morgan County histories indicate no historical events or historical significance associated with the application area (MCOHS, 1980; Robertson 1886).

Atlases/Maps

The 1875 *Atlas of Perry County, Ohio* (Lake 1875) shows two structures within the application area (Figure 3). The project appears to be owned by William L. Bennett, E. S. Bennett, Abraham Bennett, and R. Cooper. The county histories do not indicate any historical significance associated with these property owners.

The 1902 *Atlas of Morgan County, Ohio* (Murray 1902) shows no structures within the project area (Figure 4). The project appears to be owned by E. S. Bennett, and Abraham Bennett. The county histories do not indicate any historical significance associated with these property owners.

The 1911 *New Lexington, Ohio 15 Minute Series (Topographic)* map show two buildings in the project area (Figure 5).

The 1961 (*Photo-Revised 1975, Photo-Inspected 1983*) *Deavertown Quadrangle, Ohio, 7.5 Minute Series (Topographic)* map shows seven buildings within the project area (Figure 1).

Summary

Professional Archaeological Services Team completed an archival review for the proposed limestone quarry application located on the west and east sides of State Route 555 in Bearfield Township, Perry County and Deerfield Township, Morgan County, Ohio. The research was conducted at the request of Linn Engineering, Inc. The archival review indicated that no previously recorded archaeological or historical sites are located in the application area. No historical significance was noted associated with the owners of the land denoted on the historic atlases. Several buildings are shown inside the application on the historic and modern map/topos.

Sincerely,



Craig S. Keener, Ph.D
PAST

References

Aument, B. W., W. H. Hunter, E. Kuhns, A. J. Tookey, and K. K. Butterworth, Editor
1995 *Cultural Resource Survey for the Proposed PER-555-2.65 and 2.73 (PID 13510 AMD 13511) Bridge Replacements and Road Realignment in Bearfield Township, Perry County, Ohio*. ODOT. A copy on file at the Ohio Historic Preservation Office, Columbus.

Graham, A.A.
1883 *History of Fairfield and Perry Counties*. W.H. Beers & Co., Chicago.

Lake, D. J.
1875 *Atlas of Perry County, Ohio*. Titus, Simmons & Titus, Philadelphia.

Leary, C. G., A. Reed, D. Miller, and C. Bergman
2002 *Phase I Cultural Resources Survey of Commercial Development Site and Associated Wetland Mitigation Area for the Proposed Maysville Market Center in Newton Township, Muskingum County, and Deerfield Township, Morgan County, Ohio*. BHE Environmental, Inc. A copy on file at the Ohio Historic Preservation Office, Columbus.

Martzolff, C.

1902 *History of Perry County, Ohio*. Ward & Weiland, New Lexington.

Morgan County Ohio Historical Society

1980 *The History of Morgan County, Ohio, 1980*. Morgan County Ohio Historical Society, Inc., McConnellsville.

Mills, W. C.

1914 *An Archaeological Atlas of Ohio*. Ohio State Archaeological and Historical Society, Columbus.

Murray, P. R.

1902 *Atlas of Morgan County, Ohio*. Paul R. Murray, New Philadelphia, Ohio.

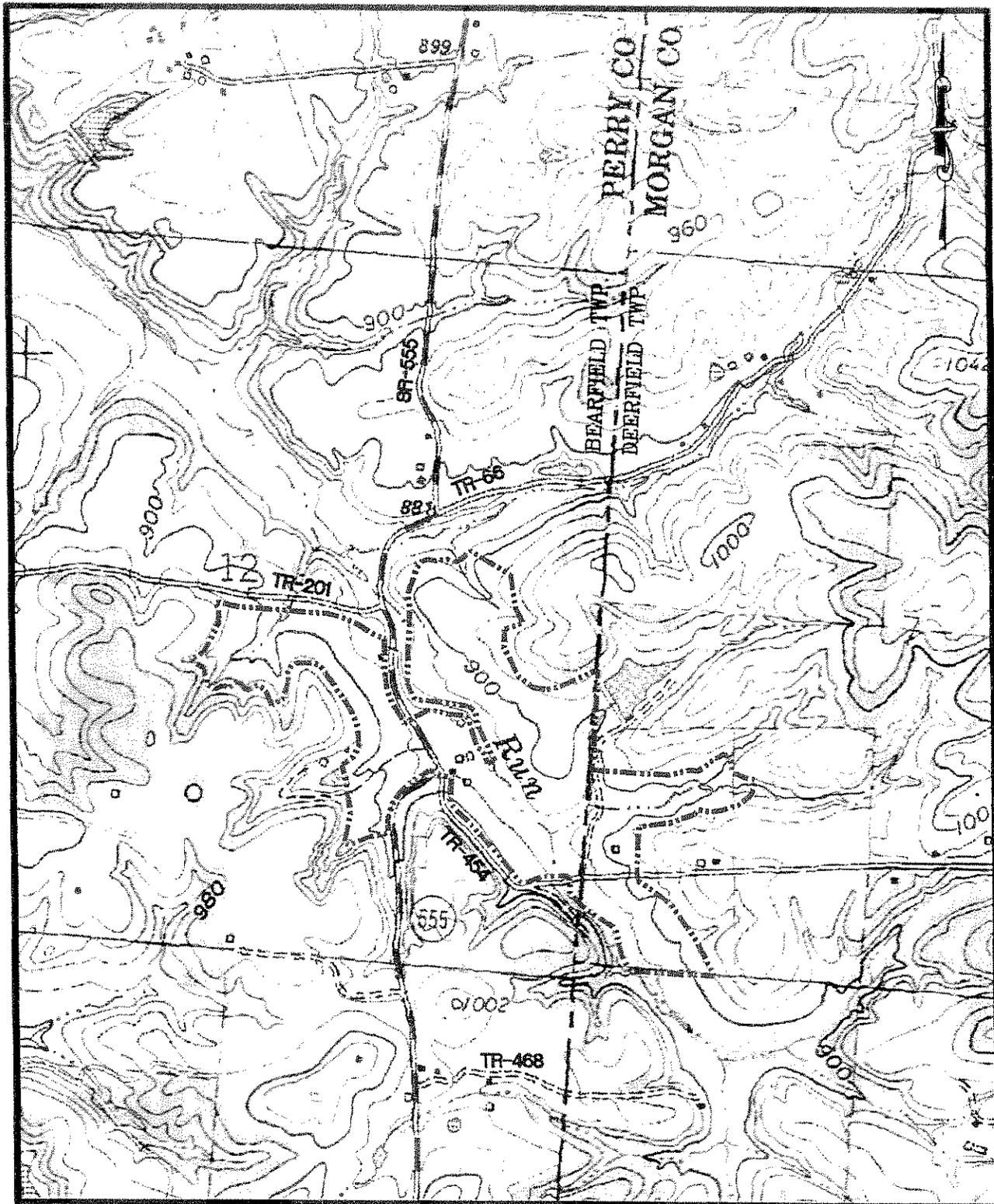
Robertson, Charles M.D.

1886 *History of Morgan County, Ohio*. L. H. Watkins & Co., Chicago.

Workman, K.

2004 *Phase I Cultural Resources Management Investigations for the Proposed Portersville PCS/Adkins Wireless Cellular Tower in Bearfield Township, Perry County, Ohio*. EMH&T, Inc. A copy on file at the Ohio Historic Preservation Office, Columbus.

2006 *Phase I Cultural Resources Management Survey for the Proposed Portersville PCS/Ferguson Wireless Cellular Tower in Bearfield Township, Perry County, Ohio*. EMH&T, Inc. A copy on file at the Ohio Historic Preservation Office, Columbus.



LAT: 39° 42' 00.35823"N LONG: 82° 01' 49.63496"W
 Source: USGS 7.5 minute Deavertown quadrangle

 STUDY AREA, 99 acres

Figure 1: SITE LOCATION MAP
 SERGEANT STONE, INC.
 PERRY and MORGAN COUNTIES, OHIO
 DATE: 9/10/10 SCALE: 1" = 1000'

 Linn Engineering, Inc. 740-452-7434
 Civil Engineering Consultants
 P.O. Box 2086 Zanesville, Ohio 43702-2086

Figure 1. Portion of the USGS 1961 (Photo-Revised 1975 and Photo-Inspected 1983) Deavertown and Quadrangle, Ohio, 7.5 Minute Series (Topographic) map showing the location of the application area (map provided by Linn Engineering, Inc.).

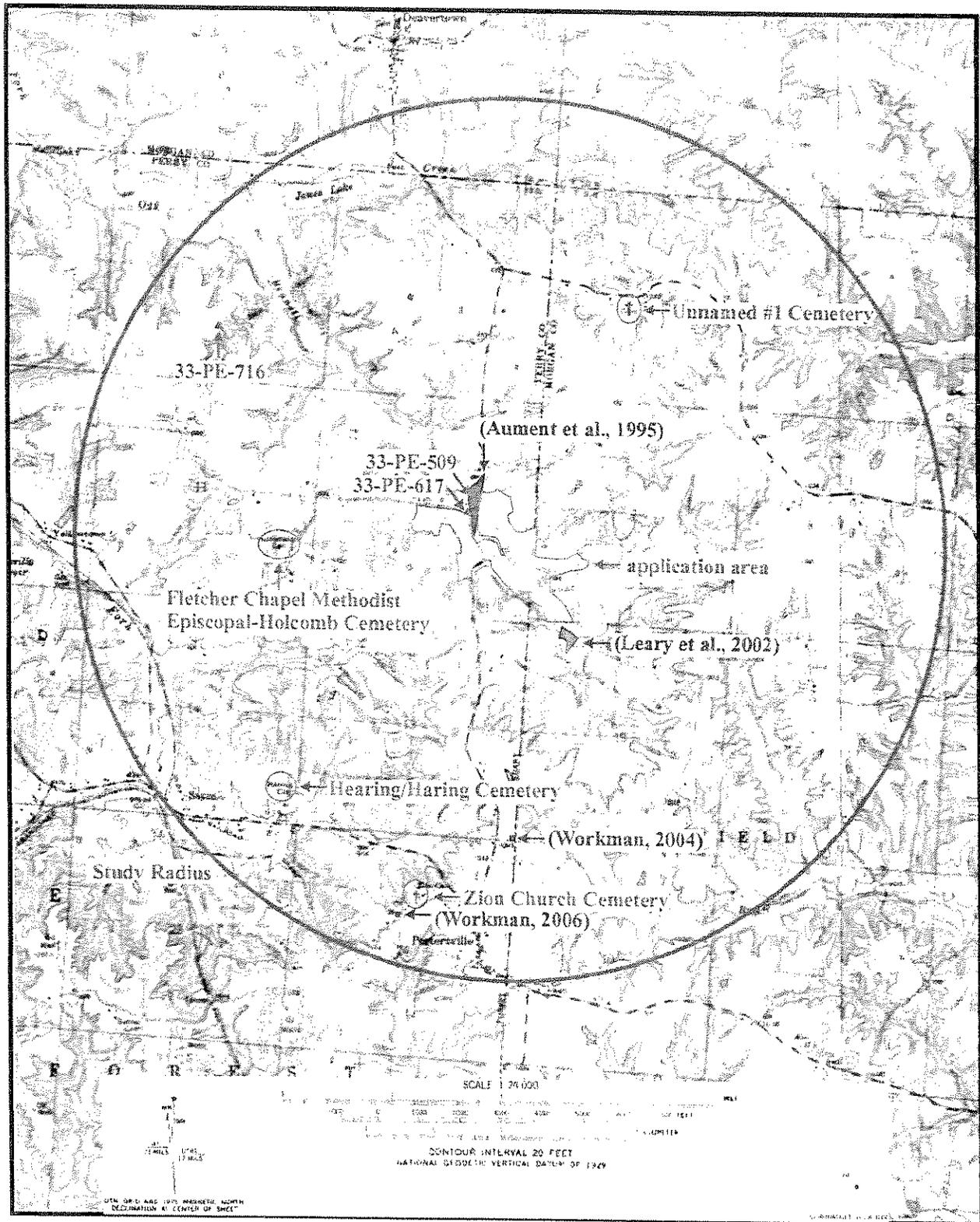


Figure 2. Portions of the USGS 1961 (Photo-Revised 1975 and Photo-Inspected 1983) Deavertown and the 1961 (Photo-Revised 1975 and Photo-Inspected 1984) Rokeby Lock Quadrangles, Ohio, 7.5 Minute Series (Topographic) maps showing the location of the application area, the 3.2km (2 mile) study radius, previously surveyed areas, previously identified archaeological sites, and cemeteries.

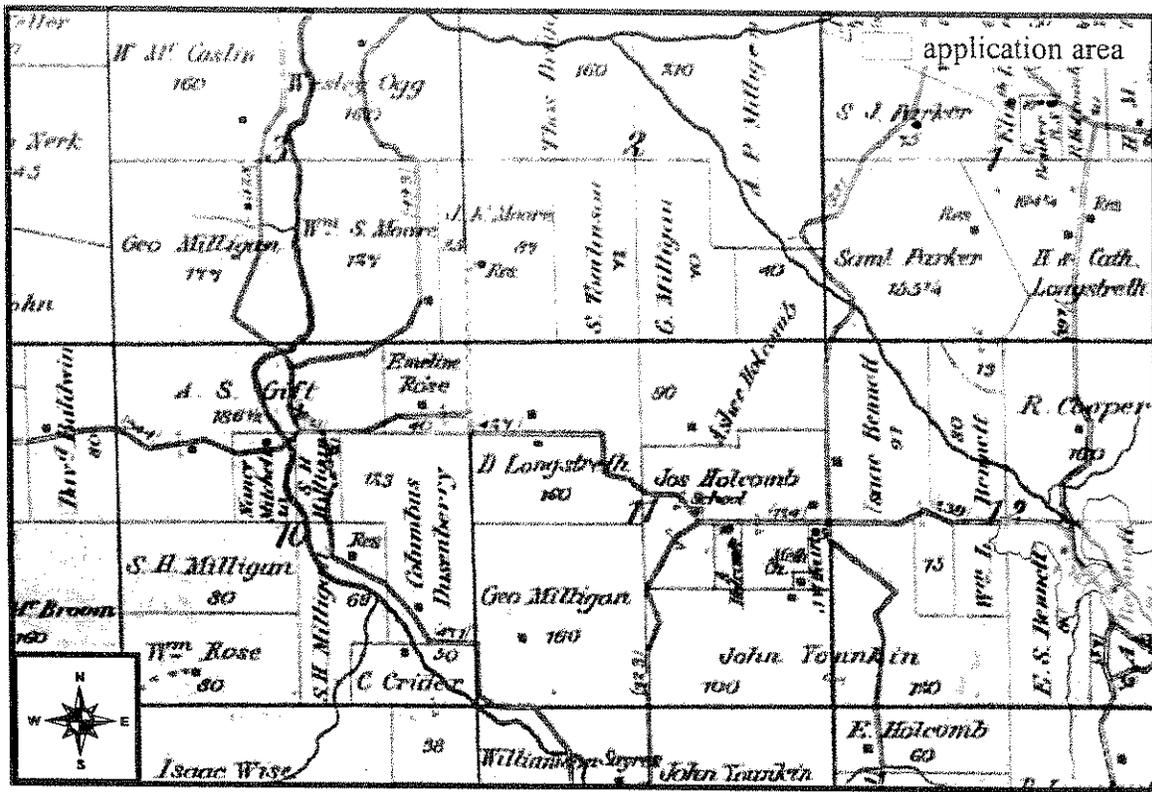


Figure 3. Portion of 1875 Atlas of Perry County, Ohio (Lake 1875) showing the estimated location of the application area.

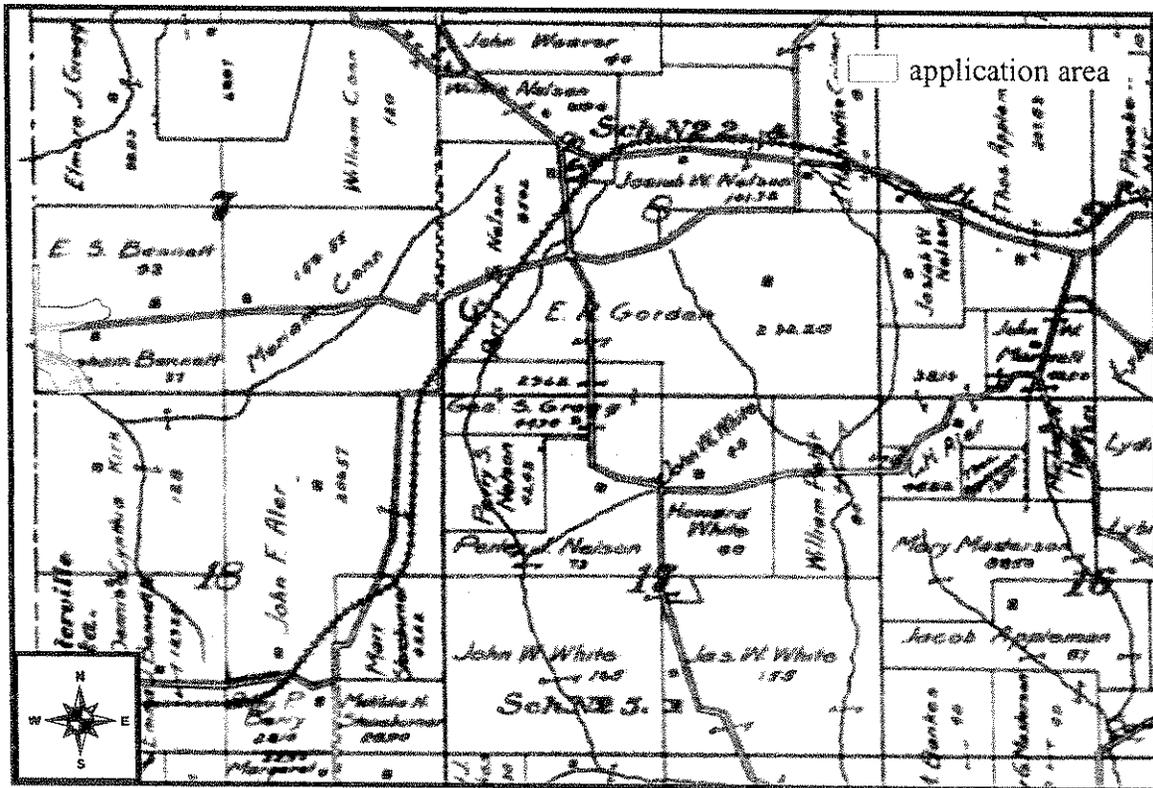


Figure 4. Portion of 1902 Atlas of Morgan County, Ohio (Murray 1902) showing the estimated location of the application area.

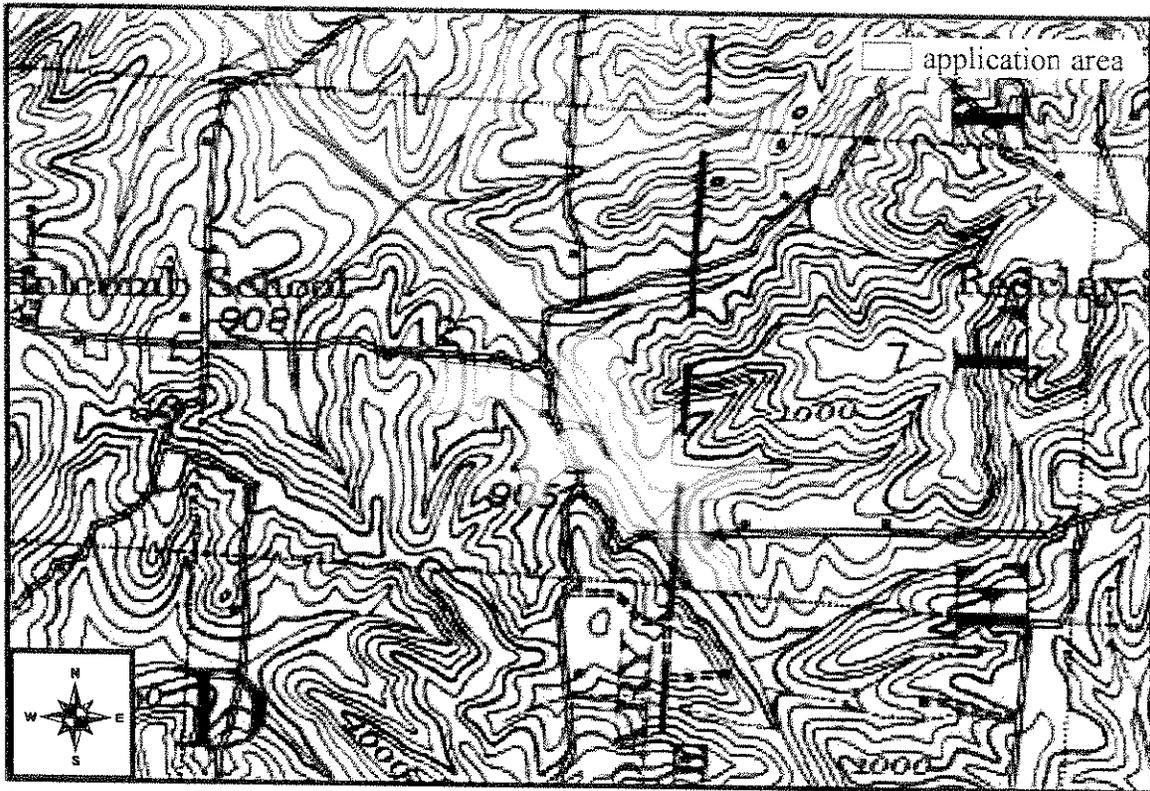


Figure 5. Portion of the *USGS 1911 New Lexington, Ohio 15 Minute Series (Topographic)* map showing the general location of the application area.

APPENDIX F

Compensatory Mitigation Plan

APPENDIX G

Form of Conservation Easement

CONSERVATION EASEMENT

This Conservation Easement (this "Easement") is made this _____ day of _____, 20__ by and between Bennett Creek Farm, 3355 Knox Lane, Malta, Ohio, 43758 (the "Grantor"), and [to be determined] (the "Grantee").

WHEREAS, the Grantor is the owner in fee of certain real property, hereinafter described, situated in Perry County, Ohio (the "Property"), which the Ohio Environmental Protection Agency and the Grantee have determined to be of importance to the water quality of Black Fork watershed, Muskingum River Drainage Basin; and

WHEREAS, having applied for and received a state 401 Water Quality Certification from the Ohio Environmental Protection Agency for impacts to waters of the state, the Grantor submitted a specific and detailed mitigation proposal including this Easement as the proposed legal mechanism for protecting the Property in perpetuity pursuant to Revised Code Section 6111.30(A)(4).

NOW THEREFORE, in consideration of ONE DOLLAR (\$1.00) and other good and valuable consideration, the Grantor does hereby grant and convey, in perpetuity, unto the Grantee and its successors and assigns, a conservation easement in the Property of the nature and character and to the extent hereinafter expressed, to be and to constitute a servitude upon the Property, which servitude will result from the covenants and restrictions set out below and hereby imposed upon the use of the Property, and to that end and for the purpose of accomplishing the intent of the parties hereto, the Grantor covenants, on behalf of itself and its successors and assigns, with the Grantee and its successors and assigns, to do and refrain from doing, severally and collectively, upon the Property, the various acts hereinafter mentioned, it being hereby agreed and expressed that the doing and the refraining from said acts, and each thereof, upon the Property is and will be for the benefit of the Grantee.

The restrictions hereby imposed upon the use of the Property by the Grantor, and the acts, which the Grantor so covenants to do and refrain from doing upon the Property in connection therewith, are and shall be as follows:

1. The Property shall be kept in its natural state. As herein used, the term "natural state" is intended to mean that no buildings, billboards, signs or other structures of any kind, either temporary or permanent, shall be placed or erected on the Property, unless otherwise expressly provided hereunder.
2. There shall be on or in the Property no fillings, excavating, or removal of topsoil, sand, gravel, rock, minerals or other materials, nor any building of roads or change in the topography of the land in any manner, other than that which occurred prior to the effective date hereof or caused by the forces of nature or as reserved hereafter.

3. Herbicides or pesticides may only be used on the Property in accordance with the prescribed methods approved by the ODNR Division of Soil and Water.
4. No power transmission lines may be erected, nor shall any interest in the Property be granted for this purpose. It is the intent of this provision to grant to the Grantee such an interest in the Property as is sufficient to prohibit the exercise of the power of eminent domain by public utility companies and any other body or person. The Grantor, and its successors and assigns, reserve the right and easement on the Property to maintain and repair existing telephone, electric, water, wells, or other utility lines or mains needed to provide for the needs of the Grantor, and its successors and assigns.
5. No trees, ground cover, or other vegetation shall be cut on or removed from the Property unless approved by the Grantee.
6. The Property shall at all times be kept free of garbage, trash, and machinery; and no other unsightly material shall be allowed to accumulate or be stored thereon, except that the Grantor shall have no duty to remove garbage, trash, etc. unlawfully deposited on the premises by persons acting without the Grantor's consent.
7. Each and every other activity that might endanger the natural state of the Property is forbidden.
8. The Grantee reserves the right to periodically inspect the Property for any breach of this Easement, and if upon sixty (60) days advance written notice the Grantor has not cured said breach or breaches the Grantee may cure said breach or breaches at the expense of the Grantor. The Grantee or its authorized representative may enter upon the Property for the purpose of inspection.
9. The Grantor shall post, clearly mark and maintain the markers of the boundaries of the Property with designated boundary signs provided by the Grantee. The Grantee's intent is to clearly define and maintain all survey pins, corners, points on line, traverse and reference points and line of sight clearance to insure that all boundaries are easily identifiable in perpetuity.
10. There shall be no further manipulation or alteration of creeks, streams, surface or subsurface springs or other bodies of water, or any activities on or uses of the Property detrimental to water purity or quality.
11. Except as may be necessary for reasonable preservation, management or restoration of the Property, there shall be no building of new roads or other rights of way. Existing roads may be maintained but shall not be widened or improved. This restriction does not prohibit the construction, development, and maintenance of unpaved recreational trails for hiking, cross country skiing, interpretive signs, nature observation or other similar purposes, and such trails may be used by motorized vehicles only for maintenance and security and in case of an emergency. Horseback riding, bicycles including mountain biking, skateboards, in-line skates, or similar means of transportation shall not be permitted. All road and trail maintenance, construction, or development shall be subject to the approval of the Grantee.

12. There shall be no recreational operation of snowmobiles, dune buggies, motorcycles, all-terrain vehicles or other motorized recreational vehicles.
13. There shall be no domestic livestock, no non-native animals and no feedlots permitted on the Property.
14. All written material, media releases, and main entrance signs specifically developed for the Property shall prominently give acknowledgment to the Grantee for protecting Black Fork and the respective riparian buffer.
15. The Grantor shall conduct removal and control of invasive plant species. Control of invasive/non-native plant species through the use of herbicides may only be conducted in accordance with the prescribed methods approved by the Grantee.
16. There shall be no user fees imposed by the Grantor without prior written approval from the Grantee.

The conservation easement granted hereunder and the covenants heretofore made are subject to the following rights of the Grantor which are expressly reserved hereunder.

1. Except as expressly limited herein, the Grantor reserves for itself, and its successors and assigns, all rights as owner of the Property, including the right to use the Property for all purposes not inconsistent with this Easement.

The Property to which the provisions of this Easement apply is situated in the Township of Bearfield, in Perry County, and the State of Ohio, and is more particularly described as follows:

Approximately 0.70 acre of created wetlands and a buffer area defined as 50-feet around the wetland perimeter, all as shown on Exhibit A.

TO HAVE AND TO HOLD unto the Grantee and its successors and assigns forever. The covenants agreed to and the restrictions imposed, as aforesaid, shall be binding upon the Grantor, its successors, and assigns, and each of them, and shall constitute as a servitude upon the Property, and the Grantor does COVENANT and WARRANT that the title to the Property is CLEAR, FREE, and UNENCUMBERED, and that it will DEFEND the same against all lawful claims of all persons whomsoever.

[Remainder of Page Intentionally Left Blank with Signatures on Following Page]

IN WITNESS WHEREOF, the Grantor has hereunto set its hand on the date first set forth above.

Grantor:

BENNETT CREEK FARM

By: _____

Name: _____

Title: _____

STATE OF _____, COUNTY OF _____, ss

Before me, a notary public in and for said state and county, the foregoing Conservation Easement was acknowledged, subscribed and sworn to me by _____, as the _____ of the Grantor, for and on behalf of the Grantor.

In testimony whereof, I hereunto set my hand and official seal at _____, this ___ day of _____, 20 ____.

Notary Public

My Commission expires: _____

This instrument prepared by:

Ohio Environmental Protection Agency

APPENDIX H

USACE Public Notice



**U S Army Corps
of Engineers**
Huntington District

Public Notice

In reply refer to Public Notice No.

LRH-2010-930-MUS

Stream:

Bennett Creek

Issuance Date:

October 29, 2014

Closing Date:

November 27, 2014

Please address all comments and inquiries to:

U.S. Army Corps of Engineers, Huntington District

ATTN: CELRH-RD-N Public Notice No. (*reference above*)

502 Eighth Street

Huntington, West Virginia 25701-2070

Phone: (304) 399-5210

PUBLIC NOTICE FOR ADJACENT PROPERTY OWNERS

The purpose of this notice is to inform you the Huntington District, Regulatory Division has posted a Public Notice on our website for work in which you might be interested. The proposed work is described in Public Notice No. LRH-2010-930-MUS. You can access a copy of Public Notice No. LRH-2010-930-MUS at

<http://www.lrh.usace.army.mil/Missions/Regulatory/PublicNotices.aspx>

If you do not have an internet access and would like to receive a copy of Public Notice No. LRH-2010-930-MUS through the U.S. Postal Service, please contact Ms. Stormie Roberts by phone at (304) 399-6976 or by mail using the mailing address listed above.

Thank you for your interest in our nation's water resources. If you have any questions concerning this public notice, please contact Ms. Teresa Spagna by phone at 304-399-6910 or by email at teresa.d.spagna@usace.army.mil.



US Army Corps of Engineers
BUILDING STRONG®

LRH 2010-930-MUS

Posted 10/29/2014

ATTACHMENTS

▶ [2010-930-MUS Drawings](#)

TO WHOM IT MAY CONCERN: The following application has been submitted for a Department of the Army (DA) Permit under the provisions of Section 404 of the Clean Water Act. This notice serves as the United States Army Corps of Engineers' (Corps) request to the Ohio Environmental Protection Agency (OEPA) to act on the Section 401 Water Quality Certification for the following application.

APPLICANT: Mr. Claude W. Imler
 Sergeant Stone, Inc.
 Post Office Box 2086
 Zanesville, Ohio 43702-2086

LOCATION: The proposed project is bisected by State Route 555 and is located within the watershed of Bennett Run (N38°42'00" and W81°01'50") approximately 2.5 miles south of Deavertown and 1.5 miles north of Porterville, in the Bearfield Township of Perry County, Ohio. Bearfield Township Roads 201 and 454 run adjacent to the proposed project site. The proposed discharges of dredged and/or fill material would take place within unnamed tributaries to Bennett Run and adjacent wetlands. Bennett Run is an indirect tributary to the Muskingum River, a traditional navigable water of the United States. Sheet 1 of 6 depicts the proposed project location.

DESCRIPTION OF PROPOSED WORK: The applicant proposes to discharge dredged and/or fill material into waters of the United States in conjunction with the construction of a 69.8 acre industrial limestone mine, known as the Deavertown Limestone Mine Site. The project would include the extraction of approximately 150,000 tons of limestone via contour mining techniques annually for an approximate 10 year period. All surface waters proposed to be affected by the proposed project are underlain by recoverable limestone. Extraction of limestone, subsequent backfilling and grading and/or haulroad and sediment pond construction would permanently impact 0.38 acre of jurisdictional wetlands and 2,734 linear feet (0.11 acre) of jurisdictional streams as indicated on the attached Table 1. Material that would be discharged into the on-site wetlands and streams would be soft shale and cohesive soil overburden. The applicant has obtained an Ohio Department of Natural Resources (ODNR) Industrial Minerals Permit 2429. The purpose of the project is to recover limestone for commercial sale. Reclamation activities would involve backfilling, grading, re-distribution of resoiling material, revegetation, and mitigation of affected aquatic features. Plan view maps (Sheets

2A to 2H) of the proposed site layout and associated impacts to waters of the United States are attached to this public notice.

ALTERNATIVES ANALYSIS: A total of approximately 0.38 acre of jurisdictional wetlands and 2,734 linear feet of jurisdictional streams would be filled as a result of the proposal. The project does not require access or proximity to, or siting within, the wetlands to fulfill its basic purpose and is considered a non-water dependent activity. The Section 404(b)(1) Guidelines state for non-water dependent activities, practicable alternatives that do not involve wetlands are presumed to be available, unless clearly demonstrated otherwise. The applicant is required to provide an alternatives analysis that must overcome this presumption prior to receiving authorization for the discharge of fill material. The applicant has submitted the required alternatives analysis and it is currently under review. A complete copy of the applicant's alternatives analysis can be reviewed by appointment at the above address. No permit will be issued until our office determines practicable upland alternatives are not available to achieve the overall project purpose based upon the applicant's alternative analysis.

AVOIDANCE AND MINIMIZATION: In evaluating a project area containing waters of the United States, consideration must be given to avoiding impacts on these sites. If waters of the United States cannot be avoided, then the impacts must be minimized. A total of approximately 1,059 linear feet of one perennial stream, 713 linear feet of one intermittent stream, 4,256 linear feet of ten ephemeral streams and 0.38 acre of emergent wetlands, subject to Section 404 Clean Water Act regulation, exists within the project area. Avoidance and minimization efforts were incorporated into the proposal to reduce the footprint of the proposed project. The applicant initially proposed to permanently discharge dredged and/or fill material into 0.38 acre of six jurisdictional wetlands and 4,969 linear feet of 10 jurisdictional streams. The applicant's proposed project would avoid 1,059 linear feet (100%) of the on-site perennial stream, 713 linear feet (100%) of the on-site intermittent stream, and 1,522 linear feet (35.8%) of the on-site ephemeral streams. Agricultural land uses have dominated the project site for the last 40 years. As shown on Sheet 3 of 6, the applicant proposes to use an existing crossing currently used by farming purposes to access the site. Sediment ponds, diversion ditches and other drainage controls would be constructed to minimize sedimentation and turbidity in receiving waters. All disturbed areas would be seeded and/or revegetated with native plant species and native seed mixes after completion of construction activities.

COMPENSATORY MITIGATION PLAN: The applicant has indicated the loss of waters of the United States associated with the proposed project would be offset by performing on-site wetland establishment and stream re-establishment. Approximately 0.70 acre of emergent wetlands would be established within the floodplain area of Bennett Run. Relatively impermeable material (i.e. shale or clay) would be obtained on-site and placed in the bottom of the mitigation wetland. This material would be placed in nine inch uncompacted lifts and then compacted by repetitious phases of heavy equipment to form an 18 inch thick layer. A 12 inch thick layer of uncompacted organic material or previously stockpiled topsoil soils would be placed on the clay layer. Natural recruitment of native plants would be allowed in the on-site wetland mitigation area. Re-distributed organic material would serve to provide a seed base for natural regeneration of hydrophytic vegetation. A maximum water depth of six inches would be maintained above the top of the hydric soils. A 50-foot buffer would be established around the wetland would be planted according to the riparian/wetland planting plan. Trees and shrubs would be slightly staggered to increase shade coverage. Sheet 4 of 6 provides details regarding the wetland mitigation site.

The applicant also proposes to re-establish the affected ephemeral streams using natural stream design techniques at the time of backfilling and grading. Once the stream corridors are graded, they would be resoiled during the first appropriate planting/growing season. Pools and riffles would be established at the outside meander bends and runs and eddy rocks and woody debris would be installed at various other locations to provide additional aquatic habitat and cover. All re-established stream channels would exhibit surface water connections to tributary systems of Bennett Run. Sheet 5 of 6 shows details of the proposed stream re-establishment. The applicant proposes to permanently protect the wetland mitigation area, including its surrounding upland buffer area via a conservation easement. The wetland mitigation site would be monitored for a minimum period of five years. Sheet 6 of 6 depicts the location of the proposed wetland mitigation site.

WATER QUALITY CERTIFICATION: A Section 401 Water Quality Certification will be required for this project. It is the applicant's responsibility to obtain certification from the OEPA.

HISTORIC AND CULTURAL RESOURCES: The National Register of Historic Places

has been consulted and it has been determined there are no properties currently listed on the National Register of Historic Places that would be indirectly or directly affected by the proposed work. Additional resources were reviewed including the Ohio Archaeological Inventory, the Ohio Historic Inventory, recorded cemeteries, county atlases/maps, county histories, and Cultural Resource Management survey files. No previously recorded archaeological or historic sites are located within the proposed project area. No historic buildings are located within the proposed project area. No historic significance was noted associated with the owners of the land denoted on the historic atlases. Agricultural land uses have dominated the project site for the last 45 years. We have determined the proposed project would have no effect on historic properties. A copy of this public notice will be furnished to the State Historic Preservation Office for their review. Comments concerning archaeological sensitivity of the project area should be based on collected data.

THREATENED AND ENDANGERED SPECIES: The proposed project is located within the known or historic range of the endangered Indiana bat (*Myotis sodalis*), the proposed endangered northern long-eared bat (*Myotis septentrionalis*), the endangered snuffbox mussel (*Epioblasma triquetra*), the endangered American burying beetle (*Nicrophorus americanus*), the endangered Fanshell mussel (*Cyprogenia stegaria*), and endangered Pink mucket pearly mussel (*Lampsilis abrupta*).

No suitable habitat is present within the proposed project area for the above-mentioned federally-protected mussel species. We have determined the proposed project would have no effect on federally-protected mussel species.

The project site consists predominately of agricultural fields with small wooded areas. The small wooded areas may contain suitable summer roosting and foraging habitat for the Indiana bats or the northern long-eared bats. Similar forested habitat appears to be abundant in the adjacent landscape.

The applicant has agreed to conduct timber removal operations between September 30 and April 1 to minimize effects on the Indiana bats or the northern long-eared bats. We have determined the proposed project may affect, but would not likely adversely affect either the Indiana bat or the northern long-eared bat.

Regarding the American burying beetle, the proposed project would have no effect on this insect species because its range does not currently extend into proposed project area; its range is limited to the southern portion of Bearfield and Deerfield Townships.

Based on this information, the project is not likely to adversely affect the continued existence of any endangered species or threatened species, or result in the destruction or adverse modification of habitat of such species which has been determined to be critical. This Public Notice serves as a request for concurrence from the United States Fish and Wildlife Service with the aforementioned effect determinations and for any additional information they may have on whether any listed or proposed to be listed endangered or threatened species may be present in the area which would be affected by the activity, pursuant to Section 7(c) of the Endangered Species Act of 1972 (as amended).

PUBLIC INTEREST REVIEW AND CUMULATIVE EFFECTS: This application will be reviewed in accordance with 33 CFR 320–332, the Regulatory Program of the Corps, and other pertinent laws, regulations, and executive orders. Our evaluation will also follow the guidelines published by the United States Environmental Protection Agency pursuant to Section 404(b)(1) of the Clean Water Act (40 CFR part 230). The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both the protection and the utilization of important resources. The benefit that reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors that may be relevant to the proposal will be considered, including the cumulative effects thereof; among those factors are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people.

SOLICITATION OF COMMENTS: The Corps is soliciting comments from the public, the Federal, state, and local agencies and officials, the Indian Tribes, and other interested parties in order to consider and evaluate the impacts of this proposed activity. For accuracy and completeness of the administrative record, all data in support of or in opposition to the proposed work should be submitted in writing setting forth sufficient detail to furnish a clear understanding of the reasons for

support or opposition. Any person may request, in writing, within the comment period specified in the notice, that a public hearing be held to consider the application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing. Any comments received will be considered by the Corps to determine whether to issue, modify, condition or deny a permit for this

proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity. Written statements received in this office on or before the expiration date of this Public Notice will become a part of the record and will be considered in the final determination. A permit will be granted unless its issuance is found to be contrary to the public interest.

CLOSE OF COMMENT PERIOD: All comments pertaining to this Public Notice must reach this office on or before the close of the comment period listed on page one of this Public Notice. If no comments are received by that date, it will be considered that there are no objections. Comments and requests for additional information should be submitted to Teresa Spagna of the North Branch at teresa.d.spagna@usace.army.mil or at the following address:

United States Army Corps of Engineers

ATTN: CELRH-RD-N

Public Notice No. LRH-2010-930-MUS

502 Eighth Street

Huntington, West Virginia 25701-2070.

Please note names and addresses of those who submit comments in response to this Public Notice become part of our administrative record and, as such, are available to the public under provisions of the Freedom of Information Act. Thank you for your interest in our nation's water resources. If you have any questions concerning this Public Notice, please contact Teresa Spagna of the North Branch at (304) 399-5210, by mail at the above address, or by email at: teresa.d.spagna@usace.army.mil.