



US Army Corps of Engineers
BUILDING STRONG®

LRH 2014-237-

GMR

Posted 4/3/2014

ATTACHMENTS

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 Section 401 Water Quality Certification for the following application.

 [LRH 2014-237-GMR](#)

APPLICANT: Mr. Justin Leyda
 Liberty South Development, LLC
 4016 Townsfair Way, Suite 201
 Columbus, Ohio 43219

LOCATION: As depicted on the attached Sheet 1 of 3, the proposed project would be located on approximately 37 acres of land within the watershed of an unnamed tributary of Gregory Creek (Latitude 39.368816, Longitude -84.371398), at 7451 Liberty Way south of Liberty Way Road, bisected by Tylers Place Boulevard and west of I-75 in West Chester, Butler County, Ohio. The project is bounded by residential properties to the south and west, I-75 to the east, and Liberty Way to the north. Gregory Creek is a perennial relatively permanent water and an indirect tributary to the Great Miami River, a traditional navigable water of the United States.

DESCRIPTION OF PROPOSED WORK: The applicant has requested DA authorization to discharge dredged and/or fill material into approximately 1.35 acres of jurisdictional wetlands, 1.07 acres of open water pond and 267 linear feet (0.03 acre) of intermittent stream in association with the construction of a 37 acre mixed-use, planned unit development known as the Liberty South Development Project. Table 1 attached to this Public Notice lists each individual discharge of dredged and/or fill material into waters of the United States. The proposed development would consist of 169,500 square feet of commercial retail space, 26,700 square feet and 50 units of mixed-use commercial retail and residential space, 30 units of residential space, 21,000 square feet of restaurant space, 34,500 square feet of mixed-use commercial retail and office space, and two 110-room hotels. In addition, the applicant proposes to discharge dredged and/or fill material into 0.02 acre of isolated wetland, which is not subject to Section 404 of the Clean Water Act. Sheet 2 of 3 depicts the overall proposed site plans, including the building footprint and attendant features (i.e. roads, parking lots, and access points). Plans (Sheets 1 through 3) of the proposal are attached to this notice.

ALTERNATIVES ANALYSIS: A total of approximately 1.35 acres of jurisdictional wetlands, 1.8 acres of open water pond and 267 linear feet of intermittent stream 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 that 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 review of the alternatives analysis clearly demonstrates that practicable upland alternatives are not available to achieve the overall project purpose.

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, impacts must be minimized. As indicated on the attached Table 2, approximately 1.35 acres of jurisdictional wetlands, 1.8 acres of open water pond and 267 linear feet of intermittent stream were identified on the approximate 37 acre property. The attached Sheet 3 of 3 depicts the locations of the on-site aquatic resources.

Avoidance and minimization efforts were incorporated into the proposal to reduce the footprint of the proposed development project. Construction activities would be performed during low flow or no flow conditions. Stormwater management planning would incorporate best management practices and other techniques necessary to maintain compliance with the Federal Water Pollution Control Act, Ohio Water Pollution Control Act, and the Butler County Stormwater District for stormwater discharges associated with construction activity. The applicant proposes to install subsurface detention units as well as implement Phase II required post-construction water quality best management practices to help offset the expected water quality impacts associated with the proposed project. The stormwater basins would be used for collecting discharged sediment associated with construction activities as well as collecting post-construction runoff volumes and peak flows from impervious surfaces after construction. The basins would be designed with outlet structures that meet local flood control requirements and ensure all post construction runoff up to the water quality storm event (0.75 inches) would be detained and released within a period of 24-48 hours.

The on-site Stream 1 would be enclosed via a pipe in order to maintain stream flows. The pipe would be of sufficient size to accommodate bankfull discharge and would be installed at a similar streambed slope in order to allow for passage of aquatic organisms. The applicant is also required to obtain an Earthmoving Permit from the Butler Soil and Water Conservation District and implement a storm water pollution prevention plan. Some of the features of this plan include temporary and permanent seeding as soon as disturbed areas of the site are able to be stabilized and the use of structural best management practices such as gravel construction entrances, velocity dissipation devices with concentrated flow areas, sediment basins and temporary sediment traps to collect concentrated flow, silt fencing, mulch berms, and inlet drain protection. No area for which grading has been completed would be unseeded for longer than 14 days. 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: To compensate for the losses of waters of the United States associated with the proposed development, the applicant proposes to purchase 2.1 acres of wetland mitigation credits, 400 linear feet of stream mitigation credits, and 2.0 acres of riparian buffer credits from a federally-approved mitigation bank.

WATER QUALITY CERTIFICATION: A Section 401 Water Quality Certification may 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 (NRHP) has been consulted and it has been determined that there are no properties currently listed on the NRHP that would be indirectly or directly affected by the proposed work. The fallow agricultural fields and woodlots within the project area were subjected to shovel test excavations. The Phase I survey did not identify any new prehistoric or historic archaeological sites. The proposed project would have no effect on historic properties listed on, eligible or potentially eligible for inclusion on the NRHP. A copy of this public notice will be furnished to Ohio 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*), proposed endangered northern long-eared bat (*Myotis septentrionalis*), and endangered rayed bean mussel (*Villosa fabalis*). The Corps has consulted the most recently available information and information provided by the applicant to make an effect determination.

The proposed project site contains a combination of old field, scrub/shrub, and palustrine emergent wetlands. Old field vegetation comprises the entire western portion of the study area and substantial portion of the study area located east of Tylers Place Boulevard. Dominant vegetation within this vegetation assemblage consists of Amur Honeysuckle, Canadian Goldenrod, Yellow Sweet-Clover, and Fuller's Teasel. Scrub/Shrub vegetation was identified within upland areas east of Wetland 1 and west of I-75. Dominant vegetation within this vegetation assemblage consists of Bradford pear, Russian Olive, Amur Honeysuckle, and Allegheny Blackberry. Three palustrine emergent wetlands were identified within the survey area. Dominant species within this vegetation assemblage consists of Black Willow, Narrow-Leaf Cat-Tail, Cut Grass, Common Fox Sedge, Swamp Milkweed, and Blunt Spike-Rush. Based on a field reconnaissance and habitat assessment completed on the project site by the applicant's consultant, the trees existing on the property contain mean diameter heights ranging from four to eight inches with less than five percent greater than twenty-four inches. Stream 1, an intermittent stream, flows south to north for approximately 267 linear feet onsite before flowing offsite under Liberty Way. Dominant substrate predominantly includes gravel. A stormwater detention basin is located west of Tyler's Place Boulevard and north of Preserve Place. Dominant substrate within the stormwater detention basin predominantly includes silt.

Suitable habitat for the rayed bean mussel is not present on-site and the Corps has determined based on the applicant's proposal to implement sediment and erosion control measures, the proposed project would have no effect on the rayed bean mussel. The applicant proposes to perform tree clearing operations prior to April 1 and after September 30 to minimize effects on the Indiana bat and the northern long-eared bat. The Corps has determined that the proposed project may affect, but would not likely adversely affect the Indiana bat or northern long-eared bat. Based on this information, the proposed 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 to the USFWS 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 protection and 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, Federal, state, and local agencies and officials, 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:

United States Army Corps of Engineers

ATTN: CELRH-RD-N

Public Notice No. LRH-2014-237-GMR

502 Eighth Street

Huntington, West Virginia 25701-2070.

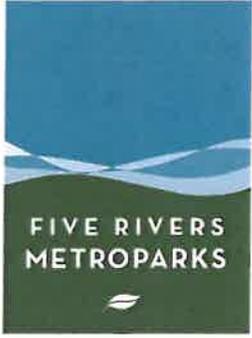
Please note names and addresses of those who submit comments in response to this Public Notice become part of our administrative record and, as such, are available to the public under provisions of the Freedom of Information Act. Thank you for your interest in our nation's water resources. If you have 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.

Table 1. Proposed Discharges of Dredged and/or Fill material into Waters of the United States at the Liberty South Mixed-Use, Planned Unit Development					
Activity	Aquatic Resource Feature ID	Aquatic Resource Type	Area (acres) of Wetland or Open Water Impact	Linear Feet of Stream Impact	Cubic Yards of Dredged and/or Fill Material
Grade establishment and drainage relocation for the 110 unit hotel, multiple restaurant and/or retail pads and associated parking areas	Wetland 1	Palustrine Emergent Wetland; ORAM Score of 27; Category 1	1.31		2,113
Grade establishment and drainage relocation for hotel parking area	Wetland 2	Palustrine Emergent Wetland; ORAM Score of 28.5; Category 1	0.04		57
Grade establishment and drainage relocation for hotel parking area	Stream 1	Intermittent Stream; HHEI Score of 46; Class II	0.03	267	73

Grade establishment and drainage relocation for multiple retail pads, a office area, and associated parking area	SW 1	Pond	1.07		1,726
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**Table 2. Aquatic Resources at the Liberty South
Mixed-Use, Planned Unit Development Project Review Site**

Aquatic Resource ID	Latitude Longitude	Flow Regime or Cowardin Class	Estimated Length and/or acreage of aquatic resource in review area	Jurisdictional or Isolated
Stream 1	39.36918, -84.37428	Intermittent	267 feet	Jurisdictional
Wetland 1	39.36855, -84.37110	Palustrine Emergent	1.31 acres	Jurisdictional
Wetland 2	39.36896, -84.37416	Palustrine Emergent	0.04 acre	Jurisdictional
Wetland 3	39.36848, -84.375415	Palustrine Emergent	0.02 acre	Isolated
SW 1	39.36839, -84.37354	Intermittent	1.8 acres	Jurisdictional



1375 East Siebenthaler Ave.
Dayton, Ohio 45414

Phone (937) 275-7275
Fax (937) 278-8849
www.metroarks.org

April 11, 2014

Mr. Justin Leyda, Development Director
Liberty South Development LLC
4016 Townsfair Way
Suite 201
Columbus, OH 43219

Dear Mr. Leyda,,

This letter is to acknowledge Five Rivers MetroParks receipt of a check from your firm in the amount of \$13,000.00 for the 10% deposit on a purchase of .2 acres of Upland Buffer credits and 400 LF of stream credits from our Great Miami Wetland Mitigation Bank.

A copy of the signed agreement is attached, and an original is being mailed to the above address.

Thank you for your interest in our Wetland Bank.

Sincerely,

A handwritten signature in blue ink that reads "David Nolin".

David Nolin
Director of Conservation



WETLAND AND STREAM MITIGATION AGREEMENT GREAT MIAMI MITIGATION BANK

WHEREAS, the discharge of dredged or fill material into waters of the United States and waters of the State of Ohio, including wetlands, is regulated pursuant to Section 404 of the Clean Water Act, 33 U.S.C. § 1344, and/or Ohio Revised Code Chapter 6111; and

WHEREAS, entities planning to place dredged or fill material into waters of the United States or waters of the State of Ohio, including wetlands, must comply with standards and conditions imposed by the Army Corps of Engineers (the "Corps") and/or the Ohio Environmental Protection Agency (the "Ohio EPA") including, in many cases, the mitigation of wetland impacts; and

WHEREAS, efforts to restore wetlands are often most successful when directed toward the establishment of large, varied wetland ecosystems rather than small, isolated wetlands which are often threatened by urban encroachment; and

WHEREAS, Five Rivers Metroparks ("FRMP") has participated in the Interagency Review Team ("IRT") review process and received approval from the IRT (which includes the Corps and Ohio EPA) to establish the Great Miami (Trotwood) Mitigation Bank and to sell wetland and stream mitigation credits to entities required to mitigate for impacts to wetlands, streams and other waters pursuant to the Section 404/401 permit process and Ohio's Isolated Wetland Permit process; and

WHEREAS, the Corps and the Ohio EPA have agreed to consider the purchase of wetland mitigation credits in an appropriate service area approved by the IRT to fulfill an entity's requirement to mitigate impacts to aquatic resources.

THEREFORE, Liberty South Development, LLC. ("Customer") and FRMP agree they will comply with the following guidelines and procedures by which Customer will purchase wetland mitigation credits from FRMP, representing the restoration of wetlands and/or streams in the State of Ohio which will be permanently maintained and which will serve to mitigate impacts permitted under Sections 404 and 401 of the Clean Water Act and in accordance with ORC Chapter 6111.

I. OBLIGATIONS OF CUSTOMER

A. Pursuant to the requirements of Sections 401 and 404 of the Clean Water Act and the regulations promulgated hereunder and/or ORC Chapter 6111, Customer is obligated to mitigate for impacts to 267 LF of streams at its Liberty South Development site located at 7490 Liberty Way in the Township of Liberty Twp., Butler County, Ohio.

B. Customer hereby agrees to pay to FRMP the amount of \$ 130,000 in consideration for the purchase of 0.2 acres of Upland Buffer credits or 400 stream mitigation credits at the Great Miami (Trotwood) Mitigation Bank. Each credit has been approved by the Ohio EPA and the Corps as equivalent to the restoration of one (1) acre of wetland and one (1) LF of stream. FRMP will reserve the necessary credits for 180 days for a deposit of \$ 13,000 (10%). If Customer has not received the necessary approvals pursuant to Section 404 and/or 401 of the Clean Water Act or the Ohio Isolated Wetland Permit program after 180 days, FRMP will continue to reserve the necessary credits for an additional 180 days upon receipt of an additional 10% deposit. If after 180 days an additional deposit is not made, the wetlands

credits will not be reserved for Customer but will be available on a first-come basis to all FRMP Customers.

C. If within the initial 180-day reservation period the Corps or the Ohio EPA denies Customer's request for a permit for the wetland impact or if Customer elects to withdraw their permit application, FRMP will refund Customer's deposit and provide written notification of the termination of this Agreement to the Corps. All deposits become non-refundable 181 days after the contract initiation date (as defined in paragraph I.E of this Agreement). Customer must provide written notification to FRMP of the denial of its permit or its intention to withdraw its permit application prior to the expiration of the 180-day reservation period in order to obtain a refund of its deposit.

D. Customer and FRMP are aware that the Section 404 permit process, and, if necessary, the Section 401 Certification process, or the Ohio Isolated Wetland Permit program must be completed by the Corps and/or the Ohio EPA and that this Wetland Mitigation Agreement will be used by the Corps and/or the Ohio EPA to document Customer's mitigation plan. Therefore, subject to paragraph I.B. of this Agreement, Customer's deposit payment(s) will be held by FRMP until such time as the Corps and/or the Ohio EPA issues the required permits.

E. Within thirty (30) days of issuance of the Section 404 permit and, if necessary, the Section 401 Certification or Ohio Isolated Wetland Permit, Customer will tender the outstanding balance of the cost of the mitigation credits. Customer will also provide FRMP with a copy of the Section 404 permit and, if applicable, the Section 401 Certification or the Ohio Isolated Wetland Permit or other approval to proceed. If payment is not received by the thirtieth day after the issuance of the appropriate permit (if more than one wetland permit is required the most recent (i.e., the latest) permit date will be utilized to determine the payment due date), an interest penalty of 1.0% per month will be assessed to the balance from the permit issuance date for each month or portion thereof until payment is received in full. The contract initiation date shall be the date the agreement is signed by Customer or the permit issuance date should no contract be in place at the time the permit is issued. Under no circumstances do the payment terms of this Agreement alter or change the conditions or terms of the permit(s) issued to Customer. It is the sole responsibility of Customer to ensure that it adheres to the terms of its permit(s).

F. Customer shall have no other obligation or responsibility for future payments for maintenance of the restored wetland areas at the Great Miami Mitigation Bank.

G. Customer shall submitted a completed Montgomery County Vendor Application to FRMP at time the same time this Agreement is submitted.

II. OBLIGATIONS OF FIVE RIVERS METROPARKS

A. FRMP has available for sale mitigation credits at the Great Miami Mitigation Bank which have been approved by the IRT to mitigate for certain wetland and stream impacts.

B. In consideration for the payment of \$ 130,000 (plus interest penalties, if applicable, as per paragraph I.E of this Agreement) by Customer, FRMP hereby agrees to provide 0.2 acres of Upland Buffer mitigation credit and 400 LF linear

feet of stream mitigation credit at the Great Miami Mitigation Bank for the benefit of Customer hereunder. FRMP shall have all responsibility for assuring the restoration and the monitoring and maintenance of the wetlands as provided herein.

C. FRMP will provide confirmation to the Corps and the Ohio EPA of the purchase of wetland and/or stream mitigation credits on behalf of Customer. The confirmation will identify the number of credits purchased pursuant to this Agreement.

D. Customer may submit the executed copy of this Agreement to the Corps and/or the Ohio EPA to document its commitment to mitigate anticipated wetland and/or stream impacts.

FIVE RIVERS METROPARKS

Signed By:


Rebecca Benná, Executive Director

Date:

4/8/14

CUSTOMER

Signed By:



Printed Name:

JUSTIN LEYDA

Title:

DEVELOPMENT DIRECTOR

Date:

MARCH 26, 2014

Address:

4016 TOWNSFAR WAY
SUITE 201
COLUMBUS, OH 43219

Telephone:

614.414.7300

Facsimile:

614.414.7311

Email:

JLEYDA@STEINER.COM

Return 2 copies with original signatures and payment to address below:

**Five Rivers MetroParks
ATTN: Michael Enright
409 E. Monument Ave., 3rd Floor
Dayton, OH 45402**

TYLER'S PLACE ASSOCIATES, LLC

1604

DATE	INVOICE NO.	DESCRIPTION	INVOICE AMOUNT	DEDUCTION	BALANCE
3-25-14	032514	TPA Stream Impact Depo	13000.00		13000.00

CHECK DATE	CHECK NUMBER	TOTALS
3-27-14	1604	13000.00

1604

TYLER'S PLACE ASSOCIATES, LLC
 10129 ALLIANCE ROAD, SUITE 100
 CINCINNATI, OH 45242
 PH. (513) 589-4070

USBANK
 19-1-420

Pay: *****Thirteen thousand dollars and no cents

	DATE	CHECK NO.	AMOUNT
PAY TO THE ORDER OF	March 27, 2014	1604	\$*****13,000.00
Five Rivers Metroparks			

TWO SIGNATURES REQUIRED


⑈001604⑈ ⑆042000013⑆ 130105717081⑈

Security Features included. Details on back.

Red Stone Farm LLC

April 3, 2014

Justin Leyda
Development Director
Liberty South Development LLC
4016 Townsfair Way, Suite 201
Columbus, Oh 43219

Re: RECEIPT OF Credit Reservation
Wetland Credit Purchase - Red Stone Farm Wetland Mitigation Bank

Dear Mr. Leyda:

This letter verifies receipt of deposit for purchase of 2.1 acres of non-forested wetland mitigation credits from Red Stone Farm Wetland Mitigation Bank for 7490 Liberty Way, in Butler County. In April 2014, we received check #1605 from Tyler's Place Associates, LLC in the amount of \$13,650, which reserves the above mitigation credits per terms of the contract.

If you have any questions, please feel free to contact me.

Sincerely,



Drausin Wulsin
Manager
Red Stone Farm Wetland Mitigation Bank
740-634-2440, dfwulsin@gmail.com

**WETLAND MITIGATION PURCHASE AGREEMENT
RED STONE FARM MITIGATION BANK**

WHEREAS, the discharge of dredge or fill material into waters of the United States and waters of the State of Ohio, including wetlands, is regulated pursuant to Section 404 of the Clean Water Act, 33 U.S.C. § 1344, and/or Ohio Revised Code Chapter 6111; and

WHEREAS, entities planning to place dredged or fill material into waters of the United States or waters of the State of Ohio, including wetlands, must comply with standards and conditions imposed by the Army Corps of Engineers (the "Corps") and/or Ohio Environmental Protection Agency ("Ohio EPA") including, in many cases, the mitigation of wetland impacts; and

WHEREAS, efforts to restore wetlands are often most successful when directed toward the establishment of large, varied wetland ecosystems rather than small, isolated wetlands which are often threatened by urban encroachment; and

WHEREAS, the Red Stone Farm, LLC has participated in the Interagency Review Team ("IRT") review process and received approval from the IRT (which includes the Corps and Ohio EPA) to establish the Red Stone Farm Mitigation Bank and to sell wetland mitigation credits to entities required to mitigate for impacts to wetlands and other waters pursuant to the Section 404/401 permit process and Ohio's Isolated Wetland Permit process; and

WHEREAS, the Corps and the Ohio EPA have agreed to consider the purchase of wetland mitigation credits in an appropriate service area approved by the IRT to fulfill an entity's requirement to mitigate wetland impacts.

THEREFORE, Liberty South Development, LLC ("Client") and Red Stone Farm, LLC agree they will comply with the following guidelines and procedures by which Client will purchase wetland mitigation credits from Red Stone Farm, LLC representing the restoration of wetlands in the State of Ohio which will be permanently maintained and which will serve to mitigate wetland impacts permitted under Sections 404 and 401 of the Clean Water Act and in accordance with ORC Chapter 6111.

I. RESERVATION OF CREDITS AND PAYMENT TERMS FOR THE CLIENT

A. Pursuant to the requirements of Sections 401 and 404 of the Clean Water Act and the regulations promulgated thereunder and/or ORC Chapter 6111, Client is obligated to mitigate for impacts to --- acres of forested wetlands and 1.37 acres of impact to non-forested wetlands at its Liberty South Development site located at 7490 Liberty Way, in Liberty Twp., Butler County, Ohio. Based on the sale price of \$ 65,000 per acre of mitigation credit, the Client hereby agrees to pay Red Stone Farm, LLC the amount of \$ 136,500 in consideration for the purchase of --- acres of forested wetlands and 2.10 acres of non-forested wetlands mitigation credits at the Red Stone Farm Mitigation Bank. Red Stone Farm, LLC will reserve the necessary wetland credits (acreage) for a period of 180 days (the "Reservation Period") upon receipt of: a signed Purchase Agreement, record of the LRH or OEPA permit #: LRH-2013-981-GMR OEPA ID: _____, and a deposit payment of \$ 13,650 (equal to 10% of the total sale price). If Client has not received the necessary approvals pursuant to Section 404 and/or 401 of the Clean Water Act or the Ohio Isolated Wetland Permit program during the Reservation Period, Red Stone Farm, LLC will extend the Reservation Period for an additional 180 days upon receipt of an additional 10% deposit. If the Reservation Period must be extended a third time, the price of credits may be adjusted by Red Stone Farm, LLC to reflect market value. The Reservation Period will not be extended a fourth time. Payment of deposits must be made within 10 days of the due date. Thereafter, a penalty of 2% of the amount due will be levied every 30 days. Once the Reservation Period expires, the wetlands credits will not be reserved for Client but will be available on a first-come basis to all Red Stone Farm, LLC clients.

Please complete the following Credit Calculation Table to confirm credits required:

Impacted Wetland Category	Acres Impacted <i>Completed by Client</i>	Mitigation Ratio	Credits Required (round to nearest tenth acre) <i>Completed by Client</i>
1 non-forested/forested	1.37	1.5 : 1	2.055 (2.10)
2 non-forested			
2 forested			
3 non-forested			
3 forested			
1 isolated non-forested/forested			
2 isolated non-forested			
2 isolated forested			

B. The Client will provide copies of the granted Sections 404 permit from the Corps, the granted Section 401 Water Quality Certification from OEPA, if needed, and the Isolated Wetland Permit from OEPA, if needed, to Red Stone Farm LLC to demonstrate regulatory approval for the Red Stone Farm Wetland Mitigation Bank to meet wetland requirements for the development site designated in paragraph 1A.

C. The Client and Red Stone Farm, LLC are aware that the Section 404 permit process, and, if necessary, the Section 401 Certification process, or the Ohio Isolated Wetland Permit program must be completed by the Corps and/or Ohio EPA and that this Wetland Mitigation Agreement will be used by the Corps and/or Ohio EPA to document the Client's mitigation plan. Therefore, the Client's deposit payment(s), as defined in paragraph 1A of this agreement, will be held by Red Stone Farm, LLC until such time as the Corps and/or Ohio EPA issues the requested permits.

D. If within the Reservation Period the Corps or Ohio EPA denies the Client's request for a permit for the wetland impact or if the Client elects to withdraw their permit application, Red Stone Farm, LLC will refund the Client's deposit and provide written notification of the termination of this Agreement to the Corps. If the Reservation Period expires, the Client shall forfeit their deposit payment(s) to Red Stone Farm, LLC. The Client must provide written notification to Red Stone Farm, LLC of the denial of its permit or its intention to withdraw its permit application prior to the expiration of the Reservation Period in order to obtain a refund of its deposit.

E. **Within thirty (30) days of issuance of the Clean Water Act Section 404 permit and, if necessary, the Section 401 Certification or Ohio Isolated Wetland Permit, the Client will tender the outstanding balance of the cost of the mitigation credits.** The Client will also provide Red Stone Farm, LLC with a copy of the Section 404 permit and, if applicable, the Section 401 Certification or the Ohio Isolated Wetland Permit or other approval to proceed. Final receipt for payment in full will not be issued until copy of the above permit is received. If payment is not received by Red Stone Farm, LLC by the end of the thirtieth day after the Permit Issuance Date, the Client will be considered to be in Default of Payment. The Permit Issuance Date is the date of the wetland fill permit (Isolated wetlands Permit, Clean Water Act Section 401/404 permits) issued for the projects. If more than one wetland fill permit is required

for the project identified in this agreement then the date of the most recent permit shall be considered as the Permit Issuance Date.

F. Should the Client be in Default of Payment for greater than 30 days, Red Stone Farm, LLC will have the right to sell the credits reserved by this agreement to other clients on a first come first serve basis or to assess a late payment penalty of \$300 or 2.0% interest per month, whichever is greater, on the outstanding balance from the Permit Issuance Date for each month or portion thereof until payment is received in full. It is the sole responsibility of the Client to ensure that they adhere to the terms of this agreement, including timely payment, and to the terms of permit(s) issued to it for their project. If the Client is in Default of Payment for greater than 90 days and Red Stone Farm, LLC elects to sell the reserved credits to a different client, the Client, the Corps and Ohio EPA shall be notified by Red Stone Farm, LLC that this agreement has been terminated and the credits are no longer held in reserve for the Client. The Client's deposit payment will be forfeited to Red Stone Farm, LLC at this time and may be applied to future mitigation purchases at the discretion of Red Stone Farm, LLC.

G. The Client shall have no other obligation other than the payments detailed in this agreement for future maintenance or remedial measures of the Red Stone Farm Mitigation Bank.

II. OBLIGATIONS OF RED STONE FARM, LLC

A. Red Stone Farm, LLC offers for sale mitigation credits at the Red Stone Farm Mitigation Bank which have been approved by the IRT to mitigate for certain wetland impacts.

B. In consideration for the payment of \$ 136,500 (plus penalties, if applicable, as per paragraph I.F of this Agreement) by Client, Red Stone Farm, LLC hereby agrees to provide 2.10 acres of wetlands mitigation credit at the Red Stone Farm Mitigation Bank for the benefit of Client hereunder. Red Stone Farm, LLC shall bear responsibility for assuring the restoration and the monitoring and maintenance of the wetlands as provided herein and in the *Red Stone Farm Wetland Mitigation Bank: Banking Instrument* dated January 2007.

C. Red Stone Farm, LLC will provide written confirmation to the Client that full payment has been made for the purchase of wetland mitigation credits specified in paragraphs IA and IB of this agreement.

D. Client may submit the executed copy of this Agreement to the Corps and/or Ohio EPA with their permit application in order to document its commitment to mitigate anticipated wetland impacts.

RED STONE FARM, LLC

Signed By: Drausin Wulsin
Drausin Wulsin, Manager

Date: 4/3/14

CLIENT Liberty South Development Co, LLC.

Signed By: Justin Leyda

Printed Name: JUSTIN LEYDA

Title: DEVELOPMENT DIRECTOR

Date: MARCH 26, 2014

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INDIVIDUAL PERMIT APPLICATION & ALTERNATIVES ANALYSIS

**Liberty South Development, LLC.
Liberty South Project**

West Chester Township, Butler County, Ohio



Document Information

Prepared for Liberty South Development, LLC
Project Name Liberty South Project
Corps ID Number LRH-2013-981-GMR-UT Gregory Creek
Project Manager Joel Thrash
Date March 7, 2014

Prepared by:



Cardno JFNew
11121 Canal Road, Cincinnati, Ohio 45241



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- Appendix II Approved Jurisdictional Determination
- Appendix III Rare, Threatened and Endangered Species Consultation
- Appendix IV Cultural and Historic Literature Review
- Appendix V Mitigation Proposal and Perpetual Protection Measures
- Appendix VI List of Adjacent Property Owners
- Appendix VII Ohio EPA Antidegradation Social Economic Justification (SEJ) Matrix

1 Project Description

Liberty South Development, LLC., is proposing to construct a mixed-use, planned unit development (B-PUD) project consisting of residential space, commercial office space, commercial and retail shopping, hotels, and restaurants to meet the needs of a growing population center in West Chester Township, Ohio. The project calls for the development of approximately 37 acres of land located south of Liberty Way Road, bisected by Tylers Place Boulevard, and west of I-75 in West Chester Township, Butler County, Ohio (Figure 1). The proposed project is located in a key commercial district within the Interstate I-75 corridor and has been zoned Commercial Planned Unit Development (C-PUD). The project is bounded by residential properties to the south and west, I-75 to the east, and Liberty Way to the north.

This report and all associated figures, exhibits and appendices have been prepared by the applicant to support the joint requirements for a Clean Water Act - Section 404 Department of the Army Permit application and Section 401 Water Quality Certification for the proposed Liberty South Development ("The Site"). Liberty South Development, LLC ("The Applicant") is the site owner and developer while Cardno JFNew serves as the project agent.

1.1 Project Purpose and Need

West Chester and Liberty Township are two of the fastest growing residential areas in Greater Cincinnati. The population of West Chester Township in 1990 was 39,703 (US Census, 1990). As of March 2010, that number had increased to over 60,958, representing a 53.5% increase from the 1990 Census (US Census, 2010). In order to better meet demand for additional residential and professional office space, retail shopping, restaurants, hotels, and other commercial needs; the project has been proposed as a mixed use development, within one of the fastest growing regions of Butler County. Exhibit 1 highlights the overall proposed site plans including the building footprint and attendant features including roads, parking lots, and access points.

The purpose of this proposed project is to meet pent-up-demand for the construction of 169,500 square feet (SF) of commercial retail space, 26,700 SF and 50 units of mixed use commercial retail and residential space, 30 Units of residential space, 21,000 SF of restaurant space, 34,500 SF of mixed use commercial retail and office space, and two 110-room hotels in accordance with locally approved land use plans, and zoning requirements. The proposed project will also provide upwards of 2,188 permanent new jobs and generate over \$21,302,619 in tax revenue annually. In order to minimize reliance of other communities for professional office space, retail shopping, restaurants, and other commercial needs; the project has been proposed as a mixed use development to concentrate compatible uses, meet pent-up demand for commercial development, centralize traffic flow, and avert uncontrolled growth into rural areas.

1.2 Project Site Selection

In addition to fulfilling the project purpose and need stated above, the proposed site was selected by the applicant after a thorough review of all potential qualifying sites within the West Chester Township real estate market. Based on a 2008 market analysis conducted as a component of the overall Liberty Township Development Plan, in consideration of the proposed

land use types allowable by local codes, three sites within the Interstate I-75 corridor met the applicant's criteria to make the project economically feasible, and location while also considering total square footage, approved uses, and impacts to water resources.

In addition to fulfilling the project purpose and need stated above, the proposed site was selected by the Applicant after a thorough review of all potential qualifying sites within the Liberty Township real estate market. The first site, located north of Liberty Way and immediately adjacent to east side of Interstate I-75 was evaluated by the applicant as a commercial / industrial development. During the evaluation process, this conglomeration of properties was determined to be owned and re-zoned by another development firm and was no longer a viable option for the applicant due to competition, acquisition costs, and expected community opposition to a zoning change to allow retail on the site. A second site, presently Green Crest Golf Course located north of Cox Rd and south of Bethany Road, was evaluated as a mixed use development, but the property size and land acquisition costs were beyond project budget. The final site, explained in the Project Background below. This site met all requisite criteria for an economically feasible development and contains the current 37 acre proposed Liberty South Development project site (Figure 1).

1.3 Project Background

On September 4, 2013, a "Waters of the U.S. Delineation Report" was completed by Cardno JFNew for the overall 37-acre Liberty South study area requested by Liberty South Development, LLC (Appendix I). During this evaluation, Cardno JFNew identified three palustrine emergent wetlands, one intermittent stream (Stream 1), and one stormwater detention basin. Based on the November 27, 2013 site visit with Jacob Siegrist of the Army Corp of Engineers Huntington District, Wetland 1 and Wetland 2 are located within depressions which are abutting or adjacent to Stream 1 and therefore are considered jurisdictional due to its hydrologic connection (adjacency) with Stream 1. Wetland 3 is located within a depressional landform with no apparent outlet a therefore is considered non-jurisdictional, or an "isolated wetland." Furthermore, the identified stormwater detention basin located west of Tylers Place Blvd is considered non-jurisdictional as a waste water management basin however if the area's use designation changes due to the proposed development the basin will be considered a jurisdictional 'water of the U.S.' Copies of the delineation report were sent to the Ohio EPA and Corps of Engineers on October 7, 2013. An additional copy of the delineation report and the subsequent Corps jurisdictional determination (JD) letter can be found in Appendix I and II, respectively. The approved JD was received on January 22, 2014 and concluded that Wetland 1, Wetland 2, Stream, 1, and a stormwater detention basin are considered jurisdictional "Waters of the U.S." whereas Wetland 3 is considered an isolated "Water of the State". See Appendix II.

1.4 Existing Site Conditions

Cardno JFNew visited the existing project site on September 4, 2013. One jurisdictional stream, two (2) jurisdictional wetlands, one (1) isolated wetland, and one (1) potentially jurisdictional stormwater detention basin were identified within the 37-acre study area (Appendix II). The stormwater detention basin is considered non-jurisdictional as a wastewater management basin however if the area's use designation changes the stormwater detention basin will no longer be covered under the wastewater management exclusion and thus will be considered a jurisdictional 'water of the U.S.' No other wetlands or waters of the United States were observed. These findings were confirmed by the Corps of Engineers Jurisdictional

Determination of the project (Appendix II). A copy of Cardno JFNew’s complete delineation and assessment can be found in Appendix I. Table 1 summarizes the aquatic resources identified in the project area.

Table 1: Features Identified within the Liberty South Development Study Area

Feature Name	USGS/ NWI Feature	Feature Class	Regulatory Status	Riffles / Pools	Dimensions		Substrate	HHE/ ORAM Score/ Class	Linear Footage (LF)	Acreage (AC)	
					Width (ft)	Depth (in)					
Wetland 1	YES	Emergent	Jurisdictional	---	---	---	---	27.0 Category 1	---	1.31	
Wetland 2	No	Emergent	Jurisdictional	---	---	---	---	28.5 Category 1	---	0.04	
Wetland 3	No	Emergent	Isolated	---	---	---	---	28.5 Category 1	---	0.02	
Stream 1	YES	Intermittent	Jurisdictional	Yes	4-5	6-8"	C-G-Si	46.0 Modified Class II PHWH	267	0.03	
Stormwater Detention	No	Ephemeral	Jurisdictional*	No	2	1	Concrete/ turf grass	---	---	1.8	
Totals			Wetlands		Emergent		Jurisdictional	1.33 Acre		1.33	
							Isolated	0.02 Acre		1.35	
			Streams		Intermittent		267 LF		0.03		
			Stormwater Detention		Jurisdictional		1.8 Acre*		1.80		
			Waterbodies Total (Jurisdictional)*					267 LF		3.16	
			Waterbodies Total (Isolated)					---		0.02	

**The stormwater detention basin (1.8 acres) is considered non-jurisdictional as a waste water management basin however if the area’s use designation changes the basin may be considered jurisdictional water of the U.S.*

The remainder of the site consists of a combination of Old Field, Scrub/Shrub, and Palustrine Emergent Wetland. Specific attention was given to the presence of habitat suitable for federally endangered species – specifically, Running Buffalo Clover (*Trifolium stoloniferum*) and the Indiana Bat (*Myotis sodalis*). The majority of site contained vegetation assemblages indicative of early succession species resulting from prior disturbed soils. To evaluate the potential habitat for rare, threatened, and endangered species a general site reconnaissance of the project area was performed by Cardno JFNew botanists.

Wetland 1 is an emergent (PEM) wetland located within a depression area in the eastern portion of the survey area. Based on the current topographic contours, the wetland exists in a depression landform which discharges southeast through stormwater pipes beneath Tyler’s Place Blvd into a retention basin that flows northwest beneath Preserve Place through stormwater pipes into a detention basin and travels through the stormwater detention basin into Stream 1. Due to this connection, Wetland 1 is considered a jurisdictional ‘water of the United States.’ The ORAM score for Wetland 1 was 27.0, classifying the wetland as Category 1 wetland.

Wetland 2 is an emergent wetland located adjacent to Stream 1, which flows downstream into an unnamed tributary (UNT) to Gregory Creek and is entirely contained within the study area. Gregory Creek is a direct tributary to the Great Miami River, a Traditional Navigable Water (TNW). Due to this connection, Wetland 2 should be considered a jurisdictional 'water of the United States.' The ORAM score for Wetland 2 was 28.5, classifying the wetland as a Category 1 wetland.

Wetland 3 is an emergent wetland located within a depression west of Tylers Place Blvd and is entirely contained within the study area. Based on the current topographic contours, the wetland exists in a depression with no apparent outlet, following prior disturbance and grading of the site. Evidence of historic disturbance suggests this wetland has no apparent outlet. As the soil samples probed across this site are indicative of prior-disturbed urban complexes, Cardno JFNew believes this wetland has developed as a result of negative drainage. Due to the lack of an observable hydrologic connection with other jurisdictional waters as well as the lack of an observable outlet, Cardno JFNew believes Wetland 1 should be considered an isolated 'water of the state.' The ORAM score for Wetland 3 was 28.5, classifying the wetland as a Category 1 wetland.

Stream 1 was determined to be an intermittent stream that flows south to north for approximately 267 LF onsite before flowing offsite under Liberty Way. Stream 1 is an unnamed USGS-identified intermittent tributary to Gregory Creek. Dominant substrate included cobble, gravel, and silt. The Ordinary High Water Mark (OHWM) width was measured at approximately 3 to 4 feet and the depth was approximately 6 inches. The Bank Full Width (BFW) was approximately 4 to 5 feet and bankfull depth was approximately 6 to 8 inches. The Top of Bank (TOB) width was approximately 6 feet and depth was approximately 1 to 1.5 feet. Stream 1 originates at an outflow culvert to a prior-constructed detention basin within the northwestern portion of the survey area. Stream 1 flows offsite toward Gregory Creek, an USGS-identified perennial tributary to the Great Miami River, a Traditional Navigable Water (TNW). Due to this hydrologic connection, Stream 1 should be considered a jurisdictional 'water of the United States.' The HHEI score for Stream 1 was 46, classifying the stream as a Modified Class II headwater stream.

A stormwater detention basin was located west of Tyler's Place Blvd and north of Preserve Place. The stormwater detention basin (1.8 acres) carries ephemeral flow north from a retention basin/pond located south of Preserve Place towards Stream 1. Dominant substrate included concrete, turf grass, and silt. The stormwater detention basin qualifies for the wastewater management exclusion thus deeming it a non-jurisdictional waterway however if a change in use designation associated with the project occurs the basin will no longer qualify for the exemption thus will be considered jurisdictional 'water of the United States'.

For detailed descriptions of the upland habitat characterizations and rare, threatened, and endangered (RTE) species habitat coordination, please refer to Appendix I and Appendix III, respectively.

Based on Cardno JFNew's field reconnaissance and habitat assessment of the site, the established trees surveyed on site contained mean diameters (DBH) ranging from four (4) to eight (8) inches, with less than 5% greater than 24" inches. Given the absence of forested areas, lack of potential roost trees, proximity to intensive land uses and distance from large, perennial waterbodies; Cardno JFNew determined that the site did not contain suitable habitat for rare, threatened, or endangered (RTE) species, specifically the federally-endangered Indiana bat (*Myotis sodalis*). This recommendation was preliminarily coordinated between the

applicant and the U.S. Fish & Wildlife Service (USFWS) on November 1, 2013 (See Appendix IV). The project was noted to lie within the range of the Indiana bat and Northern Long-Eared Bat (*Myotis septentrionalis*). Several recommendations regarding avoidance measures and seasonal clearing were made. Further coordination with the Ohio Department of Natural Resources (ODNR) on September 30, 2013 indicated that ODNR was “unaware of any unique ecological sites...animal assemblages, geologic features or protected areas within one square mile radius of the project.” See Appendix IV for RTE Coordination.

1.5 Proposed Impacts

Liberty South Development, LLC is requesting authorization for unavoidable impacts to Wetland 1-3, Stream 1, and the stormwater detention basin in order to construct 169,500 square feet (SF) of commercial retail space, 26,700 SF and 50 units of mixed use commercial retail and residential space, 30 Units of residential space, 21,000 SF of restaurant space, 34,500 SF of mixed use commercial retail and office space, and two 110-room hotels. The impacts are also necessary to construct the required attendant features such as roads, parking spaces, and utilities to service the project area.

After analyzing all options and alternatives as part of the site selection, permitting, and antidegradation processes required via Individual Permitting; the applicant has identified the preferred design (Exhibit 1), as the only economically feasible design plan despite requiring the greatest degree of impact to onsite aquatic resources. Through the antidegradation process detailed in later sections of this report, the applicant realized that avoidance measures aiming to derive a more ecologically conservative approach were extremely restricting given the orientation of the onsite aquatic resources and available developable square footage (Exhibit 1). Thus, all proposed design modifications resulted in a significant reduction of available developable square footage while preserving only portions of low quality aquatic resources and were found to not be financially viable options.

The current development plans reflect the applicant’s preferred design alternative (Exhibit 1). This alternative has been chosen to maximize the developable acreage and establish fluid pedestrian and vehicular traffic flow in order to increase site safety while adhering to the West Chester Comprehensive Land Use Plan. Onsite aquatic resources are characterized as low quality therefore the proposed impacts associated with the preferred design plan result in only minimal degradation to the overall watershed. Specifically, Stream 1 is classified as a Modified Class II Primary Headwater Habitat (PHWH) and Wetlands 1-3 are classified as Category 1 emergent wetlands.

Unavoidable impacts associated with the Preferred Design Alternative include approximately 267 LF/ 0.03 acre of intermittent stream (Stream 1), 1.37 acres of emergent wetlands (Wetland 1-3), and 1.07 acres of a stormwater detention basin (SW1), representing a total of 2.47 acres waters, are proposed. Exhibit 1 details the impacts associated with the Preferred Design Alternative. No other impacts to wetland or other waters of the U.S. are proposed.

Table 2. Proposed Impacts Associated with the Preferred Design Alternative

Feature Name	Impact Length	Impact Acreage	% Avoided	Fill Volume (Cubic Yards)
Wetland 1	----	1.31	0%	2113 CY
Wetland 2	----	0.04	0%	57 CY
Wetland 3	----	0.02	0%	37 CY

Stream 1	267 LF	0.03	0%	73 CY
SW 1	---	1.07	41%	1726 CY
Totals	Emergent Wetland	---	1.37	0%
	Intermittent Stream	267	0.03	0%
	Stormwater Detention	---	1.07	41%
Totals	267 LF	2.47 Acre	0%	4006CY

After confirming the presence of on-site aquatic resources, the need for appropriate mitigation, and water quality improvements the applicant determined that the preferred design alternative was the most practicable given the orientation of the onsite aquatic resources and available developable square footage (Exhibit 1). The minimal degradation plan reduced the amount of impervious surfaces of the project by eliminating buildings and parking areas within and adjacent to the Stream 1 corridor, Wetland 2, and a portion of Wetland 1 and the stormwater detention basin. Thus this alternative significantly decreased the available developable space consequently significantly decreasing the financial viability of the project. The total amount of impact to onsite aquatic resources proposed by the Minimal Degradation Plan was reduced by 1.29 acres of wetland, 267 LF of intermittent stream, and 0.97 acres of stormwater detention basin impacts (Exhibit 2). Wetland impacts within this alternative reduced largely due to avoidance of a majority of Wetland 1, a low quality Category 1 wetland resulting in the elimination of an 110-room hotel and 1,000 square feet of developable space, approximately 20% of the of developable acreage.

The applicant proposes to compensate for the unavoidable stream impacts proposed in the Preferred Design Alternative, by purchasing 400 LF of stream mitigation credits and 2.1 acres of wetland mitigation credits from the Great Miami Mitigation Bank (GMMB) to compensate for impacts to 267 LF of Modified Class II intermittent stream and 1.37 acres of emergent Category I wetlands. Furthermore, impacts to the existing stormwater basin will be compensated by purchasing 2.0 acres of riparian buffer credits at a 2:1 compensation-to-impact ratio from the GMMB. The stormwater detention basin currently supports ephemeral flow and lacks sufficient habitat to support a warm water biologic community. Whereas the proposed riparian buffer mitigation will be able to process nutrients, dissipate energy, process sediment, provide habitat, and maintain and protect downstream beneficial uses. Therefore the proposed riparian buffer mitigation will provide a net increase the overall quality of the watershed. Opportunities to complete this work will be coordinated with Fiver Rivers Metro Parks.

2 Individual Permit Application Requirements

The Pre Construction Notification (PCN) and Pre-Activity Notification (PAN) requirements for a Department of the Army CWA §404 Individual Permit and an Ohio EPA CWA §401 Individual Water Quality Certification contain overlapping application requirements. In general, the requirements for the Ohio EPA §401 Water Quality Certification (WQC) are more inclusive and therefore utilized as the standard template in this application package. The eleven items outlined in Table 3 have been prepared by the applicant to fulfill the joint requirements for Section 404 Individual Permit authorization as well as addressing and elaborating the additional Section 401 Individual Water Quality Certification. Please find enclosed two separate

application forms; a Waters of the U.S. delineation report dated September 13, 2013 (Appendix I); the Corps of Engineers Jurisdictional Determination (Appendix II) an Analysis of Practicable Alternatives (Page 7); a mitigation plan and proposal (Appendix V); relevant fees; existing natural resource maps (Figures 1-4); site photographs (Appendix A of Appendix I); Rare, Threatened, and Endangered (RTE) species coordination (Appendix III); and a Cultural Resource Literature review (Appendix IV). A copy of the US Army Corps of Engineers' public notice will be issued following this joint submission.

Table 3. 401 Water Quality Certification Application Requirements

Notification Requirements	Report Location
Completed 404 / 401 Application Forms	Enclosed with Cover Letter
Waters of the U.S. Delineation Report	Appendix I
U.S.A.C.E Jurisdictional Determination	Appendix II
Aquatic Life Use Designations	Appendix B of Appendix I (HHEI Forms)
Alternatives Analysis	Page 9
Mitigation Proposal and Perpetual Protection	Appendix V
Permit Fees	Enclosed with Application
Site Photographs	Appendix A of Appendix I
Relevant Resource Maps	Figures 1 - 4
USFWS / ODNR RTE Coordination	Appendix III
USACE Public Notice	<i>Pending, To be provided to OEPA following Corps Issuance</i>

3 Analysis of Practicable Alternatives

The following discussion of practicable alternatives is arranged to comply with the requirements of OEPA's Antidegradation Rule (Item 10) in the Application for Ohio EPA Section 401 Water Quality Certification. This discussion investigates the Applicants three potential alternatives as follows: Preferred Design Alternative (Exhibit 1), Minimal Degradation Alternative (Exhibit 2), and Non-Degradation Alternative (Exhibit 3). For the purpose of this evaluation the alternatives are defined as follows:

Preferred Design Alternative and Mitigative Techniques (Exhibit 1 / Appendix V) - involves the placement of fill material into a total of 267 LF (0.03 acre) of intermittent primary headwater stream, 1.37 acres of emergent wetland and 1.07 acres of stormwater detention basin for the construction of a mixed-use commercial development. Specifically, the preferred design involves the placement of onsite fill materials into intermittent Stream 1 (267 LF, 0.03 acres), emergent Wetland 1 – 3 (1.37 acres), and a stormwater detention basin (1.07 acres) via subsurface drainage pipes and clean clay loam. Fill activities associated with the wetlands and streams would maximize developable area, impact only low and moderate quality aquatic resources, and enable an economically viable project. Off-site mitigation activities would consist of purchasing 400 LF of stream mitigation credits and 2.1 acres of wetland mitigation credits from the Great Miami Mitigation Bank (GMMB) to compensate for impacts to 267 LF of Modified Class II intermittent stream at a 1.5:1 compensation-to-impact and 1.37 acres of emergent Category I wetlands at a 1.5:1 compensation to impact ratio. Furthermore, impacts to the existing stormwater basin will be compensated by purchasing 2.0 acres of riparian buffer credits at a 2:1 compensation-to-impact from the GMMB. The stormwater detention basin currently supports ephemeral flow and lacks sufficient habitat to support a warm water biologic community. Whereas the proposed riparian buffer mitigation will be able to process nutrients, dissipate energy, process sediment, provide habitat, and maintain and protect downstream beneficial uses. Therefore due to the intrinsically low quality of the onsite streams and wetlands the proposed riparian buffer mitigation will provide a net increase the overall quality of the watershed. Opportunities to complete this work will be coordinated with Five Rivers Metro Parks. These mitigation techniques are detailed in the mitigation proposal as the Preferred Alternative serves as the proposed alternative.

Minimal Degradation Alternative and Mitigative Techniques (Exhibit 2) – involves the placement of fill material into a total of 0.62 acre of emergent wetlands (Wetland 1 and Wetland 3) and 0.97 acre of stormwater detention basin for the purposes of a mixed-use commercial development. Specifically, the minimal degradation alternative design involves the placement of onsite fill material within a portion of Wetland 1 (0.60 acre) and Wetland 3 (0.02 acre) and placement of fill material via subsurface drainage pipes into the stormwater detention basin (0.9 acre). This design plan would require the loss of 1,000 SF of developable square footage and a 110-room hotel compared to the Preferred Design. Reduction of fill activities associated with the streams and wetlands would prevent an economically viable project by reducing the developable area by approximately 20% while avoiding and minimizing impacts to only low quality aquatic resources. Off-site mitigation activities would consist of purchasing the remaining 0.93 acres of wetland mitigation credits and 2 acre of riparian buffer credits from the Great Miami Mitigation Bank (GMMB) to compensate impacts to 0.62 acres of emergent wetlands at a 1.5:1 compensation-to-impact and 0.97 acres of stormwater detention basin at a 2.06:1 compensation-to-impact.

Non-Degradation Alternative (Exhibit 3) – involves avoiding all on-site waters of the U.S. This would require the loss of 58,000 SF of developable square footage and a 110-room hotel compared with the Preferred Design and the loss of 63,500 SF of developable square footage and significant ingress/egress roads providing access to the site compared with the Minimal Degradation alternative. No fill activities would occur within the jurisdictional limits of previously identified streams. No compensatory mitigation would be required for this alternative

To address the requirements of Ohio EPA's Antidegradation Rule, the following eleven (11) alphanumeric items [a-k] have been prepared for this Analysis of Practicable Alternatives. Beginning with item a.) on the ensuing page(s), the applicant has provided the appropriate discussion as it relates to the Preferred Alternative, the Minimal Degradation Alternative, and

the Non-Degradation Alternative, followed by completion of item b.) for each alternative, and so on, for all eleven items [a-k]. Where applicable, the appropriate location for supporting documentation has been referenced with the discussion.

3.1 Description of Fill

10a) Provide a 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.

Preferred Design Alternative

Impacts to Waters of the U.S. resulting from the Preferred Design Alternative would include the piping of approximately 267 linear feet (0.03 acres) of intermittent Stream 1, and the placement of fill material into 1.37 acres of emergent Wetlands 1-3, and 1.07 acre of stormwater detention basin, to support grade establishment and drainage relocation. These impacts are necessary in order to construct 169,500 square feet (SF) of commercial retail space, 26,700 SF and 50 units of mixed use commercial retail and residential space, 30 Units of residential space, 21,000 SF of restaurant space, 34,500 SF of mixed use commercial retail and office space, and two 110-room Hotels (Exhibit 1). Specifically, the impacts are necessary to construct the required, locally-regulated attendant features such as roads, requisite parking spaces, and utilities to service the project area.

Discharged material placed below the OHWM of the onsite jurisdictional wetlands, streams, and detention basin would consist of clean, on-site fill (silty clay loam) obtained during mass earth grading and the installation of approximately 267 linear feet of 36" inch HDPE pipe and its aggregate base. Specifically, 73 CY of clean on-site fill (silty clay loam) would be placed within the OHWM of intermittent Stream 1, 2,113 CY of clean on-site fill (silty clay loam) would be placed within the OHWM of emergent Wetland 1, 57 CY clean on-site fill (silty clay loam) would be placed within the OHWM of emergent Wetland 2, 37 CY clean on-site fill (silty clay loam) would be placed within the OHWM of emergent Wetland 3, and 1,726 CY of clean on-site fill (silty clay loam) would be placed within an existing stormwater detention basin. A total of 4,006 CY of fill and 267 LF of HDPE pipe are proposed utilizing this alternative. No other dredged material is proposed to be removed from any streams, wetlands or other waters under this alternative. Site plans and maps have been provided by the civil site engineer, Bayer Becker, for the Preferred Design Alternative in Exhibit 1.

Minimal Degradation Alternative

Discharged material placed below the OHWM of the onsite jurisdictional wetlands, streams, and detention basin would consist of clean, on-site fill (silty clay loam) obtained during mass earth grading and the installation of approximately 267 linear feet of 36" inch HDPE pipe and its aggregate base.

Impacts to Waters of the U.S. resulting from the Minimal Degradation Alternative would include the placement of fill material within 0.62 acres of emergent Wetland 1 and 3 and the piping of approximately 0.97 acres of a stormwater detention basin to support grade establishment and drainage relocation. These impacts are necessary in order to construct 169,500 square feet (SF) of commercial retail space, 26,700 SF and 50 units of mixed use commercial retail and residential space, 30 Units of residential space, 5,500 SF of office space, 16,500 SF of restaurant space, 34,500 SF of mixed use commercial retail and office space, and one 110-

room Hotels (Exhibit 2). Specifically, the impacts are necessary to construct the required, county-regulated attendant features such as roads, requisite parking spaces, and utilities to service the project area.

Discharged material placed below the OHWM of the onsite jurisdictional wetlands and detention basin would consist of clean, on-site fill (silty clay loam) obtained during mass earth grading. Specifically, 968 CY of clean on-site fill (silty clay loam) would be placed within the OHWM of the emergent Wetland 1, 37 CY of clean on-site fill (silty clay loam) would be placed within the OHWM of the emergent Wetland 3, and 1,452 CY of clean on-site fill (silty clay loam) would be placed within the existing stormwater detention basin. A total of 2,457 CY of clean, on-site (silty clay loam) fill is proposed using this alternative. No other dredged material is proposed to be removed from any streams, wetlands or other waters under this alternative. Site plans and maps have been provided by the civil site engineer, Bayer Becker, for the Minimal Degradation Alternative in Exhibit 2 (See Exhibit 2).

The construction of this alternative would require the loss of 49,000 SF of commercial office space and a 110-room hotel compared with the Preferred Alternative. This alternative reduces the amount highly profitable office space and eliminates high-demand hotel rooms of the project to an unmarketable size relative to land area and compared with market competition. Further, this alternative makes the project economically unfeasible and inconsistent with locally-approved commercial C-PUD zoning.

Non-Degradation Alternative

No permanent impacts to waters of the U.S. would result from the Non-Degradation Alternative. All cut and fill material to support site construction would be placed outside the OHWM of all jurisdictional waters and their buffers. This no-impact approach would permit the construction of 154,500 square feet (SF) of commercial retail space, 26,700 SF and 50 units of mixed use commercial retail and residential space, 30 Units of residential space, 16,500 SF of restaurant space, 17,500 SF of mixed use commercial retail and office space, and one 110-room Hotels (Exhibit 3). The Non-Degradation Alternative would not allow the applicant to construct the desired amount of commercial office space or hotel space for an economically viable project. Further, the required, county-regulated attendant features such as roads, requisite parking spaces, and utilities to service the project area, given the amount of remaining developable area, would not allow for an economically viable project.

The construction of this alternative would require the loss of 87,500 SF of developable square footage and a 110-room hotel compared with the Preferred Alternative and the loss of 38,500 SF of developable square footage with the Minimal Degradation Alternative. This alternative reduces the amount highly profitable office space and eliminates high-demand hotel rooms to make the entire development an unmarketable size relative to land area and comparable with market competition. Further, this alternative makes the project economically unfeasible and inconsistent with locally-approved commercial C-PUD zoning.

3.2 Water Quality Impacts to Aquatic Life, Wildlife, and R/T/E Species

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 Corps of Engineers approved wetland delineation.

Preferred Design Alternative

Water Quality Impacts

The Preferred Design Alternative is expected to result in a nominal decrease in water quality as a result of permanently filling a total 267 LF (0.03 acre) of intermittent headwater stream, 1.37 acres of Category 1 emergent wetlands, 1.07 acres of stormwater detention basin on the site, and converting approximately 37 acres of old field and scrub/shrub land uses into approximately 37 acres of impervious surfaces. The net loss of 1.37 acres of emergent wetlands, 267 LF of headwater stream and associated riparian buffer and 1.07 acres of stormwater detention basin provides less opportunity for water quality filtration, reduction of available habitat and flow attenuation. This decrease in onsite water quality would be compensated via mitigative techniques that would take place off-site at approved mitigation banks and through onsite stormwater controls and treatment.

Specifically, the streams and wetlands to be impacted as a result of this alternative include: Stream 1, Wetland 1, Wetland 2, Wetland 3 and a stormwater detention basin (Exhibit 1). Impacts to Stream 1 include piping 267 LF, characterized as modified Class II PHWH. Impacts to onsite wetlands include approximately 1.31 acres of proposed impacts to Wetland 1, 0.04 acres of impact to Wetland 2, 0.02 acres of impact to Wetland 3, and 1.07 acres of impact to an existing stormwater detention basin. All onsite wetlands are classified as Category I emergent wetlands. Stream and wetland evaluation forms are provided in Appendix B and Appendix C respectively of the "Waters of the U.S." Delineation Report (Appendix I).

Stormwater discharges are expected to be the primary source of water quality impacts as a result of the project. Stormwater discharges from impervious surfaces areas in commercial settings such as this proposed project generally decrease water quality by increasing the concentration and loading of total suspended solids (TSS), total dissolved solids (TDS), conductivity (metals), hydrocarbons (PAHs), nutrients (P- and N), temperature (thermal), and chemical oxygen demand (COD). As the project site lies within an NPDES Phase II MS4 regulated community, the applicant will work with the Butler County Stormwater District to install subsurface detention units as well as implement Phase II required post-construction water quality BMPs to help offset the expected water quality impacts associated with the Preferred Design.

Increased stormwater peak flows and volumes are also expected changes in the flow patterns of on-site streams as a result of the project. Since the headwater stream (Stream 1) proposed to be impacted as a result of the project will still be piped in order to maintain stream flow, concerns with local flow patterns can be alleviated through proper storm sewer system engineering. Further, local stormwater regulations, using a derivative of the Ohio Critical Storm methodology, will be followed to minimize the impacts to flow patterns for the 2-yr, 5-yr, 10-yr, and 50-yr, 24-hr peak flow and runoff volume rates associated with the Preferred Design.

A primary concern associated with site development of the Preferred Alternative is sediment and erosion control during construction. To minimize the potential for impacts resulting from storm events during construction, the applicant will obtain an Earthmoving Permit from the Butler Soil and Water Conservation District and implement a stormwater pollution prevention plan (SWP3). Some of the features of the plan include temporary and permanent seeding as

soon as disturbed areas of the site are able to be stabilized and the use of structural BMPs such as gravel construction entrances, velocity dissipation devices within concentrated flow areas, sediment basins and temporary sediment traps to collect concentrated flow, silt fence, mulch berms, and inlet drain protection.

Aquatic Life and Wildlife Impacts

Impacts to aquatic and wildlife habitat as a result of the proposed lowering of water quality are expected to be minimal due to the intrinsic poor quality of existing on site aquatic resources, their buffers, and the intensity of the adjacent land use. Impacts to Stream 1, both upstream and downstream of the project site are extensive, and as such, further impacts to wildlife on this proposed project would be expected to be minimal. Additionally, Stream 1 has been previously piped immediately upstream and downstream of the site thus is anticipated to displace minimal aquatic species and terrestrial wildlife. Moreover, all onsite wetlands are categorized as Category 1 which “support minimal wildlife habitat, and minimal hydrological and recreational functions” and “...do not provided critical habitat for threatened or endangered species or contain rare, threatened, or endangered species.” Category 1 wetlands are defined as “limited quality waters” in OAC Rule 3745-1-05(A). They are considered to be a resource that has been so degraded or with such limited potential for restoration or of such low functionality, that no social or economic justification and lower standards for avoidance, minimization, and mitigation are applied. Development of the site would cause the emigration of some small animals to adjacent undeveloped areas, and some aquatic animals that are less mobile may be lost as a result of the proposed construction. However, this project would not jeopardize the existence of any plant or animal species.

Most aquatic life and habitat within the impacted streams and wetlands were likely displaced in conjunction with the construction of commercial and residential developments along Liberty Way and Tylers Place Blvd within the last 15 years. During Cardno JFNew’s September 2013 site evaluation and November 2013 site visit with the Corps, no significant aquatic life was observed. Although the habitat assessment scores would indicate the potential for aquatic life in Stream 1 is sufficient for macroinvertebrates and some amphibian communities, the reality is that existing upstream and downstream impacts to Stream 1 and its riparian buffer as well as the 267 LF daylighted length limit aquatic life potential to a poor quality and largely restrict aquatic life to the primary trophic level.

Rare Threatened or Endangered (RTE) Species Habitat Impacts

Correspondence with the USFWS and ODNR confirm that no significant plant or sensitive animal species or their habitats are expected to be impacted as result of this project. Given the lack of forested areas and potential roost trees, proximity to intensive land uses and distance from large, perennial waterbodies; Cardno JFNew determined that the site did not contain suitable habitat for RTE species, specifically the federally-endangered Indiana bat (*Myotis sodalis*), or proposed federally-endangered northern long eared bat (*Myotis septentrionalis*). This recommendation was preliminarily coordinated between the applicant and the USFWS on November 1, 2013 (See Appendix III). The project was noted to lie within the range of the northern long eared bat and the Indiana Bat. Several recommendations regarding avoidance measures and seasonal clearing were made. Further coordination with the ODNR on September 30, 2013 indicated that ODNR was “unaware of any unique ecological sites, animal assemblages, geologic features, breeding or non-breeding animal concentrations, champion trees... or state parks, forests, or wildlife areas within a one square mile radius of the project area.” See Appendix III for RTE Coordination.

Commercial or Recreational Sport Fish Species

No streams on the proposed project site contain aquatic life use designations that support commercial or recreational sport fish species. All streams Stream 1 identified on the proposed project site were an unnamed, undesignated headwaters to an unnamed, undesignated tributary of Gregory Creek, a tributary of the Great Miami River. Water quality impacts as a result of the Preferred Design Alternative are expected to have little to no impact on recreational sport fishing in the Great Miami River – the nearest receiving recreational sport fishing water body. Further, there are no aquatic resources or habitat capable of supporting important commercial or sport fish resources on this site.

Aquatic Community Structure and Function Impacts

The water quality impacts associated with Preferred Design Alternative would impact aquatic community structure at the primary trophic level. Most significantly, the impacts would result in a loss or displacement of small vertebrates from the fill of 1.37 acres of emergent wetlands and macroinvertebrates from disruption of riffle-pool complexes along 267 LF of total stream due to piping. While the aquatic functions these types of emergent wetlands and headwater streams play in the overall development of the aquatic food chain are critical, the reality is that upstream and downstream impacts to Wetlands 1-3 and Stream 1 and its riparian buffer limit aquatic life potential to a poor quality and largely restrict aquatic life to the primary trophic level on this site. The impacts to aquatic communities and functions should be considered minimal and could be reasonably offset by mitigation.

Mitigation

All mitigative techniques to offset the proposed lowering of water quality associated with the Preferred Design Alternative would be completed off-site at the Great Miami Mitigation Bank (GMMB) in Trotwood, OH to fulfill permittee-responsible compensatory mitigation ratios.

The Preferred Design Alternative, would result a net gain of 0.7 acres of wetland, 137 LF of headwater stream, and 1.07 acres of riparian buffer would be realized as a result of this alternative. Thus, the entire mitigation package is expected to result in a modest improvement with respect to watershed hydrology, headwater stream values and function, and overall water quality. This is especially true when considering the current onsite conditions, which are low quality and invasive species dominated wetlands and stormwater detention basins incapable of providing all aquatic functions due to the lack of appropriate buffers, upstream urbanization, increased flow rates associated with upstream urban runoff, sedimentation, and resultant basin degradation, bank erosion and poor water quality.

Minimal Degradation Alternative

Water Quality Impacts

The Minimal Degradation Alternative is expected to result in a slight decrease in water quality as a result of permanently filling a total 0.63 acres of emergent wetland, 0.9 acres of stormwater detention basin, and converting approximately 37 acres of old field and scrub/shrub land uses into approximately 26 acres of impervious surfaces. The Minimal Degradation alternative reduces the amount of impervious surfaces by eliminating buildings and parking areas within and adjacent to the Stream 1 corridor, within a portion of Wetland 1, Wetland 2, and within a portion of the existing stormwater detention basin.

Nonetheless, the loss of over 0.63 acres of Wetlands 1 and 3, and 0.9 acres of stormwater detention basin provides less opportunity for water quality filtration, habitat and flow attenuation. The decrease in water quality associated with the Minimal Degradation Alternative would be less than the extent of the impacts associated with the Preferred Design Alternative, and the balance of these impacts could be compensated via the purchase of wetlands and stream mitigation credits from the Great Miami Mitigation Bank (GMMB) in Trotwood, OH

Specifically, the wetlands and streams to be impacted as a result of this alternative include: Wetland 1, Wetland 3, and a stormwater detention basin (Exhibit 2). Impacts to Wetland 1 include 0.6 acre of fill, characterized as Category 1 emergent wetland. Impacts to Wetland 3 include 0.02 acre of fill, characterized as Category 1 emergent wetland. Impacts to the stormwater detention basin include 0.9 acres of fill in its basin. Wetland evaluation forms are provided in Appendix C of the "Waters of the U.S." Delineation Report (Appendix I).

Similar to the Preferred Design Alternative, stormwater discharges are expected to be the primary source of water quality impacts as a result of the project. Stormwater discharges from impervious surfaces areas in commercial settings such as this proposed project generally decrease water quality by increasing the concentration and loading of total suspended solids (TSS), total dissolved solids (TDS), conductivity (metals), hydrocarbons (PAHs), nutrients (P- and N), temperature (thermal), and chemical oxygen demand (COD). As the project site lies within an NPDES Phase II MS4 regulated community, the applicant will work with the Butler County Stormwater District to install subsurface detention basins as well as implement Phase II required post-construction water quality BMPs to help offset the expected water quality impacts associated with the Minimal Degradation Alternative. By reducing developable area compared to the Preferred Design Alternative, more area is available to provide riparian buffer setbacks and additional water quality BMPs under the Minimal Degradation Alternative.

Increased stormwater peak flows and volumes are also expected changes in the flow patterns of the on-site stream (Stream 1) as a result of this alternative. Local stormwater regulations, using a derivative of the Ohio Critical Storm methodology, will be followed to minimize the impacts to flow patterns for the 2-yr, 5-yr, 10-yr, and 50-yr, 24-hr peak flow and runoff volume rates associated with the Minimal Degradation Alternative.

A primary water quality concern associated with site development of the Minimal Degradation Alternative is sediment and erosion control during construction. To minimize the potential for impacts resulting from storm events during construction, the applicant will obtain an Earthmoving Permit from the Butler Soil and Water Conservation District and implement a stormwater pollution prevention plan (SWP3). Some of the features of the plan include temporary and permanent seeding as soon as disturbed areas of the site are able to be stabilized and the use of structural BMPs such as gravel construction entrances, velocity dissipation devices within concentrated flow areas, sediment basins and temporary sediment traps to collect concentrated flow, silt fence, mulch berms, and inlet drain protection. The potential sediment yield to receiving waters and the amount of disturbed area to be stabilized under this alternative (26 acres) is minimally less than that of the Preferred Design alternative (37 acres).

Aquatic Life and Wildlife Impacts

Impacts to aquatic and wildlife habitat as a result of the proposed lowering of water quality are expected to be minimal due to the poor quality of existing aquatic resources, their buffers, and the intensity of the adjacent land use. Impacts to aquatic and wildlife habitat as a result of the

proposed lowering of water quality are expected to be minimal due to the poor quality of existing aquatic resources and their buffers. Moreover, all onsite wetlands are categorized as Category 1 which “support minimal wildlife habitat, and minimal hydrological and recreational functions” and “...do not provided critical habitat for threatened or endangered species or contain rare, threatened, or endangered species.” Category 1 wetlands are defined as “limited quality waters” in OAC Rule 3745-1-05(A). They are considered to be a resource that has been so degraded or with such limited potential for restoration or of such low functionality, that no social or economic justification and lower standards for avoidance, minimization, and mitigation are applied. Development of the site would cause the emigration of some small animals to adjacent undeveloped areas, and some aquatic animals that are less mobile may be lost as a result of the proposed construction.

Rare Threatened or Endangered (RTE) Species Habitat Impacts

Correspondence with the USFWS and ODNR confirm that no significant plant or sensitive animal species or their habitats are expected to be impacted as result of this project. Given the lack of forested areas and potential roost trees, proximity to intensive land uses and distance from large, perennial waterbodies; Cardno JFNew determined that the site did not contain suitable habitat for RTE species, specifically the federally-endangered Indiana bat (*Myotis sodalis*), or proposed federally-endangered northern long eared bat (*Myotis septentrionalis*). This recommendation was preliminarily coordinated between the applicant and the USFWS on November 1, 2013 (See Appendix III). The project was noted to lie within the range of the northern long eared bat and the Indiana Bat. Several recommendations regarding avoidance measures and seasonal clearing were made. Further coordination with the ODNR on September 30, 2013 indicated that ODNR was “unaware of any unique ecological sites, animal assemblages, geologic features, breeding or non-breeding animal concentrations, champion trees... or state parks, forests, or wildlife areas within a one square mile radius of the project area.” See Appendix III for RTE Coordination.

Commercial or Recreational Sport Fish Species

No streams on the proposed project site contain aquatic life use designations that support commercial or recreational sport fish species. Stream 1 identified on the proposed project site was an unnamed, undesignated tributary of Gregory Creek, a tributary of the Great Miami River. Water quality impacts as a result of the Minimal Degradation Alternative are expected to have little to no impact on recreational sport fishing in the Great Miami River – the nearest receiving recreational sport fishing water body. Further, there are no aquatic resources or habitat capable of supporting important commercial or sport fish resources on this site.

Aquatic Community Structure and Function Impacts

The water quality impacts associated with this alternative would impact aquatic community structure at the primary trophic level. Most significantly, the impacts would result in a loss or displacement of macroinvertebrates or amphibian communities from 0.62 acre of Category I emergent wetlands due to grading activities. While the aquatic functions of these types of wetlands play in the overall development of the aquatic food chain are critical, the reality is that the high intensity of the surrounding land uses limits aquatic life potential to a poor quality and largely at the primary trophic level on this site. The impacts to aquatic communities and functions should be considered minimal and could be reasonably offset by mitigation. The

Minimal Degradation Alternative impacts 0.62 acres of Category 1 wetlands 0.9 acres of existing stormwater detention basin which provided negligible habitat; therefore, it would be anticipated that this alternative would produce minimal impacts to the aquatic community structure and function.

Mitigation

The mitigative techniques to offset the proposed lowering of water quality associated with the Minimal Degradation Alternative would consist of purchasing the remaining wetlands and stream restoration credits and riparian buffer credits at the Great Miami Mitigation Bank in Trotwood, OH.

The Minimal Degradation Alternative would result a net gain of 0.31 acres of wetland and 0.9 acres of riparian buffer would be realized as a result of this alternative. Thus, the entire mitigation package is expected to result in a modest improvement with respect to watershed hydrology, headwater stream values and function, and overall water quality. This is especially true when considering the current onsite conditions, which are low quality and invasive species dominated wetlands and stormwater detention basins incapable of providing all aquatic functions due to the lack of appropriate buffers, upstream urbanization, increased flow rates associated with upstream urban runoff, sedimentation, and resultant basin degradation, bank erosion and poor water quality.

Non-Degradation Alternative

Water Quality

Compared with existing site conditions, no direct impacts to water quality are expected with the Non-Degradation Alternative (Exhibit 3). Impacts to waters of the U.S. resulting from the Non-Degradation Alternative would be indirect impacts, related to sedimentation during construction and post-construction receiving water quality. These impacts are similar to those explained in the Preferred Design Alternative and Minimal Degradation Alternative responses above.

Aquatic Life and Wildlife

Compared with existing site conditions, no direct impacts to aquatic life and wildlife would be expected. Indirect impacts to aquatic life associated with sedimentation during construction and post-construction receiving water quality would be expected. These impacts are similar to those explained in the Preferred Design Alternative and Minimal Degradation Alternative responses above.

Rare Threatened or Endangered (RTE) Species Habitat Impacts

Compared with existing site conditions, no direct impacts to RTE species would be expected as a result of this alternative. See USFWS and ODNr response to the Preferred Design Alternative and Minimal Degradation Alternative stated above.

Commercial or Recreational Sport Fish Species

No direct impacts to commercial or recreation sport fish species would be expected as a result of this alternative. See response to the Preferred Design Alternative and Minimal Degradation Alternative stated above.

Aquatic Community Structure and Function

Compared with existing site conditions, no permanent impacts to the aquatic community structure and function would be expected as a result of this alternative.

Mitigation

No mitigation would be required as a result of this alternative. However, it should be noted that the improvements with respect to habitat, riparian buffers, and overall watershed water quality may not be realized to the degree proposed in the mitigation associated with the Preferred Design Alternative.

3.3 Technical Feasibility and Cost Effectiveness

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).

Preferred Design Alternative

The applicant completed a basic feasibility analysis on the site before purchase and acquisition of the property. Geotechnical soil borings, civil surveys, and environmental site assessments of the properties were taken to determine the feasibility of constructing a mixed used development. The results of all studies were favorable for development of the Preferred Design Alternative.

Based on a 2008 market analysis in consideration of the proposed land use types allowable by local codes, the Preferred Design Alternative met the applicant's criteria to make the project economically feasible while considering total square footage, approved uses, and total costs associated with construction, including impacts to water resources. The results of the market analysis yielded a favorable, cost-effective return on the investment.

The Preferred Design Alternative would support the development of 169,500 square feet (SF) of commercial retail space, 26,700 SF and 50 units of mixed use commercial retail and residential space, 30 units of residential space, 21,000 SF of restaurant space, 34,500 SF of mixed use commercial retail and office space, and two 110-room hotels (Exhibit 1). Thus, the technical feasibility and total costs related to the construction of the Preferred Design Alternative would support a total 302,700 SF of mixed use space, 80 Units of residential space, and two 110-room hotels, including all required attendant features, across a total developable area of 37 acres. Operation and maintenance (O&M) costs, under this alternative, shall be the responsibility of the end user by means of a fee-based Property Owners Association. O&M costs are not considered in this evaluation of cost-effectiveness.

Minimal Degradation Alternative

The applicant completed a basic feasibility analysis on the site before purchase and acquisition of the property. Geotechnical soil borings, civil surveys, and environmental site assessments of the properties were taken to determine the feasibility of constructing a mixed used development. The results of all studies were favorable for development of the Minimal Degradation Alternative.

Based on a 2008 market analysis in consideration of the proposed land use types allowable by local codes, the Minimal Degradation Alternative was deemed incapable of achieving the applicant's criteria to make the project economically feasible when considering total developable square footage, approved uses, and total costs associated with construction, including impacts to water resources.

The Minimal Degradation Alternative would support the development of 169,500 square feet (SF) of commercial retail space, 26,700 SF and 50 units of mixed use commercial retail and residential space, 30 units of residential space, 5,5000 SF of office space, 16,500 SF of restaurant space, 34,500 SF of mixed use commercial retail and office space, and one 110-room hotel (Exhibit 2). Thus, the technical feasibility and total costs related to the construction of the Minimal Degradation Alternative would support a total 253,700 SF of mixed use space and a 110-room hotel, including all required attendant features, across a total developable area of 26 acres.

Compared to the Preferred Design Alternative, this alternative would result in the loss of approximately 40,000 SF of mixed retail space, 4,500 SF of commercial office space, 4,500 SF of restaurant space, and one 110- room hotel. Additionally, this alternative reduces off-site wetland, stream, and detention basin mitigation demand. Operation and maintenance (O&M) costs, under this alternative, shall be the responsibility of the end user by means of a fee-based Property Owners Association. O&M costs are not considered in this evaluation of cost-effectiveness.

As a result of evaluating the cost-effectiveness of the Minimal Degradation Alternative, the applicant has determined that this alternative is not favorable for an economically feasible development. Therefore, as a result of the antidegradation process, the applicant has determined that an economically viable and cost-effective project cannot be completed in accordance with local land use plans under the Minimal Degradation Alternative. Specifically, the loss in the square footage of highly profitable mixed retail space, commercial office space, and one hotel as well as up to nine acres of developable land under the Minimal Degradation Alternative would not generate enough revenue at margins necessary to justify over 37 acres of raw land acquisition costs and other development costs needed to make this a financially viable project.

Non-Degradation Alternative

The applicant completed a basic feasibility analysis on the site prior to purchase and acquisition of the property. Geotechnical soil borings, civil surveys, and environmental site assessments of the properties were taken to determine the feasibility of constructing a mixed used development. The results of all studies were favorable for development of the Non-Degradation Alternative.

However, based on a 2008 market analysis in consideration of the proposed land use types allowable by local codes, the Non-Degradation Alternative did not meet the applicant's criteria to make the project economically feasible while considering total square footage, approved uses, and total costs associated with construction, including impacts to water resources. The results of the market analysis yielded an unfavorable, ineffective cost return on the investment.

The Non-Degradation Alternative would support the development of 144,000 square feet (SF) of commercial retail space, 26,700 SF and 50 units of mixed use commercial retail and residential space, 30 units of residential space, 16,500 SF of restaurant space, 17,500 SF of mixed use commercial retail and office space, and one 110-room hotel (Exhibit 3). While the technical

feasibility is favorable for development, the total costs vs profits related to the construction of the Non-Degradation Alternative would not support the kind of return on investment expected of an approximately 204,700 SF project consisting of mixed use space, including all required attendant features, across a total developable area of 24 acres. In fact, this no-impact alternative would prevent over half (26 acres) of the project area from being developed in a manner consistent with local land use plans.

Compared to the Preferred Design Alternative (and Minimal Degradation Alternative), this alternative would result in the loss of approximately 17,000 SF (17,500 SF) of mixed retail space, 0 SF (5,500 SF) of commercial office space, 4,500 SF (0 SF) of restaurant space, and one (zero) 110- room hotel. This alternative eliminates the need for off-site stream mitigation demand by 267 LF (0 LF). Operation and maintenance (O&M) costs, under this alternative, shall be the responsibility of the end user by means of a fee-based Property Owners Association. O&M costs are not considered in this evaluation of cost-effectiveness.

As a result of evaluating the cost-effectiveness of the Non-Degradation Alternative, the applicant has determined that this alternative is not favorable for an economically feasible development. Therefore, as a result of the antidegradation process, the applicant has determined that an economically viable and cost-effective project cannot be completed in accordance with local land use plans under the Non-Degradation Alternative. Specifically, the loss in the square footage of highly profitable mixed retail space, commercial office space, and one hotel as well as up to 13 acres of developable land under the Non-Degradation Alternative would not generate enough revenue at margins necessary to justify over 37 acres of raw land acquisition costs and other development costs needed to make this a financially viable project.

3.4 Sewage Collection and Treatment Facilities

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.

All Alternatives

No regional sewage collection or treatment facilities are proposed as a part of this project. Wastewater generated from this development will tap into existing sanitary sewers, capable of supporting increased flow rates associated with all alternatives. The existing sanitary sewers are located along the northern border of the property and convey wastewater to the LeSourdsville Regional WWTP publically owned and operated by the Butler County Water and Sewer Department.

3.5 Government or Other Affected Conservation Projects

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 targeted improvement of water quality or enhancement of recreational opportunities on the affected water resource.

All Alternatives

Based on information collected during field investigations of the property and discussions with local conservation and government organizations, there are no known locations where conservation measures intended to enhance water quality have been implemented in the affected streams or local watershed. The on-site resources are unnamed, undesignated waters that have not been targeted for conservation improvements or recreational use.

3.6 Cost of Water Pollution Controls (BMPs)

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 (BMPs) to be used during

Preferred Design Alternative

Costs associated with water pollution controls related to the Preferred Design Alternative includes construction site sediment and erosion control BMPs and post-construction water quality BMPs. The major water pollution control BMP proposed under this alternative is the installation and maintenance of a subsurface detention basin necessary to meet Butler County stormwater regulations as well the Ohio EPA NPDES post-construction WQv.

Stormwater basin(s) under this alternative will have dual function. Basins will be used for collecting discharged sediment associated with construction activities as well as collecting post-construction runoff volumes and peak flows from impervious surfaces after construction. The basins will be designed with outlet structures that meet local flood control requirements and ensure all post construction runoff up to the water quality (WQv) storm event (0.75 inches) will be detained and released within a period of 24-48 hours.

Additional water pollution control BMPs used for erosion and sediment control during construction include silt fence, sediment basin riser pipes, temporary sediment traps, temporary and permanent seed, inlet protection, and a gravel construction entrance. All sediment and erosion control measures will be finalized in the SWP3 and require permit authorization from Ohio EPA and the Butler County Soil and Water Conservation District prior to construction.

The combined estimate for all water pollution control BMPs used in construction and post construction water quality pollution control, under this alternative, shall be the responsibility of the end user by means of a fee-based Property Owners Association. O&M costs can be reasonably assumed at 10% of installation costs.

Minimal Degradation Alternative and Mitigative Design Techniques

Costs associated with water pollution controls related to the Minimal Degradation Alternative includes construction site sediment and erosion control BMPs and post-construction water quality BMPs. The major water pollution control BMP proposed under this alternative is the installation and maintenance of a subsurface detention basin necessary to meet Butler County stormwater regulations as well the Ohio EPA NPDES post-construction WQv.

Stormwater basin(s) under this alternative will have dual function. Basins will be used for collecting discharged sediment associated with construction activities as well as collecting post-construction runoff volumes and peak flows from impervious surfaces after construction. The basins will be designed with outlet structures that meet local flood control requirements and

ensure all post construction runoff up to the water quality (WQv) storm event (0.75 inches) will be detained and released within a period of 24-48 hours.

Additional water pollution control BMPs used for erosion and sediment control during construction include silt fence, rock check dams, sediment basin riser pipes, temporary sediment traps, temporary and permanent seed, inlet protection, and a gravel construction entrance. All sediment and erosion control measures will be finalized in the SWP3 and require permit authorization from Ohio EPA and the Butler County Soil and Water Conservation District prior to construction.

The combined estimate for all water pollution control BMPs used in construction and post construction water quality pollution control, under this alternative, shall be the responsibility of the end user by means of a fee-based Property Owners Association. O&M costs can be reasonably assumed at 10% of installation costs.

Non-Degradation Alternative

Costs associated with water pollution controls related to the Non-Degradation Alternative includes construction site sediment and erosion control BMPs and post-construction water quality BMPs. The major water pollution control BMP proposed under this alternative is the installation and maintenance of a subsurface detention basin necessary to meet Butler County stormwater regulations as well the Ohio EPA post-construction WQv.

Stormwater basin(s) under this alternative will have dual function. Basins will be used for collecting discharged sediment associated with construction activities as well as collecting post-construction runoff volumes and peak flows from impervious surfaces after construction. The basins will be designed with outlet structures that meet local flood control requirements and ensure all post construction runoff up to the water quality storm event (0.75 inches) will be detained and released within a period of 24-48 hours.

Additional water pollution control BMPs used for erosion and sediment control during construction include silt fence, rock check dams, sediment basin riser pipes, temporary sediment traps, temporary and permanent seed, inlet protection, and a gravel construction entrance. All sediment and erosion control measures will be finalized in the SWP3 and require permit authorization from Ohio EPA and the Butler County Soil and Water Conservation District prior to construction.

The combined estimate for all water pollution control BMPs used in construction and post construction water quality pollution control, under this alternative, shall be the responsibility of the end user by means of a fee-based Property Owners Association. O&M costs can be reasonably assumed at 10% of installation costs.

3.7 Human Health Impacts

10g) Describe any impacts on human health and the overall quality and value of the water resource.

All Alternatives

None of the proposed alternatives would have a negative impact on human health, safety or welfare. The overall quality and value (functions and services) provided by the water resources

on this site do not provide significant human benefits. The emergent wetlands and intermittent headwater stream on this site play no role in human health, safety or welfare other than drainage to fallow fields and localized flood control. These services will be maintained through civil site engineering and compliance with local stormwater and flood control regulations.

3.8 Socio-Economic Benefits Gained

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.

All Alternatives

West Chester and Liberty Township are two of the fastest growing residential areas in Greater Cincinnati. The population of West Chester Township in 1990 was 39,703 (US Census, 1990). As of March 2010, that number had increased to over 60,958, representing a 53.5% increase from the 1990 Census (US Census, 2010). In order to better meet demand for additional residential and professional office space, retail shopping, restaurants, hotels, and other commercial needs; the project has been proposed as a mixed use development, within one of the fastest growing regions of Butler County. Exhibit 1 highlights the overall proposed site plan including the building footprints and attendant features including roads, parking lots, and access points.

The purpose of this proposed project is to meet pent-up-demand for the construction of 169,500 square feet (SF) of commercial retail space, 26,700 SF and 50 units of mixed use commercial retail and residential space, 30 units of residential space, 21,000 SF of restaurant space, 34,500 SF of mixed use commercial retail and office space, and two 110-room hotels in accordance with locally approved land use plans, zoning requirements, and local government incentives provided to end users. The proposed project will also provide upwards of 2,188 new jobs, generate over \$21,302,619 in tax revenue annually. In order to minimize reliance of other communities for professional office space, retail shopping, restaurants, and other commercial needs; the project has been proposed as a mixed use development to concentrate compatible uses, meet pent-up demand for commercial development, centralize traffic flow, and avert uncontrolled growth into rural areas.

Preferred Design Alternative

The Preferred Design Alternative consists of 169,500 square feet (SF) of commercial retail space, 26,700 SF and 50 units of mixed use commercial retail and residential space, 30 units of residential space, 21,000 SF of restaurant space, 34,500 SF of mixed use commercial retail and office space, and two 110-room hotels (Exhibit 1). This large scale development will generate an extensive amount of tax revenue for the local economy. The total expected annual tax revenue will be \$21,302,619.00. For a breakdown in tax revenues, please see the Social and Economic Justification Table presented in Appendix VII.

The social and economic benefits of this project are realized through mixed use development space that provides jobs for local citizens and a tax base for local government. Having a mixed use development in the midst of a predominantly residential township may allow some people to live and work within a short distance, thereby reducing commute time and centralizing traffic flow.

Permanent jobs created as a result of the Preferred Design Alternative will depend on the type of end use tenants; however, the combined estimate for the professional office space, commercial office space, retail buildings, restaurants and hotel is 2,188 jobs (Appendix VII).

The seasonal work force involved in preparing the site and building facility would include engineering consultants, architects, earthwork contractors, construction contractors, landscapers/landscape architects, laborers and craftsmen. Seasonal jobs created or retained as a result of the Preferred Design Alternative and the expected seasonal workforce is approximately 682 individuals (Appendix VII).

Minimal Degradation Alternative and Mitigative Techniques

The Minimal Degradation Alternative consists of 169,500 square feet (SF) of commercial retail space, 26,700 SF and 50 units of mixed use commercial retail and residential space, 30 units of residential space, 5,000 SF of office space, 16,500 SF of restaurant space, 34,500 SF of mixed use commercial retail and office space, and one 110-room hotel (Exhibit 2). This proposed development will generate an extensive amount of tax revenue for the local economy. The total expected annual tax revenue will be \$17,100,538. This reflects an approximate 20% reduction from the Preferred Alternative (Appendix VII).

The social and economic benefits of this alternative are realized through mixed use development space that provides jobs for local citizens and a tax base for local government. Having a mixed use development in the midst of a predominantly residential township may allow some people to live and work within a short distance, thereby reducing commute time and centralizing traffic flow.

Permanent jobs created as a result of the Minimal Degradation Alternative will depend on the type of end use tenants; however, the combined estimate for the professional office space, commercial office space, retail buildings, restaurants and hotel is 1,862 jobs. This reflects an approximate 15% reduction from the Preferred Alternative (Appendix VII).

The seasonal work force involved in preparing the site and building facility would include engineering consultants, architects, earthwork contractors, construction contractors, landscapers/landscape architects, laborers and craftsmen. Seasonal jobs created or retained as a result of the Minimal Degradation Alternative and the expected seasonal workforce is 630 individuals. This reflects an approximate 8% reduction from the Preferred Alternative (Appendix VII).

Non-Degradation Alternative

The Non-Degradation Alternative consists of 144,000 square feet (SF) of commercial retail space, 26,700 SF and 50 units of mixed use commercial retail and residential space, 30 units of residential space, 16,500 SF of restaurant space, 17,500 SF of mixed use commercial retail and office space, and one 110-room hotel (Exhibit 3). The total expected annual tax revenue will be \$11,796,804. This reflects an approximate 45% reduction from the Preferred Alternative and 31% reduction from the Minimal Degradation Alternative (Appendix VII).

The social and economic benefits of this alternative are realized through commercial and retail development space that provides jobs for local citizens and a tax base for local government. Having a mixed use development in the midst of a predominantly residential township may allow

some people to live and work within a short distance, thereby reducing commute time and centralizing traffic flow.

Permanent jobs created as a result of the Non-Degradation Alternative will depend on the type of end use tenants; however, the combined estimate for the professional office space, commercial office space, retail buildings, restaurants, and hotel is 1,271 jobs. This reflects an approximate 42% reduction from the Preferred Alternative and 32% reduction from the Minimal Degradation Alternative (Appendix VII).

The seasonal work force involved in preparing the site and building facility would include engineering consultants, architects, earthwork contractors, construction contractors, landscapers/landscape architects, laborers and craftsmen. Seasonal jobs created or retained as a result of the Non-Degradation Alternative and the expected seasonal workforce is approximately 520 individuals. This reflects an approximate 24% reduction from the Preferred Alternative and 17% reduction from the Minimal Degradation Alternative (Appendix VII).

3.9 Socio-Economic Benefits Lost

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.

All Alternatives

No significant social or economic benefits would be lost as a result of this project. This property in its current land use and the affected wetlands and stream have contributed very little to the social well-being or economic prosperity of West Chester Township. The emergent wetlands and intermittent headwater stream on this site have little to no commercial or recreational uses other than seasonal and intermittent drainage to support agricultural production and localized flood control. Under all alternatives, these minimal socio-economic services will be maintained through civil site engineering and compliance with local stormwater and flood control regulations.

Further, the property has traditionally been used to cultivate row crops and provide pasture for cattle but within the last 20 years has been fallow. There is no history of further commercial and/or recreational use of this property. The potential social and economic benefits, including tax revenues and jobs, associated with the proposed development far exceed the minimal loss in agricultural production.

The affected water resources subject to permitting do not have significant commercial or recreational value; additionally, the lowering of water quality associated with impacts to these resources, should they occur, will not affect future recreation, tourism, or aesthetics.

3.10 Environmental Benefits Lost/Gained

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.

All Alternatives

No significant environmental benefits will be lost or gained as part of the project. See responses to 10b.

4 Proposed Mitigation Techniques

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

Preferred Design Mitigative Techniques

The following conceptual mitigation proposal has been developed for the Preferred Design Alternative.

In order to compensate for unavoidable impacts to the functions and services associated with emergent Wetland 1 (1.31 acre), Wetland 2 (0.04 acre), Wetland 3 (0.02 acre), intermittent Stream 1 (267 LF), and the stormwater detention basin (1.07 acres); the applicant proposes the following conceptual mitigation techniques and ratios:

- 1.) Off-site wetland restoration in the form of stream mitigation banking at a 1.5:1 compensation -to- impact ratio;
- 2.) Off-site stream restoration in the form of stream mitigation banking at a 1.5:1 compensation -to- impact ratio;
- 3.) Offsite restoration in the form of a purchase of riparian buffer mitigation bank credits at a 2:1 compensation-to-impact ratio for impacts to the artificial stormwater detention basin.

To mitigate for the balance of the unavoidable impacts to onsite wetlands, streams, and a stormwater detention basin the applicant proposes to purchase 2.1 acres of wetland mitigation credits, 400 LF of stream mitigation credits, and 2.0 acres of riparian buffer credits from the Great Miami Mitigation Bank (GMMB). Specifically, 400 LF of headwater stream credits will compensate for impacts to 267 LF of Modified Class II intermittent stream at a 1.5:1 compensation-to-impact, 2.1 acres of wetland credits will compensate for impacts to 1.37 acres of emergent Category I wetlands at a 1.5:1 compensation-to-impact, and 2.0 acres of riparian buffer credits will compensate for impacts to 1.07 acres of an existing stormwater detention basin at a 2:1 compensation-to-impact in accordance with the GMMB Banking Instrument.

These techniques are further detailed in the mitigation proposal found in Appendix V.

Minimal Degradation Alternative Mitigative Techniques

The following conceptual mitigation proposal has been developed for the Minimal Degradation Alternative.

In order to compensate for 0.62 acres of unavoidable impacts to the functions and services associated emergent Wetland 1 (0.60 acre), Wetland 3 (0.02 acre) and 0.9 acres of stormwater

detention basin (SW 1); the applicant proposes the following conceptual mitigation techniques using linear feet, with associated riparian buffer, as the credit assessment methodology:

- 1.) Off-site wetlands reestablishment in the form of purchase of wetland mitigation bank credits at a 1:1.5 compensation-to-impact ratio.
- 2.) Offsite restoration in the form of a purchase of riparian buffer mitigation bank credits at a 2:1 compensation-to-impact ratio for impacts to the artificial stormwater detention basin.

Specifically, the applicant proposes to purchase the 0.93 acres of wetland mitigation credits and 0.9 acres of riparian buffer credits from the Great Miami Mitigation Bank (GMMB) to compensate for impacts to 0.62 acres of emergent Category I wetlands (Wetland 1 and Wetland 3) at a 1.5:1 compensation-to-impact and 0.9 acres of stormwater detention basin (SW 1) at a 2:1 compensation-to-impact in accordance with the GMMB Banking Instrument. Opportunities to complete this work will be coordinated with the Five Rivers Metroparks. As of the date of this permit application submittal the aforementioned credits have all been confirmed as available at the GMMB and final arrangements to purchase credits will be made upon issuance of the Section 401 and 404 permits.

The combination of these proposed mitigative techniques represents 0.93 acres of wetland mitigation credit and 0.9 acres of riparian buffer credit.

Non Degradation Alternative Mitigative Techniques

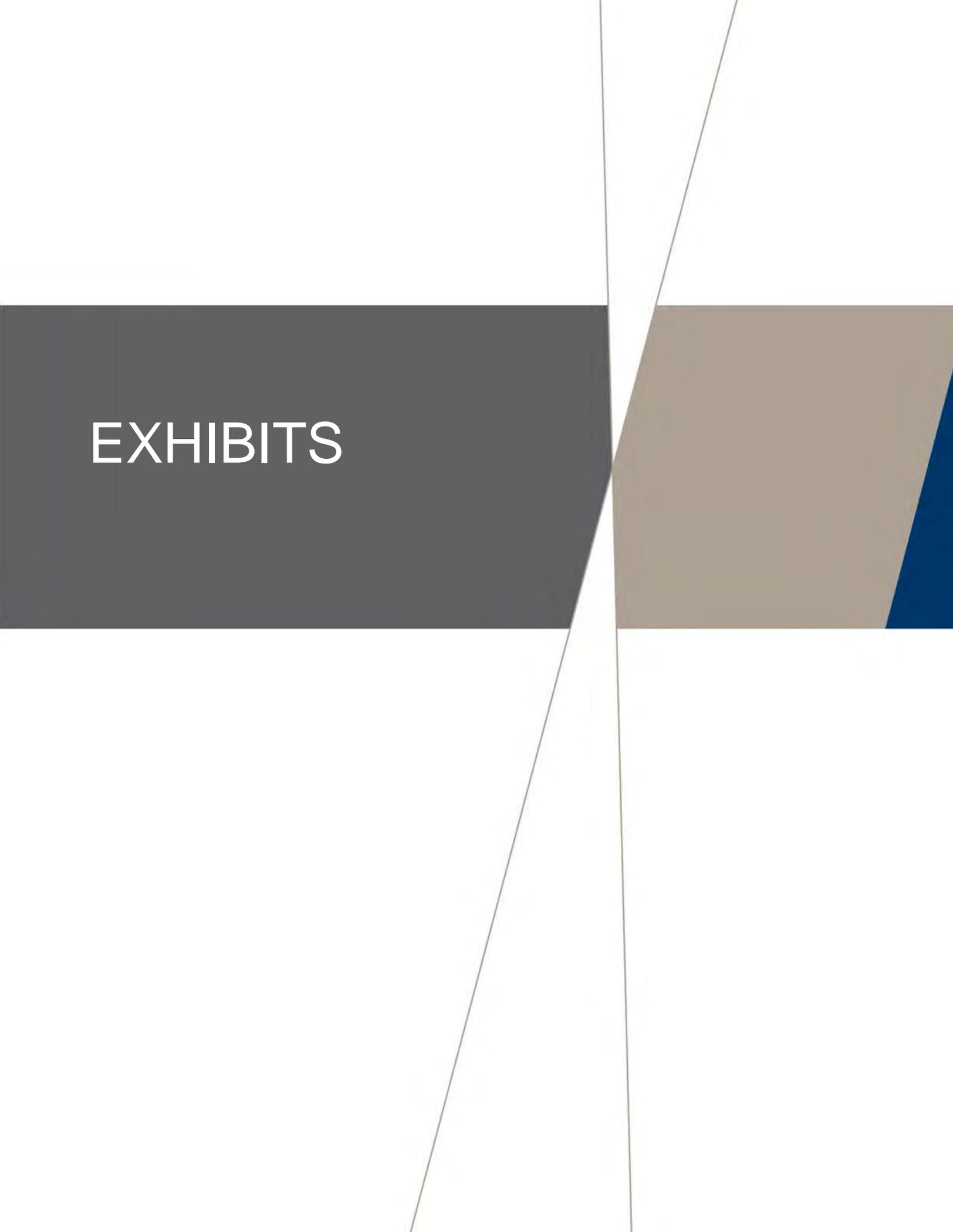
A mitigation proposal is not necessary for the Minimal Degradation Alternative. No impacts to existing water resources would occur under this alternative.

5 References

- U. S. Census Bureau. (2000). Census Viewer: Population of Butler County, Ohio: Census 2010 and 2000 Interactive Map, Demographics, Statistics, Graphs, Quick Fact: Butler County, Ohio. Retrieved February 2, 2014, from <http://censusviewer.com/county/OH/Butler>
- U. S. Census Bureau. (2010). American FactFinder fact sheet: Butler County, Ohio. Retrieved February 2, 2014, from http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_10_DP_DPDP1
- West Chester Township, 2013. "Comprehensive Land Use Plan" West Chester Township, Butler County, Ohio. Accessed February 2014 from: http://www.egovlink.com/public_documents300/westchester/published_documents/Community%20Development/Comprehensive%20Land%20Use%20Plan/Land%20Use%20Plan/index.html



FIGURES



EXHIBITS

APPENDIX

I

WATERS OF THE U.S.
DELINEATION REPORT
(CARDNO JFNEW, 2013)

**REGULATED WATERS
DELINEATION REPORT**
Liberty South Development, LLC.
Liberty South Project

West Chester Township, Butler County, Ohio



Document Information

Prepared for Liberty South Development, LLC
Project Name Liberty South Project
Project Number Cardno JFNew #130818.00
Project Manager Joel Thrash
Date September 13, 2013

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Acronyms

USACE	U.S. Army Corps of Engineers
CWA	Clean Water Act
OHWM	Ordinary High Water Mark
SWANCC	Solid Waste Agency of Northern Cook County
OEPA	Ohio Environmental Protection Agency
EPA	Environmental Protection Agency
NWPL	National Wetland Plant List
NRCS	U.S. Department of Agriculture - Natural Resources Conservation Service

1 Introduction

1.1 Cardno JFNew was contracted to perform a boundary delineation and assessment of regulated waters, including wetlands and streams which are located at the proposed Liberty South property (the “Project”), located south of Liberty Way, bisected by Tylers Place Blvd, and west of I-75 in West Chester Township, Butler County, Ohio (Figure 1 and Figure 2). Cardno JFNew surveyed an approximately 37-acre study area on September 4, 2013. The study area was dominated by old field, palustrine emergent wetland, and scrub/shrub vegetation assemblages. One intermittent stream (267 LF, 0.03 acres) and three emergent wetlands (1.37 acres) were identified during the site investigation.

1.2 This report identifies the jurisdictional status of the project area based on Cardno JFNew’s best professional understanding and interpretation of the *Corps of Engineers’ Wetland Delineation Manual* (Environmental Laboratory, 1987) and U.S. Army Corps of Engineers’ (USACE) guidance documents and regulations. Jurisdictional determinations for other “waters of the U.S.” were made based on definitions and guidance found in 33 CFR 328.3, USACE Regulatory Guidance Letters, and the wetland delineation manual. The USACE administers Section 404 of the Clean Water Act (CWA), which regulates the discharge of fill or dredged material into all “waters of the U.S.,” and is the regulatory authority that must make the final determination as to the jurisdictional status of the project area.

2 Regulatory definitions

2.1 Waters of the United States

“Waters of the U.S.” are within the jurisdiction of the USACE under the CWA. “Waters of the U.S.” is a broad term, which includes waters that are used or could be used for interstate commerce. This includes wetlands, ponds, lakes, territorial seas, rivers, tributary streams including any definable intermittent waterways, and some ditches below the ordinary high water mark (OHWM). Also included are manmade water bodies such as quarries and ponds, which are no longer actively being mined or constructed and are connected to other “waters”. Wetlands, mudflats, vegetated shallows, riffle and pool complexes, coral reefs, sanctuaries, and refuges are all considered special aquatic sites which involve more rigorous regulatory permitting requirements. A specific, detailed definition of “waters of the U.S.” can be found in the Federal Register (33 CFR 328.3).

On January 9, 2001, the U.S. Supreme Court issued a decision, *Solid Waste Agency of Northern Cook County (SWANCC) v. U.S. Army Corps of Engineers* (No. 99-1178). The decision reduces the regulation of isolated wetlands under Section 404 of the CWA, which assigns the USACE authority to issue permits for the discharge of dredge or fill material into “waters of the U.S.”. Prior to the SWANCC decision, the USACE had adopted a regulatory definition of “waters of the U.S.” that afforded federal protection for almost all of the nation’s wetlands. The Supreme Court decision interpreted that the USACE’s jurisdiction is restricted to navigable waters, their tributaries, and wetlands that are adjacent to these navigable waterways and tributaries. The decision leaves the majority of “isolated” wetlands unregulated by the CWA. Therefore, most wetlands that are not adjacent to, or contiguous with, any other “waters

of the U.S.” via a surface drain such as a swale, ditch, or stream are considered isolated and thus no longer jurisdictional by the USACE.

On June 19, 2006, the U.S. Supreme Court issued decisions in regards to John A. Rapanos v. United States (No. 04-1034) and June Carabell v. United States (04-1384), et al. The plurality decision created two ‘tests’ for determining CWA jurisdiction: the permanent flow of water test (set out by Justice Scalia) and the “significant nexus” test (set out by Justice Kennedy). On June 5, 2007, the USACE and EPA issued joint guidance on how to interpret and apply the Court’s ruling. According to this guidance, the USACE will assert jurisdiction over traditionally navigable waters, adjacent wetlands, and non-navigable tributaries of traditionally navigable waters that have “relatively permanent” flow, and wetlands that border these waters, regardless of whether or not they are separated by roads, berms, and similar barriers. In addition, the USACE will use a case-by-case “significant nexus” analysis to determine whether waters and their adjacent wetlands are jurisdictional. A “significant nexus” can be found where waters, including adjacent wetlands, alter the physical, biological, or chemical integrity of the traditionally navigable water based on consideration of several factors.

2.2 Waters of the State

“Waters of the state” are within the jurisdiction of the Ohio Environmental Protection Agency (OEPA). They are generally defined as surface and underground water bodies, which extend through or exist wholly in the State, which includes, but is not limited to, streams and both isolated and non-isolated wetlands. Private ponds, or any pond, reservoir, or facility built for reduction of pollutants prior to discharge are not included in this definition. In addition to “waters of the U.S.”, the OEPA also regulates and issues permits for isolated wetland impacts.

The State relies on the USACE decision regarding wetland determinations and delineations including whether or not a wetland is isolated or non-isolated.

2.3 Wetlands

Wetlands are a category of “waters of the U.S.” for which a specific identification methodology has been developed. As described in detail in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987), wetland boundaries are delineated using three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. In addition to the criteria defined in the 1987 Manual, the procedures described in the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Piedmont Region* (Environmental Laboratory, 2010) were used to evaluate the project area for the presence of wetlands.

2.3.1 Hydrophytic Vegetation. In the course of developing the wetland determination methodology the USACE, in cooperation with the U.S. Fish and Wildlife Service (USFWS), Environmental Protection Agency (EPA), and the Soil Conservation Service (SCS), compiled a comprehensive list of wetland vegetation. The indicator status of plant species is expressed in terms of the estimated probability of that species occurring in wetland conditions within a given region. The indicator categories as defined by the USACE are:

Obligate Wetland (OBL): Occurs almost always (estimated probability >99 percent) under natural conditions in wetlands.

Facultative Wetland (FACW): Usually occurs in wetlands (estimated probability 67 to 99 percent), but occasionally found in non-wetlands.

Facultative (FAC): Equally likely to occur in wetlands or non-wetlands (estimated probability 34 to 66 percent).

Facultative Upland (FACU): Usually occurs in non-wetlands, but occasionally found in wetlands (estimated probability 1 to 33 percent).

Obligate Upland (UPL): Occurs almost always (estimated probability >99 percent) in uplands.

Plants that are OBL, FACW, and FAC are considered wetland species. The percentage of the dominant wetland species in each of the vegetation strata in the sample area determines the hydrophytic or wetland status of the plant community. Soil type and hydroperiod are two factors important in controlling species composition.

In order for an area to be considered a wetland, it must display a dominance of hydrophytic vegetation, which is determined using the 50/20 rule. The methodology for the 50/20 rule is as follows:

1. For each stratum (tree, sapling, shrub, woody vine, herb):
 - a. Estimate percent areal cover (alternatively, use basal area or stem density) for each species.
 - b. Calculate the relative percent areal cover by dividing each species percent cover into the total percent cover for all species and multiplying by 100.
 - c. In descending order of relative percent cover, select species that when cumulatively totaled immediately exceed 50% of total relative cover. Species of equal cover value that would contribute to meeting this requirement must all be selected. These are considered dominants.
 - d. Identify any other species that by themselves account for 20% or more of the relative percent cover. These are also considered dominant species.
2. Look up wetland indicator status of all dominant species in all strata.
3. Determination of prevalence:
 - a. If more than 50% of the dominant species are FAC or wetter, then hydrophytic vegetation is prevalent.
 - b. If the number of dominant species FAC or wetter is equal to the number of dominant species FACU or drier or all dominant species are FAC:
 - i. Use the FAC-neutral test to determine prevalence (see below).
 - ii. If the FAC-neutral test results in a tie, base the determination on soils and hydrology indicators.

2.3.2 Hydric Soils. Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part. In general, hydric soils are flooded, ponded, or saturated for a week or more during the growing season when soil temperatures are above 32 degrees Fahrenheit. The anaerobic conditions created by repeated or prolonged saturation or flooding result in permanent changes in soil color and chemistry, which are used to differentiate hydric from non-hydric soils.

In this report, soil colors are described using the Munsell notation system. This method of describing soil color consists of separate notations for hue, value, and chroma that are combined in that order to form the color designation. The hue notation of a color indicates its relation to red, yellow, green, blue, and purple; the value notation indicates its lightness, and the chroma notation indicates its strength or departure from a neutral of the same lightness.

The symbol for hue consists of a number from 1 to 10, followed by the letter abbreviation of the color. Within each letter range, the hue becomes more yellow and less red as the numbers increase. The notation for value consists of numbers from 0 for absolute black, to 10 for absolute white. The notation for chroma consists of numbers beginning with /0 for neutral grays and increasing at equal intervals. A soil described as 10YR 3/1 soil is more gray than a soil designated 10YR 3/6.

2.3.3 Wetland Hydrology. Wetland hydrology is defined as the presence of water for a significant period of time at or near the surface (within the root zone) during the growing season. Wetland hydrology is present only seasonally in many cases, and is often inferred by indirect evidence. Hydrology is controlled by such factors as seasonal and long-term rainfall patterns, local geology and topography, soil type, local water table conditions, and drainage. Primary indicators of hydrology are inundation, soil saturation in the upper 12 inches of the soil, watermarks, sediment deposits, and drainage patterns. Secondary indicators such as oxidized root channels in the upper 12 inches of the soil, water-stained leaves, local soil survey data, and the FAC-neutral vegetation test are sometimes used to identify hydrology. A primary indicator or two or more secondary indicators are required to establish a positive indication of hydrology.

2.3.4 Wetland Definition Summary. In general, an area must meet all three criteria to be classified as a wetland. In certain problem areas such as seasonal wetlands, which are not wet at all times, or in recently disturbed (atypical) situations, areas may be considered a wetland if only two criteria are met. In special situations, an area that meets the wetland definition may not be within the USACE's jurisdiction due to a specific regulatory exemption.

3 Background Information

3.1 Existing Maps

Several sources of information were consulted to identify potential wetlands and wetland soil units on the site. These include aerial photographs (Figure 1), the USGS 7.5" Minute Topographic Quadrangle Map (Figure 2), the USFWS's *National Wetland Inventory* (NWI) (Figure 2), and the Natural Resources Conservation Service's (NRCS) *Soil Survey* for Butler County (Figure 3). These maps identify potential wetlands and wetland soil units on the site. The NWI maps were prepared from high altitude photography and in most cases were not field checked. Because of this, wetlands are sometimes erroneously identified, missed, or misidentified. Additionally, the criteria used in identifying these wetlands were different from those currently used by the USACE. The county soil maps, on the other hand, were developed from actual field investigations. However, they address only one of the three required wetland criteria and may reflect historical conditions rather than current site conditions. The resolution of the soil maps limits their accuracy as well. The mapping units are often generalized based on topography and many mapping units contain inclusions of other soil types for up to 15 percent of the area of the unit. The USACE does not accept the use of either of these maps to make wetland determinations.

3.2 USGS Topographic Map

The survey area for the proposed Project is located on the Mason, Ohio USGS 7.5' topographic map quadrangle (Figure 2). The USGS topographic map identified one unnamed intermittent stream west of Tyler's Place Blvd, within the study area.

3.3 National Wetland Inventory

The NWI map of the survey area (Figure 2) identified one PEMC (palustrine emergent-persistent, seasonally flooded) wetland within the eastern portion of the study area.

3.4 Soil Survey

The NRCS *Soil Survey of Butler County* identified eight soil series within the study area (Figure 3). The following table identifies the soil unit symbol, soil unit name, and whether or not the soil type contains components that meet the hydric soil criteria.

Table 3-1 Soil Types within the Liberty South Study Area

Symbol	Description	Hydric
DaB	Dana silt loam, 2 to 6 percent slopes	No
FdB	Fincastle silt loam, 2 to 6 percent slopes, moderately eroded	No*
Gn	Genesee loam	No
Ra	Ragsdale silty clay loam	YES
RwB	Russel-Miamian silt loams, bedrock substratum, 2 to 6 percent slopes	No
WyC2	Wynn silt loam, 6 to 12 percent slopes, moderately eroded	No
XeB	Xenia silt loam, 2 to 6 percent slopes	No*
XfB2	Xenia silt loam, bedrock substratum, 2 to 6 percent slopes, moderately eroded	No*

* Denotes that soils are not defined by the USDA-NRCS as “Hydric;” however these soil units are known to have at least 5% hydric inclusions

4 Site Investigation and Description

4.1 Investigation Methodology

The delineation of wetlands and other “waters of the U.S.” on the site were based on the methodology described in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (Environmental Laboratory, 2010) as required by current USACE policy.

Prior to the field work, the background information was reviewed to establish the probability and potential location of wetlands and streams on the site. Next, a general reconnaissance of the project area was conducted to determine site conditions. The site was then walked with the specific intent of identifying and determining wetland and stream boundaries.

- 4.1.1** Site Photographs. Photographs of the site are located in Appendix A. These photographs are the visual documentation of site conditions at the time of inspection. The photographs are intended to provide representative visual samples of any wetlands, streams, or other special features found on the site.
- 4.1.2** Delineation Data Sheets. Where stations represent a wetland boundary point they are presented as paired data points, one each documenting the wetland and upland sides of the wetland boundary. The distance the specific upland or wetland stations are from the boundary point is noted on the data sheet. The routine wetland delineation data sheets and stream evaluation data sheets used in the jurisdictional delineation process are located in Appendix B. These forms are the written documentation of how representative sample stations meet or do not meet each of the wetland criteria and in the case of the stream evaluation data sheets provide documentation of stream habitat. For plant species included on the National Wetlands Plant List, nomenclature will follow their lead. For all other plants not listed in the NWPL, additional sources are listed in the bibliography.

4.2 Technical Descriptions

Technical descriptions for the completed field data point data sheets from the site investigation are located in Appendix B. The site is located south of Liberty Way, bisected by Tylers Place Blvd, and west of I-75 in West Chester Township, Butler County, Ohio (Figure 1). The surveyed area included approximately 37 acres, predominately comprised of old field, scrub shrub, and palustrine emergent wetland.

Wetland 1 – Emergent (1.31 acres within the Study Area) - ISOLATED

Wetland 1 is an emergent (PEM) wetland located within a depressional area in the eastern portion of the survey area. Several stormwater input culverts from Tyler's Place Blvd were identified upland of Wetland 1; however no observable outlet point or indicators of outflow was identified. Based on the current topographic contours, the wetland exists in a depressional landform with no apparent outlet, following prior disturbance in the construction of Tyler's Place Blvd and Liberty Way. Evidence of prior excavation, the construction of Tyler's Place Blvd, and a historic fill pile along Liberty way all suggest this wetland has no apparent outlet. As the soil samples probed across this site are indicative of prior-disturbed urban complexes, Cardno JFNew believes this wetland has developed as a result of negative drainage. The wetland was not underlain by a known hydric soil unit, nor is it located in a 100-yr floodplain. Due to the lack of an observable hydrologic connection with other jurisdictional waters, Cardno JFNew believes Wetland 1 should be considered an isolated 'water of the state.' The ORAM score for Wetland 1 was 27.0, classifying the wetland as Category 1 wetland.

Wetland Data Point

Data Point 1 (DP01)

Dominant vegetation in the vicinity of DP01 included Narrow-Leaf Cat-Tail (*Typha angustifolia*, OBL), and Blunt Spike-Rush (*Eleocharis obtusa*, OBL). In addition, non-dominant vegetation observed included Fowl Manna Grass (*Glyceria striata*, OBL), Pinkweed (*Persicaria pensylvanica*, FACW), Dark-Green Bulrush (*Scirpus atrovirens*, OBL), Devil's-Pitchfork (*Bidens frondosa*, FACW), Frank's Sedge (*Carex frankii*, OBL), Common Fox Sedge (*Carex vulpinoidea*, FACW), Curly Dock (*Rumex crispus*, FAC), and Chufa (*Cyperus esculentus*, FACW). The soil from 0-8" had a matrix soil color of 10YR 4/2 with concentrations in the matrix at 5%, and a texture of Clay Loam. The soil from 8-16" had a matrix soil color of 10YR 3/1 with concentrations in the matrix at 8%, and a texture of Clay Loam. The soil at the data point was mapped as Dana silt loam (DaB), and met the Depleted Matrix (F3), and Redox Depressions

(F8) hydric soil criteria. Primary indicators of hydrology included Saturation (A3), and secondary indicators of hydrology observed included Crayfish Burrows (C8), Saturation Visible on Aerial Imagery (C9), Geomorphic Position (D2), and the FAC-Neutral Test (D5). This data point qualified as a wetland.

Upland Data Point

Data Point 2 (DP02)

Dominant vegetation in the vicinity of DP02 included Canadian Goldenrod (*Solidago canadensis*, FACU), Yellow Sweet-Clover (*Melilotus officinalis*, FACU), and Fuller's Teasel (*Dipsacus fullonum*, FACU). In addition, non-dominant vegetation observed included Annual Ragweed (*Ambrosia artemisiifolia*, FACU), Tall False Rye Grass (*Schedonorus arundinaceus*, FACU), Canadian Horseweed (*Erigeron canadensis*, FACU), Alsike Clover (*Trifolium hybridum*, FACU), Eyebane (*Euphorbia nutans*, FACU), Eastern Cottonwood (*Populus deltoides*, FAC), and Queen Anne's-Lace (*Daucus carota*, UPL). The soil from 0-9" had a matrix soil color of 10YR 4/3 with a texture of Silty Clay Loam. The soil at the data point was mapped as Dana silt loam (DaB), and did not meet any hydric soil criteria. No indicators of hydrology were observed. This data point did not meet wetland criteria.

Wetland 2 – Emergent (0.04 acres within the Study Area)

Wetland 2 is an emergent wetland located adjacent to Stream 1, which flows downstream into an unnamed tributary (UNT) to Gregory Creek and is entirely contained within the study area. Gregory Creek is a direct tributary to the Great Miami River, a Traditional Navigable Water (TNW). Due to this connection, Wetland 2 should be considered a jurisdictional 'water of the United States.' The ORAM score for Wetland 2 was 28.5, classifying the wetland as a Category 1 wetland.

Wetland Data Point

Data Point 3 (DP03)

Dominant vegetation in the vicinity of DP03 included Black Willow (*Salix nigra*, OBL), Rice Cut Grass (*Leersia oryzoides*, OBL), and Common Fox Sedge (FACW). In addition, non-dominant vegetation observed included Dark-Green Bulrush (OBL), Fuller's Teasel (FACU), Purple-Leaf Willowherb (*Epilobium coloratum*, OBL), American Wild Mint (*Mentha arvensis*, FACW), Silver Maple (*Acer saccharinum*, FACW), Allegheny Monkey-Flower (*Mimulus ringens*, OBL), and Marsh Primrose-Willow (*Ludwigia palustris*, OBL). The soil from 0-10" had a matrix soil color of 10YR 4/2 with concentrations in the matrix at 10%, and a texture of Clay Loam. The soil at the data point was mapped as Wynn silt loam (WyC2), and met the Depleted Matrix (F3), and Redox Depressions (F8) hydric soil criteria. Secondary indicators of hydrology observed included Drainage Patterns (B10), Geomorphic Position (D2), and the FAC-Neutral Test (D5). This data point qualified as a wetland.

Upland Data Point

Data Point 4 (DP04)

Dominant vegetation in the vicinity of DP04 included Ash-Leaf Maple (*Acer negundo*, FAC), Canadian Goldenrod (FACU), and Fuller's Teasel (FACU). In addition, non-dominant vegetation observed included Annual Ragweed (FACU), Giant Ironweed (*Vernonia gigantea*, FAC), and Queen Anne's-Lace (UPL). The soil from 0-10" had a matrix soil color of 10YR 4/3 with a texture of Silty Clay Loam. The soil from 10-16" had a matrix soil color of 10YR 3/1 with concentrations in the matrix at 15%, and a texture of Silty Clay Loam. The soil at the data point was mapped as Wynn silt loam (WyC2), and did not meet any hydric soil criteria. No indicators of hydrology were observed. This data point did not meet wetland criteria.

Wetland 3 – Emergent (0.02 acres within the Study Area) - ISOLATED

Wetland 3 is an emergent wetland located within a depression west of Tylers Place Blvd and is entirely contained within the study area. Based on the current topographic contours, the wetland exists in a depressional landform with no apparent outlet, following prior disturbance and grading of the site. Evidence of historic disturbance suggests this wetland has no apparent outlet. As the soil samples probed across this site are indicative of prior-disturbed urban complexes, Cardno JFNew believes this wetland has developed as a result of negative drainage. Due to the lack of an observable hydrologic connection with other jurisdictional waters as well as the lack of an observable outlet, Cardno JFNew believes Wetland 1 should be considered an isolated 'water of the state.' The ORAM score for Wetland 3 was 28.5, classifying the wetland as a Category 1 wetland.

Wetland Data Point

Data Point 5 (DP05)

Dominant vegetation in the vicinity of DP05 included Black Willow (OBL), and Blunt Spike-Rush (OBL). In addition, non-dominant vegetation observed included Eastern Cottonwood (FAC), Frank's Sedge (OBL), Common Fox Sedge (FACW), and Fall Panic Grass (*Panicum dichotomiflorum*, FACW). The soil from 0-8" had a matrix soil color of 10YR 4/2 with concentrations in the matrix at 5%, and a texture of Clay Loam. The soil at the data point was mapped as Xenia silt loam (XfB2), and met the Depleted Matrix (F3), and Redox Depressions (F8) hydric soil criteria. Secondary indicators of hydrology observed included Surface Soil Cracks (B6), Geomorphic Position (D2), and the FAC-Neutral Test (D5). This data point qualified as a wetland.

Upland Data Point

Data Point 6 (DP06)

Dominant vegetation in the vicinity of DP04 included Canadian Goldenrod (FACU). In addition, non-dominant vegetation observed included Fuller's Teasel (FACU), and Annual Ragweed (FACU). The soil from 0-12" had a matrix soil color of 10YR 4/3 with a texture of Silty Clay Loam. The soil at the data point was mapped as Xenia silt loam (XfB2), and did not meet any hydric soil criteria. No indicators of hydrology or vegetation were observed. This data point did not meet wetland criteria.

Additional Data Point

Upland Data Point

Data Point 7 (DP07)

Dominant vegetation in the vicinity of DP07 included Black Willow (OBL) in multiple strata, and Spiny Cocklebur (*Xanthium spinosum*, FACU). In addition, non-dominant vegetation observed included Eastern Cottonwood (FAC), Annual Ragweed (FACU), Fuller's Teasel (FACU), Fall Panic Grass (FACW), Alsike Clover (FACU), Eyebane (FACU), Devil's-Pitchfork (FACW), and White Panicked American-Aster (*Symphotrichum lanceolatum*, FAC). The soil from 0-6" had a matrix soil color of 10YR 4/3 with a texture of Silty Clay Loam. The soil from 6-12" had a matrix soil color of 10YR 4/3 with concentrations in the matrix at 50%, and a texture of Silty Clay Loam. The soil at the data point was mapped as Xenia silt loam (XfB2), and did not meet any hydric soil criteria. Secondary indicators of hydrology observed included Surface Soil Cracks (B6), and the FAC-Neutral Test (D5). This data point did not meet wetland criteria.

Stream 1 - Intermittent (267LF within the Study Area)

Stream 1 was determined to be an intermittent stream that flows south to north for approximately 267 LF and flows offsite under Liberty Way. Stream 1 is a USGS-identified intermittent tributary to Gregory Creek. Dominant substrate included cobble, gravel, and silt. The Ordinary High Water Mark (OHWM) width was measured at approximately 3 to 4 feet and the depth was approximately 6 inches. The Bank Full Width (BFW) was approximately 4 to 5 feet and bankfull depth was approximately 6 to 8 inches. The Top of Bank (TOB) width was approximately 6 feet and depth was approximately 1 to 1.5 feet. Stream 1 originates at an outflow culvert to a prior-constructed detention basin within the northwestern portion of the survey area. Stream 1 flows offsite toward Gregory Creek, an USGS-identified perennial tributary to the Great Miami River, a Traditional Navigable Water (TNW). Due to this hydrologic connection, Stream 1 should be considered a jurisdictional 'water of the United States.' The HHEI score for Stream 1 was 46, classifying the stream as a Modified Class II headwater stream.

Habitat Assessment

During Cardno JFNew's delineation of the project area, three vegetation assemblages were observed: Old Field, Scrub/Shrub, and Palustrine Emergent Wetland. Specific attention was given to the presence of habitat suitable for federally endangered species – specifically, Running Buffalo Clover (*Trifolium stoloniferum*) and the Indiana Bat (*Myotis sodalis*). The majority of site contained vegetation assemblages indicative of early succession species resulting from prior disturbed soils. To evaluate the potential habitat for rare, threatened, and endangered species a general site reconnaissance of the project area was performed by Cardno JFNew botanists. The results of these habitat assessments can be found below.

Old Field Habitat Characterization

Old field vegetation comprised the entire western portion of the study area and substantial portion of the study area located east of Tylers Place Blvd. Dominant vegetation within this vegetation assemblage consists of Amur Honeysuckle (*Lonicera maackii*), Canadian Goldenrod, Yellow Sweet-Clover, and Fuller's Teasel. In addition, non-dominant vegetation observed included Annual Ragweed, Tall False Rye Grass, Canadian Horseweed, Eyebane, Showy Tick Trefoil (*Desmodium canadense*), Eastern Cottonwood, and Queen Anne's-Lace, Common Yarrow (*Achillea millefolium*), Poison Ivy (*Toxicodendron radicans*) and Alsike Clover. Although a formal study was not part of this scope, no Running Buffalo Clover individuals or indicative habitat was identified within the study area.

Scrub/Shrub Habitat Characterization

Scrub/Shrub vegetation was identified within upland areas east of Wetland 1 and west of I-75. Dominant vegetation within this vegetation assemblage consists of Bradford pear (*Pyrus calleryana*), Russian Olive (*Elaeagnus angustifolia*), Amur Honeysuckle, and Allegheny Blackberry (*Rubus allegheniensis*). Dominant species within the herbaceous layer included Canadian Goldenrod, Fuller's Teasel, Showy Tick Trefoil, Canadian Horseweed and Poison Ivy. Although a formal study was not part of this scope, no trees greater than 8" DBH were observed in the study area. Additionally, no woody vegetation with snags, splits, cavities, or exfoliating bark, typically indicative of Indiana bat habitat was identified within the study area.

Palustrine Emergent Wetland Habitat Characterization

Three Palustrine Emergent Wetlands (PEM) were identified within the survey area. Dominant species within this vegetation assemblage consists of Black Willow, Narrow-Leaf Cat-Tail, Cut Grass, Common Fox Sedge, Swamp Milkweed (*Asclepias incarnata*), and Blunt Spike-Rush. In

addition, non-dominant vegetation observed included Pinkweed, Frank's Sedge, Fowl Manna Grass, Fuller's Teasel, Purple-Leaf Willowherb, American Wild Mint, Silver Maple saplings, Allegheny Monkey-Flower, Marsh Primrose-Willow, Dark-Green Bulrush, Devil's-Pitchfork, Fall Panic Grass, Eastern Cottonwood saplings, Ash-Leaf Maple saplings, and Curly Dock.

5 Jurisdictional Analysis

5.1 Corps of Engineers

The USACE has authority over the discharge of fill or dredged material into “waters of the U.S.”. This includes authority over any filling, mechanical land clearing, or construction activities that occur within the boundaries of any “waters of the U.S.” A permit must be obtained from the USACE before any of these activities occur. Permits can be divided into two general categories: Individual Permits and Nationwide Permits.

Individual Permits are required for projects that do not fall into one of the specific Nationwide Permits (NWP) or are deemed to have significant environmental impacts. These permits are much more difficult to obtain and receive a much higher level of regulatory agency and public scrutiny and may require several months to more than a year for processing.

Nationwide Permits (NWP) have been developed for projects that meet specific criteria and are deemed to have minimal impact on the aquatic environment. There are currently 50 Nationwide Permits for qualifying activities with 28 Nationwide Permit General Conditions that must be satisfied in order to receive NWP consideration from the Corps of Engineers.

5.2 Ohio Environmental Protection Agency

The Ohio EPA is responsible for issuing Clean Water Act (CWA) Section 401 permits known as Water Quality Certifications (WQC) for all impacts to “waters of the State of Ohio.” This includes authority over any dredging, filling, mechanical land clearing, impoundments or construction activities that occur within the boundaries of any “waters of the State,” including those isolated waters not otherwise regulated by the Corps.

The Ohio EPA issues Section 401 WQC in conjunction with the Corps' Section 404 permits. A §401 Water Quality Certification must be received before the Corps can issue any §404 Department of the Army Permit. The Ohio EPA must issue Individual §401 WQC for all Individual §404 Permits.

Water quality certification may be granted, without notification to the Ohio EPA, if the project falls under the NWP limitations described above. In order to qualify for this granted certification, all prior-authorized and *de minimis* Ohio State Certification General Limitations and Conditions as published by the Ohio EPA must be satisfied.

The Ohio EPA also requires notification for all impacts to isolated wetlands which includes a permit application and mitigation plan pursuant to Section 6111 of Ohio Revised Code (ORC). As prerequisite to isolated wetland permitting, the USACE must provide documentation, typically in the form of a Jurisdictional Determination (JD), that isolated waters are present on the site.

6 Summary and Conclusion

6.1 Wetland and Stream Summary

Cardno JFNew inspected the Liberty South Project study area on September 4, 2013. One intermittent stream (267 LF/ 0.02 acres) and three emergent wetlands (1.53 acres) were identified during the site investigation. Every effort should be taken to avoid and minimize impacts to jurisdictional waters. If impacts are necessary, then mitigation may be required. Table 6-1 summarize the aquatic features identified within the Project Survey Area.

Table 6-1 Features Identified within the Liberty South Study Area

Feature Name	USGS/ NWI Identified	Feature Class	Regulatory Status	Riffles/ Pools	Dimensions		Substrate	HHEI/ ORAM Score/ Class	Linear Footage (LF)	Acreage (AC)		
					Width (ft)	Depth (in)						
Wetland 1	No	Emergent	Isolated	No	---	---	---	27.0 Category 1	---	1.31		
Wetland 2	No	Emergent	Jurisdictional	No	---	---	---	28.5 Category 1	---	0.04		
Wetland 3	No	Emergent	Isolated	No	---	---	---	28.5 Category 1	---	0.02		
Stream 1	YES	Intermittent	Jurisdictional	Yes	4-5	6-8"	C-G-Si	46.0 Modified Class II PHWH	267	0.03		
Totals			Wetlands		Emergent		Jurisdictional	0.02 Acre		0.02		
							Isolated	1.35 Acre		1.35		
			Streams		Intermittent				267 LF		0.03	
			Waterbodies Total (Jurisdictional)							267 LF		0.05
			Waterbodies Total (Isolated)							---		1.35

6.2 Recommendations

Cardno JFNew inspected the Liberty South Project study area on September 4, 2013. One intermittent stream (267 LF/ 0.03 acres) and three emergent wetlands (1.37 acres) were identified during the site investigation. Wetland 1 and Wetland 3, totaling 1.35 acres, were determined to be isolated 'waters of the State.' Every effort should be taken to avoid and minimize impacts to jurisdictional and isolated waters. If impacts are necessary, permits may be required.

A permit must be obtained from the USACE and/or OEPA prior to any filling, dredging, or mechanical land clearing that occurs within the boundaries of any wetland and/or other 'regulated waters' delineated in this report. Cardno JFNew appreciates the opportunity to consult with Liberty South Development, LLC regarding site-specific permitting strategies when anticipated impacts are known.

While this report represents our best professional judgment based on our knowledge and experience, it is important to note that the Huntington District of the U.S. Army Corps of Engineers has final discretionary authority over all jurisdictional determinations of 'waters of the U.S.' including wetlands and streams under Section 404 of the CWA in this region. It is therefore, recommended that a copy of this report be furnished to the Huntington District of the U.S. Army Corps of Engineers to confirm the results of our findings.

7 References

Environmental Laboratory. 1987. *U.S. Army Corps of Engineers' Wetland Delineation Manual*, Technical Report Y-87-1, U.S. Waterways Experiment Station, Vicksburg, MS.

Environmental Laboratory. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region*, ERDC/EL TR-10-16, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

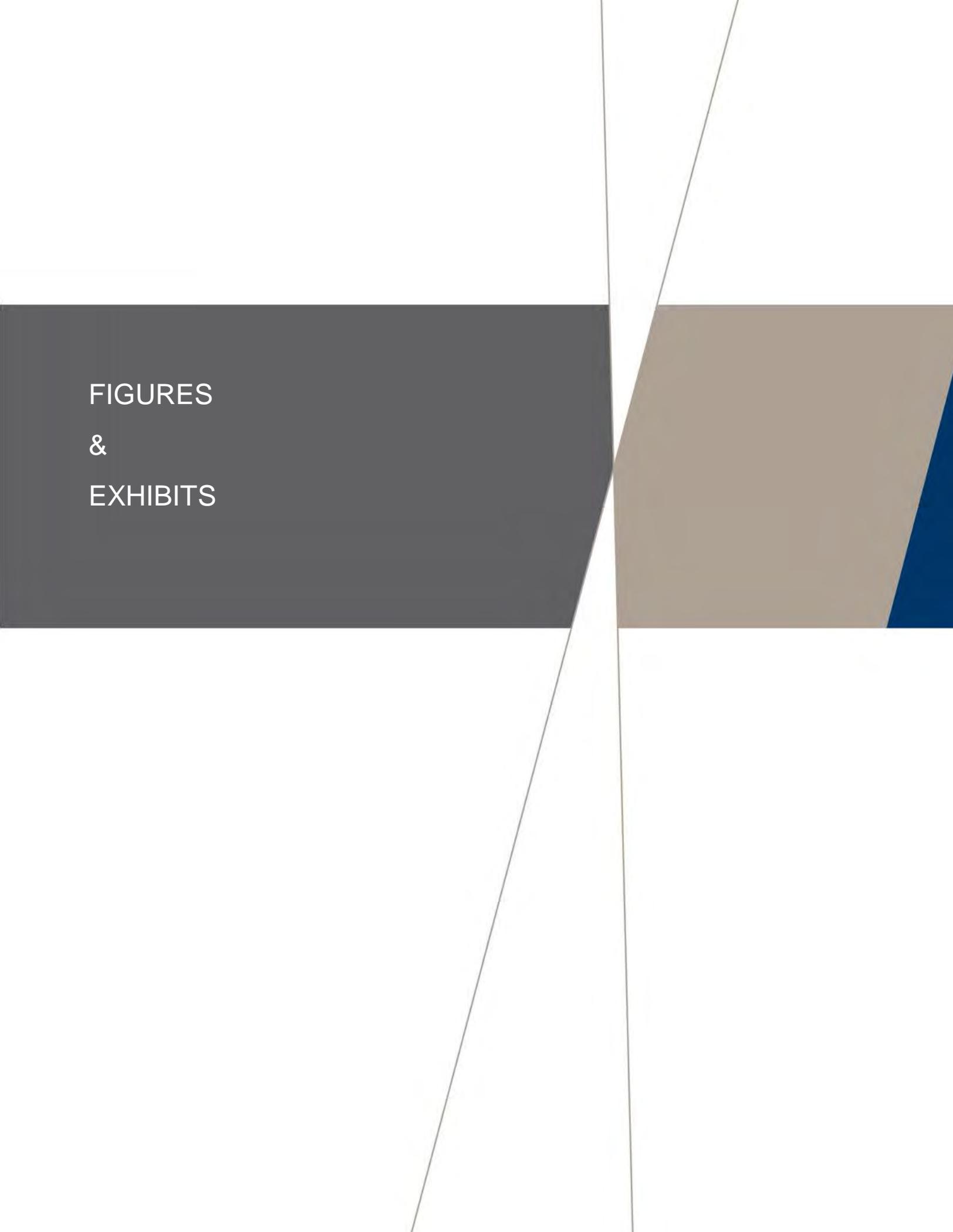
Gleason, H.A. and A. Cronquist. 1991. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada*. 2nd Edition. The New York Botanical Garden. Bronx, NY.

Lichvar, R.W., and John T. Kartesz. 2009. *North American Digital Flora: National Wetland Plant List, version 2.4.0* (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC.

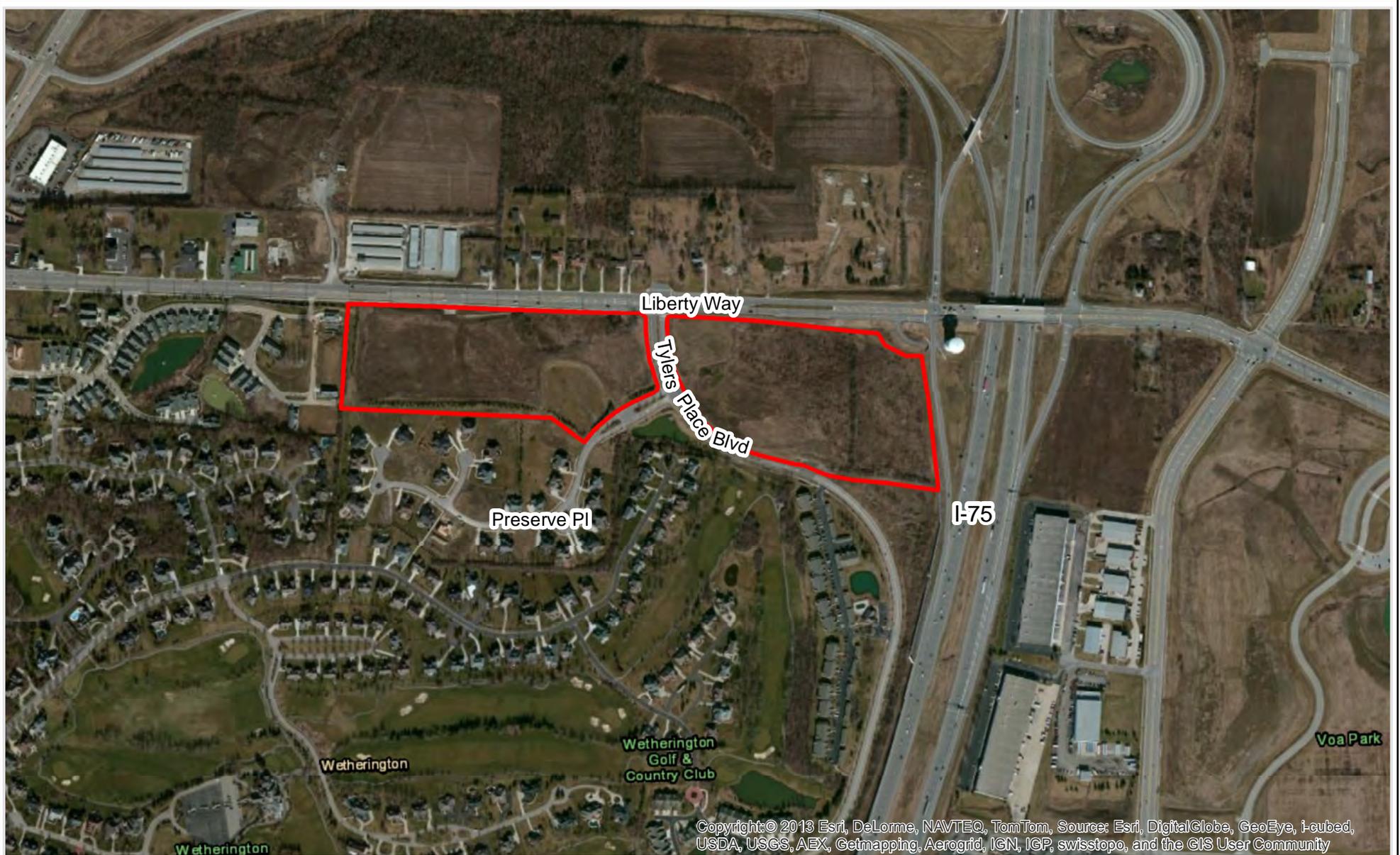
Lichvar, R., Melvin, N.C., Butterwick, M.L. and Kirchner, W.N. 2012. *National Wetland Plant List Indicator Rating Definitions*. ERDC/CRREL TN-12-1. Hanover, NH: U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. <http://www.fws.gov/wetlands/documents/National-Wetland-Plant-List-Indicator-Rating-Definitions.pdf>

Reed, P. B., Jr. 1988. *National List of Plant Species that Occur in Wetlands: 1988*. Washington, DC: U.S. Fish and Wildlife Service.

United States Department of Agriculture, Natural Resource Conservation Service (NRCS). Web Soil Survey. *Soil Survey of Butler County, OH*.



FIGURES
&
EXHIBITS



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Coordinate System:
 NAD 1983 UTM Zone 16N
 Source:
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 NW1 - GIS Data Depot
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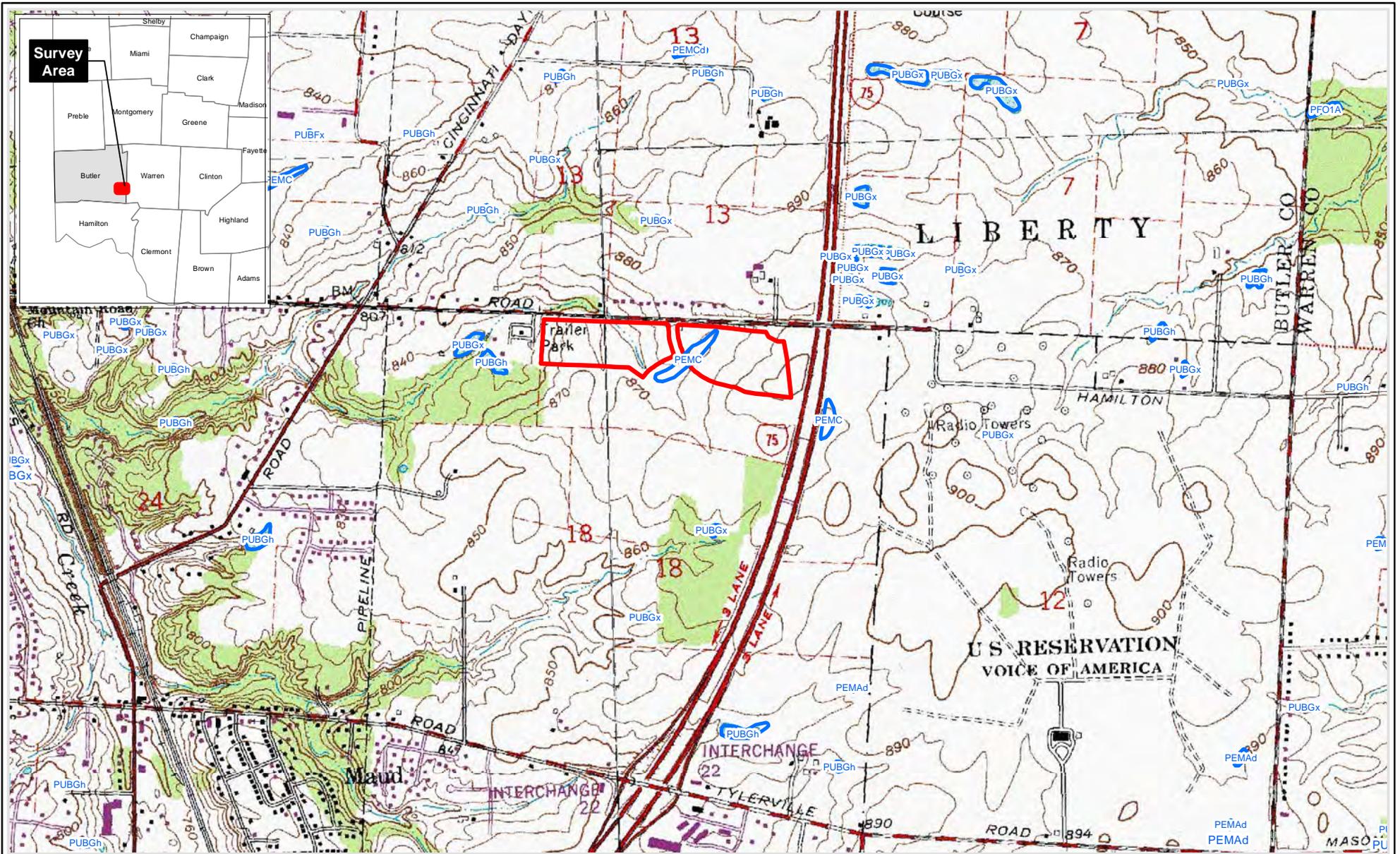
 Approximate Site Location

Figure 1: Aerial Map
Liberty South
Liberty South Development, LLC
Butler County, Ohio



September 2013
 Job No. 1308018.00


 11121 Canal Rd, Cincinnati, OH 45241
 Phone 513-489-2402/ Fax 513-489-2404
 www.cardnojfnew.com

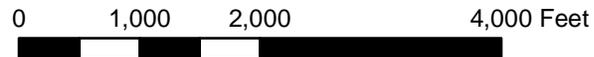


The information presented in this map document is advisory and intended for reference purposes only.

Coordinate System:
 NAD 1983 UTM Zone 16N
 Sources:
 Topography - USDA/NRCS Geospatial Data Gateway
 URL: <http://datagateway.nrcs.usda.gov/>
 NWI - GIS Data Depot
 (<http://data.geocomm.com/>)

- NWI Wetland
- Approximate Site Location

Figure 2: USGS Topo Map with NWI Overlay
 Liberty South
 Liberty South Development, LLC
 Butler County, Ohio



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Symbol	Description	Hydric Rating
DaB	Dana silt loam, 2 to 6 percent slopes	Non-Hydric
FdB	Fincastle silt loam, bedrock substratum, 2 to 6 percent slopes	Non-Hydric
Gn	Genesee loam	Non-Hydric
Ra	Ragsdale silty clay loam	Hydric
RwB	Russell-Miamian silt loams, bedrock substratum, 2 to 6 percent slopes	Non-Hydric
Wyc2	Wynn silt loam, 6 to 12 percent slopes, moderately eroded	Non-Hydric
XeB	Xenia silt loam, 2 to 6 percent slopes	Partially Hydric
XfB2	Xenia silt loam, bedrock substratum, 2 to 6 percent slopes, moderately eroded	Partially Hydric

Project Area

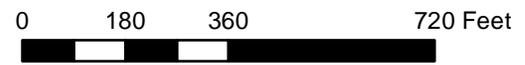
Non-Hydric 
Hydric Soils
Ra 



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Coordinate System:
 NAD 1983 UTM Zone 16N
 Source:
 Bing Maps Hybrid - (c) 2010 Microsoft Corporation and its data suppliers
 Soil Survey Geographic (SSURGO) database for Butler County, Ohio
 URL: <http://SoilDataMart.nrcs.usda.gov/>

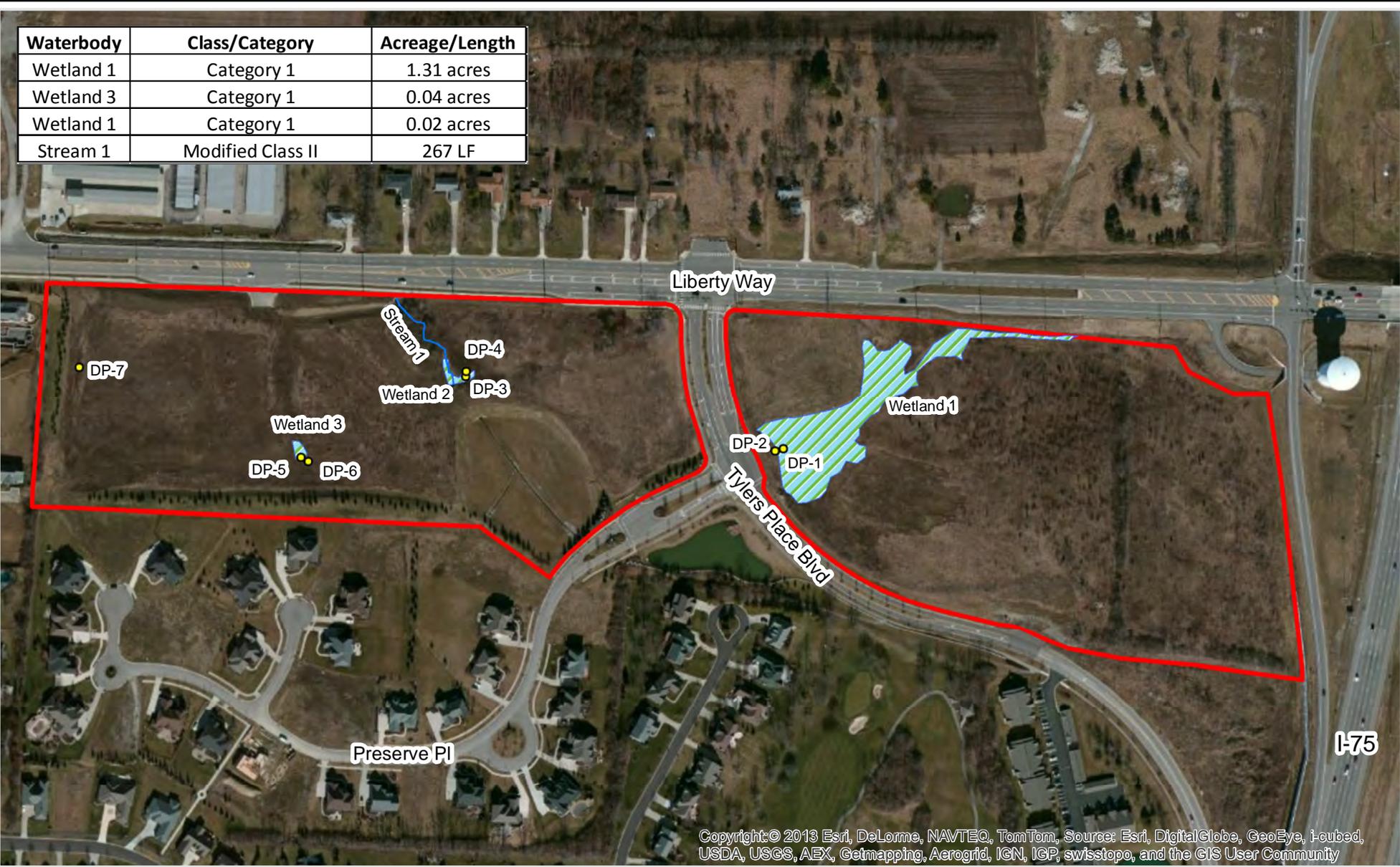
Figure 3: Aerial Map with Butler County Soil Survey Overlay
 Liberty South
 Liberty South Development, LLC
 Butler County, Ohio




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September 2013
 Job No. 1308018.00

Waterbody	Class/Category	Acreage/Length
Wetland 1	Category 1	1.31 acres
Wetland 3	Category 1	0.04 acres
Wetland 1	Category 1	0.02 acres
Stream 1	Modified Class II	267 LF



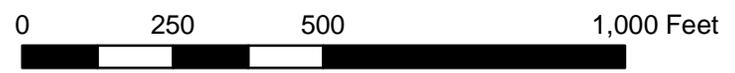
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 NW1 - GIS Data Depot
 (http://data.geocomm.com/)

- Data Point
- Wetlands
- Streams
- Approximate Site Location

Exhibit 1: Location of Identified Features
Liberty South
Liberty South Development, LLC.
Butler County, Ohio



September 2013
 Job No. 1308018.00

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APPENDIX

A

SITE PHOTOGRAPHS



View of DP01, Looking East



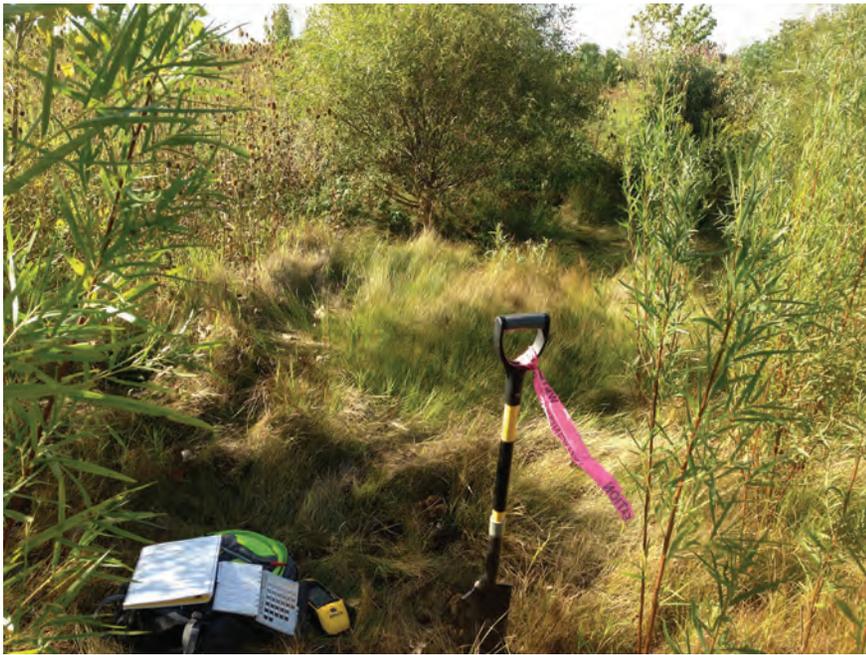
View of DP02, Looking North



View of DP03, Looking North



View of DP04, Looking Northwest



View of DP05, Looking North



View of DP06, Looking North



View of DP07, Looking Northwest



View of Stream 1, Looking Southeast, Upstream



View of Stream 1, Looking Northwest, Downstream



Overview of the Western Portion of the Survey Area, Looking North



Overview of the Eastern Portion of the Survey Area, Looking Northeast



View of Detention Basin, Located west of Tylers Place Blvd Looking West

APPENDIX

B

OHIO EPA PRIMARY HEADWATER
HABITAT EVALUATION INDEX
FORMS



Primary Headwater Habitat Evaluation Form

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

SITE NAME/LOCATION _____
 _____ SITE NUMBER _____ RIVER BASIN _____ DRAINAGE AREA (mi²) _____
 LENGTH OF STREAM REACH (ft) _____ LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____
 DATE _____ SCORER _____ 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]	_____	<input type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	_____
<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	_____
<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]	_____
<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	_____
<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____

(A)

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40

A + B

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 type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters):

Pool Depth Max = 30

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 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):

Bankfull Width Max=30

This information must also be completed

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

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS _____

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<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

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 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 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: _____ NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____
County: _____ Township / City: _____

MISCELLANEOUS

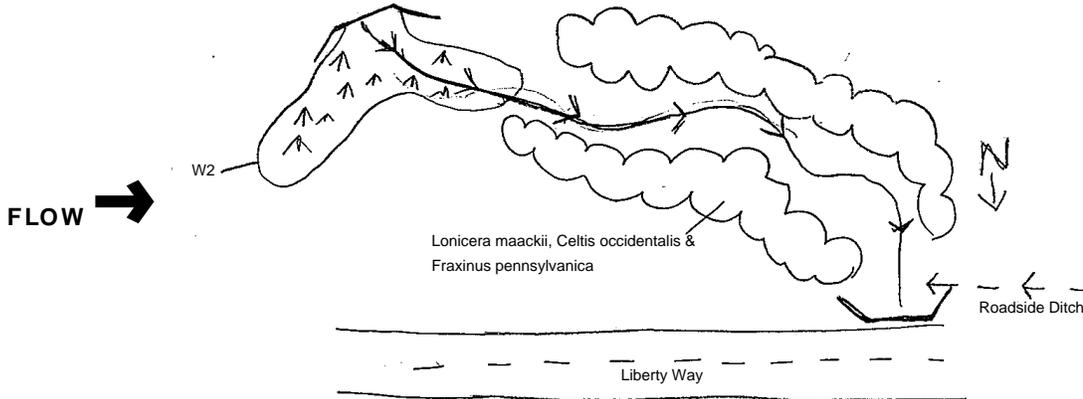
Base Flow Conditions? (Y/N): _____ Date of last precipitation: _____ Quantity: _____
Photograph Information: _____
Elevated Turbidity? (Y/N): _____ Canopy (% open): _____
Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no. or id. and attach results) Lab Number: _____
Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____
Is the sampling reach representative of the stream (Y/N) _____ If not, please explain: _____
Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/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) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/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

C

CORPS WETLAND DELINEATION
DATA SHEETS & OHIO RAPID
ASSESSMENT METHOD 5.0 FORMS

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Liberty South City/County: West Chester Twp./ Butler County Sampling Date: 9/4/2013
 Applicant/Owner: Liberty South Development LLC State: OH Sampling Point: DP01
 Investigator(s): Cori Jansing Section, Township, Range: Section 18, T3E R2N
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
 Slope (%): 0-2% Lat: 39.368456 Long: -84.37147 Datum: NAD83 UTM16N
 Soil Map Unit Name: Dana silt loam (DaB) NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Remarks:					

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status																		
1. <u>No Vegetation</u>				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)																	
2. _____																					
3. _____																					
4. _____																					
5. _____																					
= Total Cover																					
Sapling/Shrub Stratum (Plot size: <u>15' radius</u>)																					
1. <u>No Vegetation</u>				Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>88%</u></td> <td>x1 = <u>0.88</u></td> </tr> <tr> <td>FACW species <u>13%</u></td> <td>x2 = <u>0.26</u></td> </tr> <tr> <td>FAC species <u>2%</u></td> <td>x3 = <u>0.06</u></td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: <u>1.03</u> (A)</td> <td><u>1.2</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u>1.17</u></td> </tr> </table>		Total % Cover of:	Multiply by:	OBL species <u>88%</u>	x1 = <u>0.88</u>	FACW species <u>13%</u>	x2 = <u>0.26</u>	FAC species <u>2%</u>	x3 = <u>0.06</u>	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: <u>1.03</u> (A)	<u>1.2</u> (B)	Prevalence Index = B/A = <u>1.17</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>88%</u>	x1 = <u>0.88</u>																				
FACW species <u>13%</u>	x2 = <u>0.26</u>																				
FAC species <u>2%</u>	x3 = <u>0.06</u>																				
FACU species _____	x4 = _____																				
UPL species _____	x5 = _____																				
Column Totals: <u>1.03</u> (A)	<u>1.2</u> (B)																				
Prevalence Index = B/A = <u>1.17</u>																					
2. _____																					
3. _____																					
4. _____																					
5. _____																					
= Total Cover																					
Herb Stratum (Plot size: <u>5' radius</u>)																					
1. <u>Typha angustifolia</u>	<u>45%</u>	<u>Yes</u>	<u>OBL</u>	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1-Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2-Dominance Test is >50% <input checked="" type="checkbox"/> 3-Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4-Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																	
2. <u>Eleocharis obtusa</u>	<u>20%</u>	<u>Yes</u>	<u>OBL</u>																		
3. <u>Glyceria striata</u>	<u>15%</u>	<u>No</u>	<u>OBL</u>																		
4. <u>Panicum pensylvanicum</u>	<u>5%</u>	<u>No</u>	<u>FACW</u>																		
5. <u>Scirpus atrovirens</u>	<u>5%</u>	<u>No</u>	<u>OBL</u>																		
6. <u>Bidens frondosa</u>	<u>3%</u>	<u>No</u>	<u>FACW</u>																		
7. <u>Carex frankii</u>	<u>3%</u>	<u>No</u>	<u>OBL</u>																		
8. <u>Carex vulpinoidea</u>	<u>3%</u>	<u>No</u>	<u>FACW</u>																		
9. <u>Rumex crispus</u>	<u>2%</u>	<u>No</u>	<u>FAC</u>																		
10. <u>Cyperus esculentus</u>	<u>2%</u>	<u>No</u>	<u>FACW</u>																		
11. _____																					
12. _____																					
13. _____																					
14. _____																					
15. _____																					
16. _____																					
17. _____																					
18. _____																					
19. _____																					
20. _____																					
<u>103%</u> = Total Cover																					

Woody Vine Stratum (Plot size: <u>30' radius</u>) 1. <u>No Vegetation</u> 2. _____ _____ = Total Cover	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
--	--

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DP01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8"	10YR 4/2	95	10YR 4/6	5	C	M	Clay Loam	
8-16"	10YR 3/1	92	10YR 4/6	8	C	M	Clay Loam	

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 2 cm Muck (A10)	<input checked="" type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
 Type: none
 Depth (inches): none

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one is required: check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Surface Soil Cracks (B6)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input checked="" type="checkbox"/> Crayfish Burrows (C8)
	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Stunted or Stressed Plants (D1)
	<input checked="" type="checkbox"/> Geomorphic Position (D2)
	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>N/A</u>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>>16"</u>
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>6"</u>
(includes capillary fringe)	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Liberty South City/County: West Chester Twp./ Butler County Sampling Date: 9/4/2013
 Applicant/Owner: Liberty South Development LLC State: OH Sampling Point: DP02
 Investigator(s): Cori Jansing Section, Township, Range: Section 18, T3E R2N
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None
 Slope (%): 0-2% Lat: 39.368442 Long: -84.371537 Datum: NAD83 UTM16N
 Soil Map Unit Name: Dana silt loam (DaB) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N , Soil N , or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N , Soil N , or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u> </u>	No <u> X </u>	Is the Sampled Area within a Wetland?	Yes <u> </u>	No <u> X </u>
Hydric Soil Present?	Yes <u> </u>	No <u> X </u>			
Wetland Hydrology Present?	Yes <u> </u>	No <u> X </u>			
Remarks:					

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status																																				
1. <u>No Vegetation</u>						Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u> 0 </u> (A) Total Number of Dominant Species Across All Strata: <u> 3 </u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u> 0% </u> (A/B)																																	
2. _____																																							
3. _____																																							
4. _____																																							
5. _____																																							
= Total Cover																																							
Sapling/Shrub Stratum (Plot size: <u>15' radius</u>)																																							
1. <u>No Vegetation</u>				Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td align="center" colspan="2">Total % Cover of:</td> <td align="center" colspan="2">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td><u> </u></td> <td>x1 =</td> <td><u> </u></td> </tr> <tr> <td>FACW species</td> <td><u> </u></td> <td>x2 =</td> <td><u> </u></td> </tr> <tr> <td>FAC species</td> <td><u> 5% </u></td> <td>x3 =</td> <td><u> 0.15 </u></td> </tr> <tr> <td>FACU species</td> <td><u> 112% </u></td> <td>x4 =</td> <td><u> 4.48 </u></td> </tr> <tr> <td>UPL species</td> <td><u> 3% </u></td> <td>x5 =</td> <td><u> 0.15 </u></td> </tr> <tr> <td>Column Totals:</td> <td><u> 1.20 </u> (A)</td> <td></td> <td><u> 4.78 </u> (B)</td> </tr> <tr> <td align="center" colspan="4">Prevalence Index = B/A = <u> 3.98 </u></td> <td colspan="2"></td> </tr> </table>		Total % Cover of:		Multiply by:		OBL species	<u> </u>	x1 =	<u> </u>	FACW species	<u> </u>	x2 =	<u> </u>	FAC species	<u> 5% </u>	x3 =	<u> 0.15 </u>	FACU species	<u> 112% </u>	x4 =	<u> 4.48 </u>	UPL species	<u> 3% </u>	x5 =	<u> 0.15 </u>	Column Totals:	<u> 1.20 </u> (A)		<u> 4.78 </u> (B)	Prevalence Index = B/A = <u> 3.98 </u>					
Total % Cover of:		Multiply by:																																					
OBL species	<u> </u>	x1 =	<u> </u>																																				
FACW species	<u> </u>	x2 =	<u> </u>																																				
FAC species	<u> 5% </u>	x3 =	<u> 0.15 </u>																																				
FACU species	<u> 112% </u>	x4 =	<u> 4.48 </u>																																				
UPL species	<u> 3% </u>	x5 =	<u> 0.15 </u>																																				
Column Totals:	<u> 1.20 </u> (A)		<u> 4.78 </u> (B)																																				
Prevalence Index = B/A = <u> 3.98 </u>																																							
2. _____																																							
3. _____																																							
4. _____																																							
5. _____																																							
= Total Cover																																							
Herb Stratum (Plot size: <u>5' radius</u>)																																							
1. <u>Solidago canadensis</u>	<u> 35% </u>	<u> Yes </u>	<u> FACU </u>	Hydrophytic Vegetation Indicators: <u> </u> 1-Rapid Test for Hydrophytic Vegetation <u> </u> 2-Dominance Test is >50% <u> </u> 3-Prevalence Index is ≤3.0 ¹ <u> </u> 4-Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain)																																			
2. <u>Melilotus officinalis</u>	<u> 20% </u>	<u> Yes </u>	<u> FACU </u>																																				
3. <u>Dipsacus fullonum</u>	<u> 18% </u>	<u> Yes </u>	<u> FACU </u>																																				
4. <u>Ambrosia artemisiifolia</u>	<u> 12% </u>	<u> No </u>	<u> FACU </u>																																				
5. <u>Schedonorus arundinaceus</u>	<u> 8% </u>	<u> No </u>	<u> FACU </u>																																				
6. <u>Erigeron canadensis</u>	<u> 8% </u>	<u> No </u>	<u> FACU </u>																																				
7. <u>Trifolium hybridum</u>	<u> 6% </u>	<u> No </u>	<u> FACU </u>																																				
8. <u>Euphorbia nutans</u>	<u> 5% </u>	<u> No </u>	<u> FACU </u>																																				
9. <u>Populus deltoides</u>	<u> 5% </u>	<u> No </u>	<u> FAC </u>																																				
10. <u>Daucus carota</u>	<u> 3% </u>	<u> No </u>	<u> UPL </u>																																				
11. _____																																							
12. _____																																							
13. _____																																							
14. _____																																							
15. _____																																							
16. _____																																							
17. _____																																							
18. _____																																							
19. _____																																							
20. _____																																							
120% = Total Cover																																							

Woody Vine Stratum (Plot size: <u>30' radius</u>) 1. <u>No Vegetation</u> 2. _____ _____ = Total Cover	Hydrophytic Vegetation Present? Yes <u> </u> No <u> X </u>
---	--

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DP02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-9"	10YR 4/3	100					Silty Clay Loam	

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

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	
	<input type="checkbox"/> Coast Prairie Redox (A16)
	<input type="checkbox"/> Iron-Manganese Masses (F12)
	<input type="checkbox"/> Dark Surface (S7)
	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
	<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
 Type: Rock
 Depth (inches): 9

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Surface Soil Cracks (B6)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Stunted or Stressed Plants (D1)
	<input type="checkbox"/> Geomorphic Position (D2)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>>9"</u>	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>>9"</u>	

(includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Liberty South City/County: West Chester Twp./ Butler County Sampling Date: 9/4/2013
 Applicant/Owner: Liberty South Development LLC State: OH Sampling Point: DP03
 Investigator(s): Cori Jansing Section, Township, Range: Section 18, T3E R2N
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
 Slope (%): 0-2% Lat: 39.368973 Long: -84.37405 Datum: NAD83 UTM16N
 Soil Map Unit Name: Wynn silt loam (WyC2) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks:					

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status																																		
1. <u>No Vegetation</u>				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)																																	
2. _____																																					
3. _____																																					
4. _____																																					
5. _____																																					
= Total Cover																																					
Sapling/Shrub Stratum (Plot size: <u>15' radius</u>)																																					
1. <u>Salix nigra</u>	20%	Yes	OBL	Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td align="center" colspan="2">Total % Cover of:</td> <td align="center" colspan="2">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td align="center"><u>81%</u></td> <td>x1 =</td> <td align="center"><u>0.81</u></td> </tr> <tr> <td>FACW species</td> <td align="center"><u>29%</u></td> <td>x2 =</td> <td align="center"><u>0.58</u></td> </tr> <tr> <td>FAC species</td> <td></td> <td>x3 =</td> <td></td> </tr> <tr> <td>FACU species</td> <td align="center"><u>10%</u></td> <td>x4 =</td> <td align="center"><u>0.4</u></td> </tr> <tr> <td>UPL species</td> <td></td> <td>x5 =</td> <td></td> </tr> <tr> <td>Column Totals:</td> <td align="center"><u>1.20</u> (A)</td> <td></td> <td align="center"><u>1.79</u> (B)</td> </tr> <tr> <td align="center" colspan="4">Prevalence Index = B/A = <u>1.49</u></td> </tr> </table>		Total % Cover of:		Multiply by:		OBL species	<u>81%</u>	x1 =	<u>0.81</u>	FACW species	<u>29%</u>	x2 =	<u>0.58</u>	FAC species		x3 =		FACU species	<u>10%</u>	x4 =	<u>0.4</u>	UPL species		x5 =		Column Totals:	<u>1.20</u> (A)		<u>1.79</u> (B)	Prevalence Index = B/A = <u>1.49</u>			
Total % Cover of:		Multiply by:																																			
OBL species	<u>81%</u>	x1 =	<u>0.81</u>																																		
FACW species	<u>29%</u>	x2 =	<u>0.58</u>																																		
FAC species		x3 =																																			
FACU species	<u>10%</u>	x4 =	<u>0.4</u>																																		
UPL species		x5 =																																			
Column Totals:	<u>1.20</u> (A)		<u>1.79</u> (B)																																		
Prevalence Index = B/A = <u>1.49</u>																																					
2. _____																																					
3. _____																																					
4. _____																																					
5. _____																																					
20% = Total Cover																																					
Herb Stratum (Plot size: <u>5' radius</u>)																																					
1. <u>Leersia oryzoides</u>	30%	Yes	OBL	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1-Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2-Dominance Test is >50% <input checked="" type="checkbox"/> 3-Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4-Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																																	
2. <u>Carex vulpinoidea</u>	20%	Yes	FACW																																		
3. <u>Scirpus atrovirens</u>	18%	No	OBL																																		
4. <u>Dipsacus fullonum</u>	10%	No	FACU																																		
5. <u>Epilobium coloratum</u>	8%	No	OBL																																		
6. <u>Mentha arvensis</u>	6%	No	FACW																																		
7. <u>Acer saccharinum</u>	3%	No	FACW																																		
8. <u>Mimulus ringens</u>	3%	No	OBL																																		
9. <u>Ludwigia palustris</u>	2%	No	OBL																																		
10. _____																																					
11. _____																																					
12. _____																																					
13. _____																																					
14. _____																																					
15. _____																																					
16. _____																																					
17. _____																																					
18. _____																																					
19. _____																																					
20. _____																																					
100% = Total Cover																																					

Woody Vine Stratum (Plot size: <u>30' radius</u>) 1. <u>No Vegetation</u> 2. _____ _____ = Total Cover	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
--	--

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DP03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10"	10YR 4/2	90	10YR 4/6	10	C	M	Clay Loam	

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 2 cm Muck (A10)	<input checked="" type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 10

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:

Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>>10"</u>	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>>10"</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Liberty South City/County: West Chester Twp./ Butler County Sampling Date: 9/4/2013
 Applicant/Owner: Liberty South Development LLC State: OH Sampling Point: DP04
 Investigator(s): Cori Jansing Section, Township, Range: Section 18, T3E R2N
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None
 Slope (%): 0-2% Lat: 39.369006 Long: -84.374043 Datum: NAD83 UTM16N
 Soil Map Unit Name: Wynn silt loam (WyC2) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Remarks:					

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>No Vegetation</u>				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
= Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15' radius</u>)				
1. <u>Acer negundo</u>	<u>10%</u>	<u>Yes</u>	<u>FAC</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species <u>15%</u> x3 = <u>0.45</u> FACU species <u>95%</u> x4 = <u>3.8</u> UPL species <u>2%</u> x5 = <u>0.1</u> Column Totals: <u>1.12</u> (A) <u>4.35</u> (B) Prevalence Index = B/A = <u>3.88</u>
2. _____				
3. _____				
4. _____				
5. _____				
10% = Total Cover				
Herb Stratum (Plot size: <u>5' radius</u>)				
1. <u>Solidago canadensis</u>	<u>60%</u>	<u>Yes</u>	<u>FACU</u>	
2. <u>Dipsacus fullonum</u>	<u>30%</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Ambrosia artemisiifolia</u>	<u>5%</u>	<u>No</u>	<u>FACU</u>	
4. <u>Vernonia gigantea</u>	<u>5%</u>	<u>No</u>	<u>FAC</u>	
5. <u>Daucus carota</u>	<u>2%</u>	<u>No</u>	<u>UPL</u>	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
13. _____				
14. _____				
15. _____				
16. _____				
17. _____				
18. _____				
19. _____				
20. _____				
102% = Total Cover				

Woody Vine Stratum (Plot size: <u>30' radius</u>) 1. <u>No Vegetation</u> 2. _____ _____ = Total Cover	Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	--

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DP04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10"	10YR 4/3	100					Silty Clay Loam	Disturbed Fill
10-16"	10YR 3/1	85	10YR 3/6	15	C	M	Silty Clay Loam	

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

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

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:

Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present? Yes _____ No <u>X</u>
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches): <u>>16"</u>	
Saturation Present? (includes capillary fringe)	Yes _____ No <u>X</u>	Depth (inches): <u>>16"</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Liberty South City/County: West Chester Twp./ Butler County Sampling Date: 9/4/2013
 Applicant/Owner: Liberty South Development LLC State: OH Sampling Point: DP05
 Investigator(s): Cori Jansing Section, Township, Range: Section 18, T3E R2N
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
 Slope (%): 0-2% Lat: 39.368488 Long: -84.375415 Datum: NAD83 UTM16N
 Soil Map Unit Name: Xenia silt loam (XfB2) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks:					

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status																														
1. <u>No Vegetation</u>			<u>UPL</u>			Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)																											
2. _____																																	
3. _____																																	
4. _____																																	
5. _____																																	
= Total Cover																																	
Sapling/Shrub Stratum (Plot size: <u>15' radius</u>)																																	
1. <u>Salix nigra</u>	<u>30%</u>	<u>Yes</u>	<u>OBL</u>	Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td align="center" colspan="2">Total % Cover of:</td> <td align="center" colspan="2">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td><u>135%</u></td> <td>x1 =</td> <td><u>1.35</u></td> </tr> <tr> <td>FACW species</td> <td><u>10%</u></td> <td>x2 =</td> <td><u>0.2</u></td> </tr> <tr> <td>FAC species</td> <td><u>5%</u></td> <td>x3 =</td> <td><u>0.15</u></td> </tr> <tr> <td>FACU species</td> <td></td> <td>x4 =</td> <td></td> </tr> <tr> <td>UPL species</td> <td></td> <td>x5 =</td> <td></td> </tr> <tr> <td>Column Totals:</td> <td><u>1.50</u> (A)</td> <td></td> <td><u>1.7</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>1.13</u>		Total % Cover of:		Multiply by:		OBL species	<u>135%</u>	x1 =	<u>1.35</u>	FACW species	<u>10%</u>	x2 =	<u>0.2</u>	FAC species	<u>5%</u>	x3 =	<u>0.15</u>	FACU species		x4 =		UPL species		x5 =		Column Totals:	<u>1.50</u> (A)		<u>1.7</u> (B)
Total % Cover of:		Multiply by:																															
OBL species	<u>135%</u>	x1 =	<u>1.35</u>																														
FACW species	<u>10%</u>	x2 =	<u>0.2</u>																														
FAC species	<u>5%</u>	x3 =	<u>0.15</u>																														
FACU species		x4 =																															
UPL species		x5 =																															
Column Totals:	<u>1.50</u> (A)		<u>1.7</u> (B)																														
2. <u>Populus deltoides</u>	<u>5%</u>	<u>No</u>	<u>FAC</u>																														
3. _____																																	
4. _____																																	
5. _____																																	
35% = Total Cover																																	
Herb Stratum (Plot size: <u>5' radius</u>)																																	
1. <u>Eleocharis obtusa</u>	<u>95%</u>	<u>Yes</u>	<u>OBL</u>	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1-Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2-Dominance Test is >50% <input checked="" type="checkbox"/> 3-Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4-Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																													
2. <u>Carex frankii</u>	<u>5%</u>	<u>No</u>	<u>OBL</u>																														
3. <u>Carex vulpinoidea</u>	<u>5%</u>	<u>No</u>	<u>FACW</u>																														
4. <u>Salix nigra</u>	<u>5%</u>	<u>No</u>	<u>OBL</u>																														
5. <u>Panicum dichotomiflorum</u>	<u>5%</u>	<u>No</u>	<u>FACW</u>																														
6. _____																																	
7. _____																																	
8. _____																																	
9. _____																																	
10. _____																																	
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14. _____																																	
15. _____																																	
16. _____																																	
17. _____																																	
18. _____																																	
19. _____																																	
20. _____																																	
115% = Total Cover																																	

Woody Vine Stratum (Plot size: <u>30' radius</u>) 1. <u>No Vegetation</u> 2. _____ _____ = Total Cover	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DP05

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8"	10YR 4/2	95	10YR 4/6	5	C	M	Clay Loam	

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 2 cm Muck (A10)	<input checked="" type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 8

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one is required: check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Fauna (B13)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> True Aquatic Plants (B14)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Gauge or Well Data (D9)
	<input type="checkbox"/> Other (Explain in Remarks)
	<input checked="" type="checkbox"/> Geomorphic Position (D2)
	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes	<input checked="" type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
	Depth (inches): <u>N/A</u>		
	Depth (inches): <u>>8"</u>		
	Depth (inches): <u>>8"</u>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Liberty South City/County: West Chester Twp./ Butler County Sampling Date: 9/4/2013
 Applicant/Owner: Liberty South Development LLC State: OH Sampling Point: DP06
 Investigator(s): Cori Jansing Section, Township, Range: Section 18, T3E R2N
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None
 Slope (%): 0-2% Lat: 39.36846 Long: -84.375356 Datum: NAD83 UTM16N
 Soil Map Unit Name: Xenia silt loam (XfB2) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Remarks:					

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status																																				
1. <u>No Vegetation</u>			<u>UPL</u>			Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)																																	
2. _____																																							
3. _____																																							
4. _____																																							
5. _____																																							
= Total Cover				Prevalence Index worksheet: <table style="width:100%; border: none;"> <tr> <td align="right" colspan="2">Total % Cover of:</td> <td align="right" colspan="2">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td><u> </u></td> <td>x1 =</td> <td><u> </u></td> </tr> <tr> <td>FACW species</td> <td><u> </u></td> <td>x2 =</td> <td><u> </u></td> </tr> <tr> <td>FAC species</td> <td><u> </u></td> <td>x3 =</td> <td><u> </u></td> </tr> <tr> <td>FACU species</td> <td><u>115%</u></td> <td>x4 =</td> <td><u>4.6</u></td> </tr> <tr> <td>UPL species</td> <td><u> </u></td> <td>x5 =</td> <td><u> </u></td> </tr> <tr> <td>Column Totals:</td> <td><u>1.15</u> (A)</td> <td></td> <td><u>4.6</u> (B)</td> </tr> <tr> <td align="right" colspan="4">Prevalence Index = B/A =</td> <td align="right" colspan="2"><u>4.00</u></td> </tr> </table>		Total % Cover of:		Multiply by:		OBL species	<u> </u>	x1 =	<u> </u>	FACW species	<u> </u>	x2 =	<u> </u>	FAC species	<u> </u>	x3 =	<u> </u>	FACU species	<u>115%</u>	x4 =	<u>4.6</u>	UPL species	<u> </u>	x5 =	<u> </u>	Column Totals:	<u>1.15</u> (A)		<u>4.6</u> (B)	Prevalence Index = B/A =				<u>4.00</u>	
Total % Cover of:		Multiply by:																																					
OBL species	<u> </u>	x1 =	<u> </u>																																				
FACW species	<u> </u>	x2 =	<u> </u>																																				
FAC species	<u> </u>	x3 =	<u> </u>																																				
FACU species	<u>115%</u>	x4 =	<u>4.6</u>																																				
UPL species	<u> </u>	x5 =	<u> </u>																																				
Column Totals:	<u>1.15</u> (A)		<u>4.6</u> (B)																																				
Prevalence Index = B/A =				<u>4.00</u>																																			
6. _____																																							
7. _____																																							
8. _____																																							
9. _____																																							
= Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1-Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2-Dominance Test is >50% <input type="checkbox"/> 3-Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4-Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																																			
1. <u>Solidago canadensis</u>	<u>85%</u>	<u>Yes</u>	<u>FACU</u>																																				
2. <u>Dipsacus fullonum</u>	<u>20%</u>	<u>No</u>	<u>FACU</u>																																				
3. <u>Ambrosia artemisiifolia</u>	<u>10%</u>	<u>No</u>	<u>FACU</u>																																				
4. _____																																							
5. _____																																							
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17. _____																																							
18. _____																																							
19. _____																																							
20. _____																																							
115% = Total Cover				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																																			
Woody Vine Stratum (Plot size: <u>30' radius</u>)																																							
1. <u>No Vegetation</u>			<u>UPL</u>																																				
2. _____																																							
= Total Cover																																							

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DP06

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12"	10YR 4/3	100					Silty Clay Loam	Disturbed

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

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	
	<input type="checkbox"/> Coast Prairie Redox (A16)
	<input type="checkbox"/> Iron-Manganese Masses (F12)
	<input type="checkbox"/> Dark Surface (S7)
	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
	<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
 Type: Rock
 Depth (inches): 12

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Surface Soil Cracks (B6)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Stunted or Stressed Plants (D1)
	<input type="checkbox"/> Geomorphic Position (D2)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>>12"</u>	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>>12"</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM -- Midwest Region

Project/Site: Liberty South City/County: West Chester Twp./ Butler County Sampling Date: 9/4/2013
 Applicant/Owner: Liberty South Development LLC State: OH Sampling Point: DP07
 Investigator(s): Cori Jansing Section, Township, Range: Section 18, T3E R2N
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None
 Slope (%): 0-2% Lat: 39.369104 Long: -84.377209 Datum: NAD83 UTM16N
 Soil Map Unit Name: Xenia silt loam (XfB2) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks:					

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67%</u> (A/B)
1. <u>No Vegetation</u>			<u>UPL</u>	
2. _____				
3. _____				
4. _____				
5. _____				
= Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>110%</u> x1 = <u>1.1</u> FACW species <u>15%</u> x2 = <u>0.3</u> FAC species <u>15%</u> x3 = <u>0.45</u> FACU species <u>63%</u> x4 = <u>2.52</u> UPL species _____ x5 = _____ Column Totals: <u>2.03</u> (A) <u>4.37</u> (B) Prevalence Index = B/A = <u>2.15</u>
1. <u>Salix nigra</u>	<u>75%</u>	<u>Yes</u>	<u>OBL</u>	
2. <u>Populus deltoides</u>	<u>10%</u>	<u>No</u>	<u>FAC</u>	
3. _____				
4. _____				
5. _____				
<u>85%</u> = Total Cover				
Herb Stratum (Plot size: <u>5' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1-Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2-Dominance Test is >50% <input checked="" type="checkbox"/> 3-Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4-Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
1. <u>Salix nigra</u>	<u>35%</u>	<u>Yes</u>	<u>OBL</u>	
2. <u>Xanthium spinosum</u>	<u>25%</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Ambrosia artemisiifolia</u>	<u>15%</u>	<u>No</u>	<u>FACU</u>	
4. <u>Dipsacus fullonum</u>	<u>10%</u>	<u>No</u>	<u>FACU</u>	
5. <u>Panicum dichotomiflorum</u>	<u>10%</u>	<u>No</u>	<u>FACW</u>	
6. <u>Trifolium hybridum</u>	<u>8%</u>	<u>No</u>	<u>FACU</u>	
7. <u>Euphorbia nutans</u>	<u>5%</u>	<u>No</u>	<u>FACU</u>	
8. <u>Bidens frondosa</u>	<u>5%</u>	<u>No</u>	<u>FACW</u>	
9. <u>Symphytichum lanceolatum</u>	<u>5%</u>	<u>No</u>	<u>FAC</u>	
10. _____				
11. _____				
12. _____				
13. _____				
14. _____				
15. _____				
16. _____				
17. _____				
18. _____				
19. _____				
20. _____				
<u>118%</u> = Total Cover				

Woody Vine Stratum (Plot size: <u>30' radius</u>) 1. <u>No Vegetation</u> 2. _____ _____ = Total Cover	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
--	--

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DP07

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	10YR 4/3	100					Silty Clay Loam	Disturbed
6-12"	10YR 4/3	50	10YR 4/2	50	c	m	Silty Clay Loam	Disturbed

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 12

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:

Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>>12"</u>	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>>12"</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Background Information

Name: Corrine Jansing	
Date: 9/4/2013	
Affiliation: Cardno JFNew	
Address: 11121 Canal Road, Cincinnati, Ohio 45241	
Phone Number: 513-489-2402	
e-mail address: Corrine.Jansing@cardno.com	
Name of Wetland: Wetland 1	
Vegetation Communit(ies): Emergent	
HGM Class(es): Depressional	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc. Please See Attached Delineation Map	
Lat/Long or UTM Coordinate 39.368505, -84.371249	
USGS Quad Name Mason	
County Butler	
Township West Chester	
Section and Subsection 18	
Hydrologic Unit Code 05080002	
Site Visit 09/04/2013	
National Wetland Inventory Map Mason	
Ohio Wetland Inventory Map Mason	
Soil Survey Mason	
Delineation report/map Liberty South	

Name of Wetland: Wetland 1	
Wetland Size (acres, hectares):	1.319 acres
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	
Final score : 27	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.	X	
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.	X	
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.	X	
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.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
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.	X	

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	Circle 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 Wetland should be evaluated for possible Category 3 status Go to Question 2	<input checked="" type="radio"/> NO 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 Wetland is a Category 3 wetland. Go to Question 3	<input checked="" type="radio"/> NO Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	<input checked="" type="radio"/> NO 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 Wetland is a Category 3 wetland Go to Question 5	<input checked="" type="radio"/> NO 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 Wetland is a Category 1 wetland Go to Question 6	<input checked="" type="radio"/> NO 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 Wetland is a Category 3 wetland Go to Question 7	<input checked="" type="radio"/> NO 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 Wetland is a Category 3 wetland Go to Question 8a	<input checked="" type="radio"/> NO 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 Wetland is a Category 3 wetland. Go to Question 8b	<input checked="" type="radio"/> NO 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 Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO 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 Go to Question 9b	NO 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 Wetland should be evaluated for possible Category 3 status Go to Question 10	NO 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 Go to Question 9d	NO 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 Wetland is a Category 3 wetland Go to Question 10	NO 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 Wetland should be evaluated for possible Category 3 status Go to Question 10	NO 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 Wetland is a Category 3 wetland. Go to Question 11	NO 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 Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO 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 var. 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 var. 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 spp.</i>	<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 spp.</i>		<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: Liberty South - Wetland 1	Rater(s): Cori Jansing	Date: 09/04/2013
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2	2
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	6
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)

13	19
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 (1)
 - Part of wetland/upland (e.g. forest), complex (1)
 - 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"/> point source (nonstormwater)
<input checked="" type="checkbox"/> tile	<input checked="" type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input checked="" type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input checked="" type="checkbox"/> stormwater input	<input type="checkbox"/> other _____

9	28
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"/> 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 checked="" type="checkbox"/> nutrient enrichment

28
subtotal this page

Site: Liberty South - Wetland 1	Rater(s): Corrine Jansing	Date: 09/04/2013
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28

subtotal first page

0	28
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)

-1	27
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)
- X 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)
- X Moderate 25-75% cover (-3)
- Sparse 5-25% cover (-1)
- Nearly absent <5% cover (0)
- Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- Vegetated hummocks/tussucks
- Coarse woody debris >15cm (6in)
- 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

27

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
Question 10. Oak Openings	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	2	
	Metric 2. Buffers and surrounding land use	4	
	Metric 3. Hydrology	13	
	Metric 4. Habitat	9	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	-1	
	TOTAL SCORE	27	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle 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 Wetland is categorized as a Category 3 wetland	<input checked="" type="radio"/> NO	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 Wetland should be evaluated for possible Category 3 status	<input checked="" type="radio"/> NO	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 Wetland is categorized as a Category 1 wetland	<input checked="" type="radio"/> NO	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?	<input checked="" type="radio"/> YES Wetland is assigned to the appropriate category based on the scoring range	NO	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 Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	<input checked="" type="radio"/> NO	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 Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<input checked="" type="radio"/> NO 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	<input checked="" type="radio"/> Category 1	<input type="radio"/> Category 2
	<input type="radio"/> Category 3	

End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name: Corrine Jansing	
Date: 9/4/2013	
Affiliation: Cardno JFNew	
Address: 11121 Canal Road, Cincinnati, Ohio 45241	
Phone Number: 513-489-2402	
e-mail address: Corrine.Jansing@cardno.com	
Name of Wetland: Wetland 2	
Vegetation Communit(ies): Emergent	
HGM Class(es): Depressional	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc. Please See Attached Delineation Map	
Lat/Long or UTM Coordinate 39.368973, -84.374050	
USGS Quad Name Mason	
County Butler	
Township West Chester	
Section and Subsection 18	
Hydrologic Unit Code 05080002	
Site Visit 09/04/2013	
National Wetland Inventory Map Mason	
Ohio Wetland Inventory Map Mason	
Soil Survey Mason	
Delineation report/map Liberty South	

Name of Wetland: Wetland 2	
Wetland Size (acres, hectares):	0.04 acres
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	
Final score : 28.5	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.	X	
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.	X	
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.	X	
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.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
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.	X	

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	Circle 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 Wetland should be evaluated for possible Category 3 status Go to Question 2	<input checked="" type="radio"/> NO 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 Wetland is a Category 3 wetland. Go to Question 3	<input checked="" type="radio"/> NO Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	<input checked="" type="radio"/> NO 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 Wetland is a Category 3 wetland Go to Question 5	<input checked="" type="radio"/> NO 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 Wetland is a Category 1 wetland Go to Question 6	<input checked="" type="radio"/> NO 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 Wetland is a Category 3 wetland Go to Question 7	<input checked="" type="radio"/> NO 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 Wetland is a Category 3 wetland Go to Question 8a	<input checked="" type="radio"/> NO 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 Wetland is a Category 3 wetland. Go to Question 8b	<input checked="" type="radio"/> NO 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 Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO 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 Go to Question 9b	NO 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 Wetland should be evaluated for possible Category 3 status Go to Question 10	NO 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 Go to Question 9d	NO 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 Wetland is a Category 3 wetland Go to Question 10	NO 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 Wetland should be evaluated for possible Category 3 status Go to Question 10	NO 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 Wetland is a Category 3 wetland. Go to Question 11	NO 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 Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO 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: Liberty South - Wetland 2	Rater(s): Cori Jansing	Date: 09/04/2013
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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)

14	18
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 (lake or stream) (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 (1)
 - Part of wetland/upland (e.g. forest), complex (1)
 - 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"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input checked="" type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input checked="" type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input checked="" type="checkbox"/> stormwater input	<input type="checkbox"/> other _____

10.5	28.5
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 checked="" 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 checked="" type="checkbox"/> nutrient enrichment

28.5
subtotal this page

Site: Liberty South - Wetland 2	Rater(s): Corrine Jansing	Date: 09/04/2013
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28.5

subtotal first page

0	28.5
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)

0	28.5
max 20 pts.	subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- 0 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)
- X Nearly absent <5% cover (0)
- Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- Vegetated hummocks/tussucks
- Coarse woody debris >15cm (6in)
- 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

28.5

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
Question 10. Oak Openings	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="radio"/> NO <input checked="" type="radio"/>	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	14	
	Metric 4. Habitat	10.5	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	0	
	TOTAL SCORE	28.5	Category based on score breakpoints ₁

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle 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 Wetland is categorized as a Category 3 wetland	<input checked="" type="radio"/> NO	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 Wetland should be evaluated for possible Category 3 status	<input checked="" type="radio"/> NO	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 Wetland is categorized as a Category 1 wetland	<input checked="" type="radio"/> NO	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?	<input checked="" type="radio"/> YES Wetland is assigned to the appropriate category based on the scoring range	NO	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 Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	<input checked="" type="radio"/> NO	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 Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<input checked="" type="radio"/> NO 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	<input checked="" type="radio"/> Category 1	<input type="radio"/> Category 2	<input type="radio"/> Category 3
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End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name: Corrine Jansing	
Date: 9/4/2013	
Affiliation: Cardno JFNew	
Address: 11121 Canal Road, Cincinnati, Ohio 45241	
Phone Number: 513-489-2402	
e-mail address: Corrine.Jansing@cardno.com	
Name of Wetland: Wetland 3	
Vegetation Communit(ies): Emergent	
HGM Class(es): Depressional	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc. Please See Attached Delineation Map	
Lat/Long or UTM Coordinate 39.368489, -84.375415	
USGS Quad Name Mason	
County Butler	
Township West Chester	
Section and Subsection 18	
Hydrologic Unit Code 05080002	
Site Visit 09/04/2013	
National Wetland Inventory Map Mason	
Ohio Wetland Inventory Map Mason	
Soil Survey Mason	
Delineation report/map Liberty South	

Name of Wetland: Wetland 3			
Wetland Size (acres, hectares):		0.02 acre	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.			
Please refer to the attached delineation map.			
Comments, Narrative Discussion, Justification of Category Changes:			
Final score : 28.5		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.	X	
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.	X	
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.	X	
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.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
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.	X	

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	Circle 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 Wetland should be evaluated for possible Category 3 status Go to Question 2	<input checked="" type="radio"/> NO 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 Wetland is a Category 3 wetland. Go to Question 3	<input checked="" type="radio"/> NO Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	<input checked="" type="radio"/> NO 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 Wetland is a Category 3 wetland Go to Question 5	<input checked="" type="radio"/> NO 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 Wetland is a Category 1 wetland Go to Question 6	<input checked="" type="radio"/> NO 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 Wetland is a Category 3 wetland Go to Question 7	<input checked="" type="radio"/> NO 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 Wetland is a Category 3 wetland Go to Question 8a	<input checked="" type="radio"/> NO 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 Wetland is a Category 3 wetland. Go to Question 8b	<input checked="" type="radio"/> NO 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 Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO 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 Go to Question 9b	NO 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 Wetland should be evaluated for possible Category 3 status Go to Question 10	NO 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 Go to Question 9d	NO 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 Wetland is a Category 3 wetland Go to Question 10	NO 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 Wetland should be evaluated for possible Category 3 status Go to Question 10	NO 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 Wetland is a Category 3 wetland. Go to Question 11	NO 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 Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO 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: Liberty South - Wetland 3	Rater(s): Cori Jansing	Date: 09/04/2013
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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)

7	7
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	18
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 (1)
 - Part of wetland/upland (e.g. forest), complex (1)
 - 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"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input checked="" 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 type="checkbox"/> other _____

9.5	27.5
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 checked="" 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 checked="" type="checkbox"/> nutrient enrichment

27.5
subtotal this page

Site: Liberty South - Wetland 3	Rater(s): Corrine Jansing	Date: 09/04/2013
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27.5

subtotal first page

0	27.5
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)

1	28.5
max 20 pts.	subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- 0 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.

- Vegetated hummocks/tussucks
- Coarse woody debris >15cm (6in)
- 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

28.5

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input checked="" type="radio"/> NO	If yes, Category 1.
	Question 6. Bogs	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 7. Fens	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES <input checked="" type="radio"/> NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
Question 10. Oak Openings	YES <input checked="" type="radio"/> NO	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input checked="" type="radio"/> NO	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	7	
	Metric 3. Hydrology	11	
	Metric 4. Habitat	9.5	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	1	
	TOTAL SCORE	28.5	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle 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 Wetland is categorized as a Category 3 wetland	NO	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 Wetland should be evaluated for possible Category 3 status	NO	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 Wetland is categorized as a Category 1 wetland	NO	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 Wetland is assigned to the appropriate category based on the scoring range	NO	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 Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	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 Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO 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.

APPENDIX



APPROVED JURISDICTIONAL
DETERMINATION OF PROJECT AREA
(CORPS OF ENGINEERS, 2013)



REPLY TO
ATTENTION OF

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

JAN 22 2014

Regulatory Division
North Branch
LRH-2013-981-GMR-UT Gregory Creek

**APPROVED JURISDICTIONAL DETERMINATION and
NATIONWIDE PERMIT WITHDRAWAL**

Mr. Justin Leyda
Liberty South Development LLC
4016 Townsfair Way, Suite 201
Columbus, Ohio 43219

Dear Mr. Leyda:

This letter is in reference to the *Nationwide Permit (NWP) 39 Application and Pre-Construction Notification (PCN)* dated October 7, 2013 and submitted on your behalf by Cardno JFNew. Additional information was provided by email on December 6, 2013. An approved jurisdictional determination (JD) was completed for 37 acres near Liberty Way and Tylers Place Blvd in West Chester Township, Butler County, Ohio. Based on the approved JD, your PCN for a NWP 39 has been withdrawn. See Enclosure 1 for maps identifying the aquatic resources within the approved JD boundary and Enclosure 2 for a table listing each aquatic resource. This project has been assigned the following file number: LRH-2013-981-GMR-UT Gregory Creek. Please include this file number on all future correspondence related to this project.

The United States (U.S.) Army Corps of Engineers' (Corps) authority to regulate waters of the U.S. 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 a Department of the Army (DA) permit be obtained prior to discharging dredged or fill material into waters of the U.S., including wetlands. Section 10 of the Rivers and Harbors Act of 1899 requires a DA permit be obtained for any work in, on, over or under a navigable water.

Approved Jurisdictional Determination

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 Act jurisdiction

Based on a review of the information provided, a site visit on November 27, 2013, and other information available to us, the site contains one stream (Stream 1 or Relevant Reach (RR) 1), three wetlands (Wetland 1, Wetland 2, and Wetland 3), one stormwater detention basin SW 1, and one stormwater retention pond (Pond 1). RR1 (Stream 1) is an intermittent-seasonal relatively permanent water (RPW), Wetland 1 is adjacent to RR1 and has a significant nexus with a traditional navigable water, and Wetland 2 is abutting RR1. RR1, Wetland 1, and Wetland 2 were determined to be jurisdictional waters of the U.S.

Wetland 3 is an isolated water completely surrounded by uplands, with no hydrologic connection to the tributary system and was determined to be non-jurisdictional. Isolated aquatic resources may be regulated by the Ohio Environmental Protection Agency. You should contact the Ohio Environmental Protection Agency, Division of Surface Water at 614-644-2001, to determine state permit requirements.

Stormwater detention basin SW1 is a non-jurisdictional feature that was constructed in-stream pursuant to stormwater management criteria for Section 402 of the Clean Water Act (33 CFR 328.3(a)) and serves as the hydrologic connection to the downstream tributary for upstream intermittent headwaters and for Wetland 1. If there are any changes in use to the stormwater detention basin SW1 the area may be considered a water of the U.S. Pond 1 is a non-jurisdictional feature that was created in uplands pursuant to stormwater management criteria for Section 402 of the Clean Water Act (33 CFR 328.3(a)).

In accordance with the June 5, 2007 Joint Memorandum between the U.S. Environmental Protection Agency (USEPA) and the Corps, and the January 28, 2008 Corps Memorandum regarding coordination on jurisdictional determinations, this determination was coordinated with the USEPA Region 5 and Corps Headquarters, with coordination completed on January 7, 2014.

This jurisdictional verification is valid for a period of five (5) 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 JD for the subject site within the approved JD boundary. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form (Enclosure 3). 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 Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR 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 MAR 23 2014. **It is not necessary to submit an RFA form to the Division office if you do not object to the determination in this letter.**

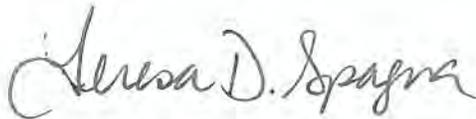
This determination has been conducted to identify the limits of the Corps' Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are United States 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.

Nationwide Permit Withdrawal

Your PCN dated October 7, 2013 requested DA authorization to construct the Liberty South commercial development under the NWP 39. After a review of your proposed project and the determination in this approved JD, your proposed project exceeds the terms and conditions of the nationwide permits. You must submit a DA permit application for an individual permit for the Corps to complete processing of your proposed project.

If you have any questions concerning the above, please contact Jacob Siegrist at (513) 825-4489 or by email at jacob.a.siegrist@usace.army.mil.

Sincerely,



Teresa D. Spagna
Regulatory Project Manager
North Branch

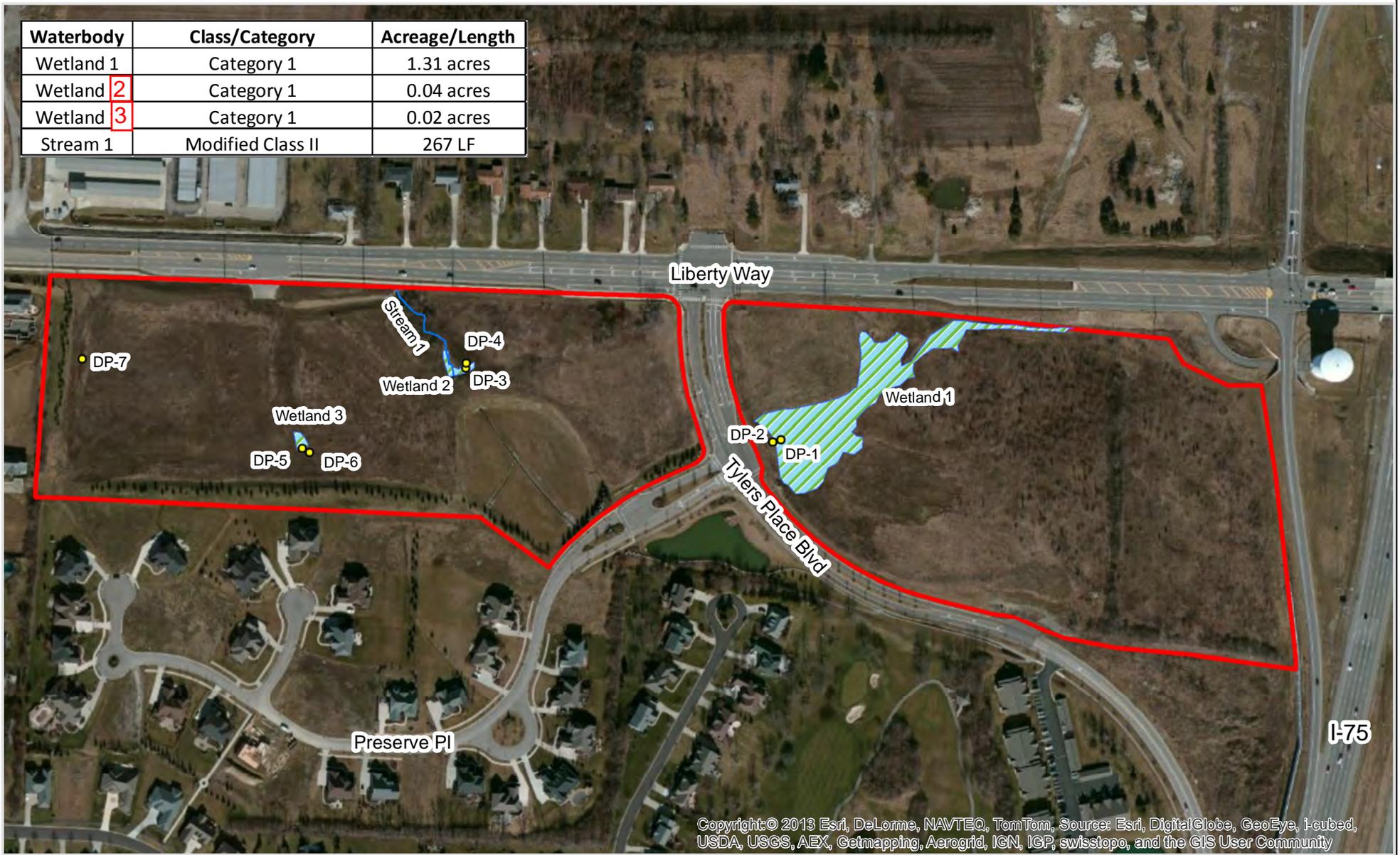
Encl 1 – Maps
Encl 2 – Table of Aquatic Resources
Encl 3 – NAP RFA Form

Copy furnish letter only to:

Rachel Taulbee
Ohio Environmental Protection Agency Division of Surface Water
Lazarus Government Building
Post Office Box 1049
Columbus, Ohio 43216-3669

Mr. Joel Thrash
Cardno JFNew
joel.thrash@cardno.com

Waterbody	Class/Category	Acreage/Length
Wetland 1	Category 1	1.31 acres
Wetland 2	Category 1	0.04 acres
Wetland 3	Category 1	0.02 acres
Stream 1	Modified Class II	267 LF



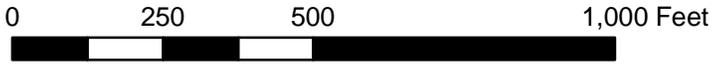
Copyright: © 2013 Esri, DeLorme, NAVTEQ, TomTom, Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

The information presented in this map document is advisory and intended for reference purposes only.

Coordinate System:
 NAD 1983 UTM Zone 16N
 Source:
 Esri, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community - (c) 2013 Esri, DeLorme, NAVTEQ, TomTom
 NW1 - GIS Data Depot
 (http://data.geocomm.com/)

- Data Point
- Streams
- Wetlands
- Approximate Site Location

Exhibit 1: Location of Identified Features
Liberty South
Liberty South Development, LLC.
Butler County, Ohio



Cardno
JFNew
 11121 Canal Rd, Cincinnati, OH 45241
 Phone 513-489-2402/ Fax 513-489-2404
 www.cardnojnew.com

September 2013
 Job No. 1308018.00

LRH-2013-981-GMR-UT Gregory Creek
Liberty South

Table of Aquatic Resources

Name	Latitude, Longitude	Length/Acreage	Jurisdictional Determination
Stream 1 – RR1	39.36918, -84.37428	267 feet	Water of the U.S.
Wetland 1	39.36855, -84.37110	1.31 acres	Water of the U.S.
Wetland 2	39.36896, -84.37416	0.04 acre	Water of the U.S.
Wetland 3	39.36848, -84.375415	0.02 acre	Isolated – non-jurisdictional
SW 1	39.36839, -84.37354	1.8 acres (350 feet and 125 feet)	Non-jurisdictional*
Pond 1	39.36783, -84.37208	0.5 acre	Non-jurisdictional

* Stormwater detention basin SW1 is a non-jurisdictional feature that was constructed in-stream pursuant to stormwater management criteria for Section 402 of the Clean Water Act (33 CFR 328.3(a)) and serves as the hydrologic connection to the downstream tributary for upstream intermittent headwaters and for Wetland 1. If there are any changes in use to the stormwater detention basin SW1 the area may be considered a water of the U.S.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Liberty South Development LLC	File Number: 2013-981-GMR	Date:
Attached is:		See Section below
<input type="checkbox"/>	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
<input type="checkbox"/>	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
<input type="checkbox"/>	PERMIT DENIAL	C
<input checked="" type="checkbox"/>	APPROVED JURISDICTIONAL DETERMINATION	D
<input type="checkbox"/>	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at <http://usace.army.mil/inet/functions/cw/cecwo/reg> or Corps regulations at 33 CFR Part 331.

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

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. 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.

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

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

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

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

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

Ginger Mullins, Chief, Regulatory Division, 304-399-5389
Michael Hatten, Chief, North Regulatory Branch 304-399-5210
Susan Porter, Chief, South Regulatory Branch, 304 399-5710
Mark Taylor, Chief, Energy Resource Branch, 304-399-5610
Address: U.S. Army Corps of Engineers, Huntington District
Regulatory Division
502 8th Street
Huntington, WV 25701

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

Appeals Review Officer
Great Lakes and Ohio River Division
550 Main Street RM 10524
Cincinnati, Ohio 45202-3222
Phone: (513) 684-7261 Fax: (513) 684-2460

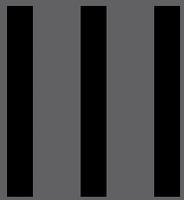
RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity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

Signature of appellant or agent.

Date:

Telephone number:

APPENDIX



RARE, THREATENED AND ENDANGERED
(R/T/E) SPECIES COORDINATION
LETTERS (USFWS, 2013), (ODNR, 2013)

United States Department of the Interior



FISH AND WILDLIFE SERVICE

Ecological Services
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993 / FAX (614) 416-8994

November 1, 2013

Cardno / JFNW
Attn: Corrine Jansing
11121 Canal Road
Cincinnati, OH 45241

TAILS# 03E15000-2014-TA-0081

Reference: Liberty South Project, West Chester Township, Butler County

Dear Ms. Jansing,

We have received your recent correspondence requesting information about the subject proposal. There are no Federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area. The following comments and recommendations will assist you in fulfilling the requirements for consultation under section 7 of the Endangered Species Act of 1973, as amended (ESA).

The Service recommends that proposed developments avoid and minimize water quality impacts and impacts to high quality fish and wildlife habitat (e.g., forests, streams, wetlands). Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the Corps of Engineers should be contacted to determine whether a Clean Water Act section 404 permit is required. Best management practices should be used to minimize erosion, especially on slopes. All disturbed areas should be mulched and revegetated with native plant species. Prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

ENDANGERED SPECIES COMMENTS: All projects in the State of Ohio lie within the range of the **Indiana bat** (*Myotis sodalis*), a federally listed endangered species. Since first listed as endangered in 1967, their population has declined by nearly 60%. Several factors have contributed to the decline of the Indiana bat, including the loss and degradation of suitable hibernacula, human disturbance during hibernation, pesticides, and the loss and degradation of forested habitat, particularly stands of large, mature trees. Fragmentation of forest habitat may also contribute to declines. During winter, Indiana bats hibernate in caves and abandoned mines. Summer habitat requirements for the species are not well defined but the following are considered important:

- (1) dead or live trees and snags with peeling or exfoliating bark, split tree trunk and/or branches, or cavities, which may be used as maternity roost areas;
- (2) live trees (such as shagbark hickory and oaks) which have exfoliating bark;
- (3) stream corridors, riparian areas, and upland woodlots which provide forage sites.

Should habitat exhibiting the characteristics described above be present at the proposed project site, we recommend that they, as well as surrounding trees, be saved wherever possible. However, if these trees cannot be avoided, they should only be cut between October 1 and March 31. If implementation of the seasonal tree cutting restriction is not possible, summer surveys should be conducted to document the

presence or likely absence of the Indiana bat within the project area during the summer. The survey must be conducted by an approved surveyor and be designed and conducted in coordination with the Endangered Species Coordinator for this office.

The proposed project lies within the range of the **northern long-eared bat** (*Myotis septentrionalis*), a species that is currently proposed for listing as federally endangered. Recently white-nose syndrome (WNS), a novel fungal pathogen, has caused serious declines in the northern long-eared bat population in the northeastern U.S. WNS has also been documented in Ohio, but the full extent of the impacts from WNS in Ohio are not yet known.

During winter, northern long-eared bats hibernate in caves and abandoned mines. Summer habitat requirements for the species are not well defined but the following are considered important:

- (1) Roosting habitat in dead or live trees and snags with cavities, peeling or exfoliating bark, split tree trunk and/or branches, which may be used as maternity roost areas;
- (2) Foraging habitat in upland and lowland woodlots and tree lined corridors;
- (3) Occasionally they may roost in structures like barns and sheds.

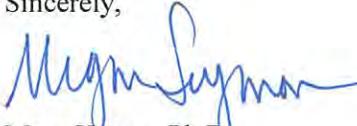
It appears that habitat exhibiting the characteristics described above may be present at the proposed project site. We recommend that trees exhibiting any of the characteristics listed above, as well as any wooded areas or tree lined corridors be saved wherever possible. However, if these areas cannot be avoided, they should only be cut from October 1 through March 31.

If there is a Federal nexus for the project (e.g., Federal funding provided, Federal permits required to construct), no tree clearing on any portion of the parcel should occur until consultation under section 7 of the ESA, between the Service and the Federal action agency, is completed. We recommend that the Federal action agency submit a determination of effects to this office, relative to the Indiana bat, for our review and concurrence.

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, proposed, or candidate species. Should the project design change, or during the term of this action, additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, consultation with the Service should be initiated to assess any potential impacts.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the Endangered Species Act of 1973 (ESA), as amended, and are consistent with the intent of the National Environmental Policy Act of 1969 and the U. S. Fish and Wildlife Service's Mitigation Policy. This letter provides technical assistance only and does not serve as a completed section 7 consultation document.

Sincerely,


Mary Khapp, Ph.D.
Field Supervisor



Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

Ohio Division of Wildlife
Scott Zody, Chief
2045 Morse Rd., Bldg. G
Columbus, OH 43229-6693
Phone: (614) 265-6300

September 20, 2013

Corrine Jansing
Cardno JFNew
11121 Canal Road
Cincinnati, OH 45241

Dear Ms. Jansing

After reviewing the Natural Heritage Database, I find the Division of Wildlife has no records of rare or endangered species in the Liberty South Project area, including a one mile radius, in Union Township, Butler County, Ohio. We are unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forests, national wildlife refuges, parks or forests, or other protected natural areas within a one mile radius of the project area. We also have no records for Indiana Bat (*Myotis sodalis*) capture locations within a five mile radius or hibernacula within a ten mile radius of the project site.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Although we inventory all types of plant communities, we only maintain records on the highest quality areas.

This letter only represents a review of rare species and natural features data within the Ohio Natural Heritage Database. It does not fulfill coordination under the National Environmental Policy Act (NEPA) or the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S. C. 661 et seq.) and does not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Please contact me at 614-265-6452 if I can be of further assistance.

Sincerely,

A handwritten signature in blue ink that reads "Greg Schneider".

Greg Schneider, Administrator
Ohio Natural Heritage Program

APPENDIX

IV

CULTURAL AND HISTORIC
LITERATURE REVIEW
(CARDNO JFNEW, 2013)

Phase I Archaeological Reconnaissance

For the Liberty South Development
Project (LTCD01C01), West Chester,
West Chester Township, Butler
County, Ohio

1308018



Document Information

Prepared for Justin Leyda, Liberty South Development, LLC.
Project Name Phase I Archaeological Reconnaissance for the Liberty South
Development Project (LCD01C01), West Chester, West Chester
Township, Butler County, Ohio
Project Number 1308018
Project Manager Joel Thrash
Date October 1, 2013

Principal Investigator

Amy C. Favret



Prepared for:

Justin Leyda
Libertytown LLC. 4016 Townsfair Way, Suite 201. Columbus, Ohio 4327

Prepared by: Amy C. Favret



Cardno JFNew
11121 Canal Road, Cincinnati, Ohio 45241

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Acronyms

APE	Area of Potential Effects
BCOGS	Butler County Chapter, Ohio Genealogical Society
B.P.	Years Before Present
CRM	Cultural Resource Management
DOE	National Register of Historic Places Determination of Eligibility List
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
OAI	Ohio Archaeological Inventory
OGS	Ohio Genealogical Society
OHI	Ohio Historic Inventory
OHPO	Ohio Historic Preservation Office
OKI	Ohio Kentucky Indiana Council of Governments
USACE	United States Army Corps of Engineers
USDA/SCS	United States Department of Agriculture, Soil Conservation Service
USGS	United States Geological Survey

Executive Summary

In response to a request from Liberty South Development, LLC, Cardno JFNew conducted a Phase I archaeological reconnaissance for the proposed Liberty South Development project in the City of West Chester, Butler County, Ohio. The proposed project involves the construction of a mixed residential and commercial development. This investigation was completed in anticipation of Section 404 Individual Permitting for impacts to a National Wetland Inventory (NWI) listed wetland located in the project area. As part of a Section 404 Individual Permitting project, the Huntington District of the U.S. Army Corps of Engineers (USACE) is the lead federal agency for the Section 106 review of the Liberty South Development project.

A cultural resources literature review conducted prior to the field investigation focused on a 1.6-kilometer (1-mile) study area centered on the project. Research revealed multiple previous surveys and identified several archaeological sites in the area. It also indicated that the northern and eastern portions of the project area have been previously surveyed for cultural resources. In addition, the literature review indicated an Ohio Genealogical Society (OGS) registered historic cemetery may be located within or adjacent to the project area.

Cardno JFNew conducted the fieldwork on September 3, 2013. The project area measured approximately 36.7 acres (14.85 hectares). At the time of survey the project area consisted of fallow and disturbed agricultural fields, a fill disposal area, constructed detention basin, and National Wetland Inventory (NWI) wetland.

Cardno JFNew conducted shovel test excavations to confirm disturbance in all areas that were not delineated NWI wetland. Shovel test excavations across the project area revealed disturbed, eroded, and hydric soils.

Cardno JFNew did not identify any new prehistoric or historic archaeological sites. Further, visual inspection and shovel test excavations in the area of the historic cemetery identified during the literature review revealed approximately 2.5 to 3.6 meters (8 to 12 feet) of construction fill covering the original ground surface. There was no indication of the historic Swearingen/Van Swearingen Cemetery on the existing surface. In addition, archival research indicates the recorded location of the Swearingen/Van Swearingen Cemetery may not be accurate. As a result we recommend no further work is necessary in areas with confirmed to be disturbed. The proposed project will likely have no effect on historic properties in the areas of confirmed ground disturbance. However, we were not able to confirm the presence or absence of cultural resources including the historic cemetery in the area covered by construction fill. Additional work may be necessary in this portion of the project area if project activities extend below the construction fill. Options may include additional archaeological investigation, monitoring of construction activities, preparing a plan for unintended discoveries, or other steps developed in coordination with the Ohio Historic Preservation Office. If archaeological artifacts or human remains are identified during construction, work within the area will stop and the Ohio Historic Preservation Office will be notified within two (2) business days.

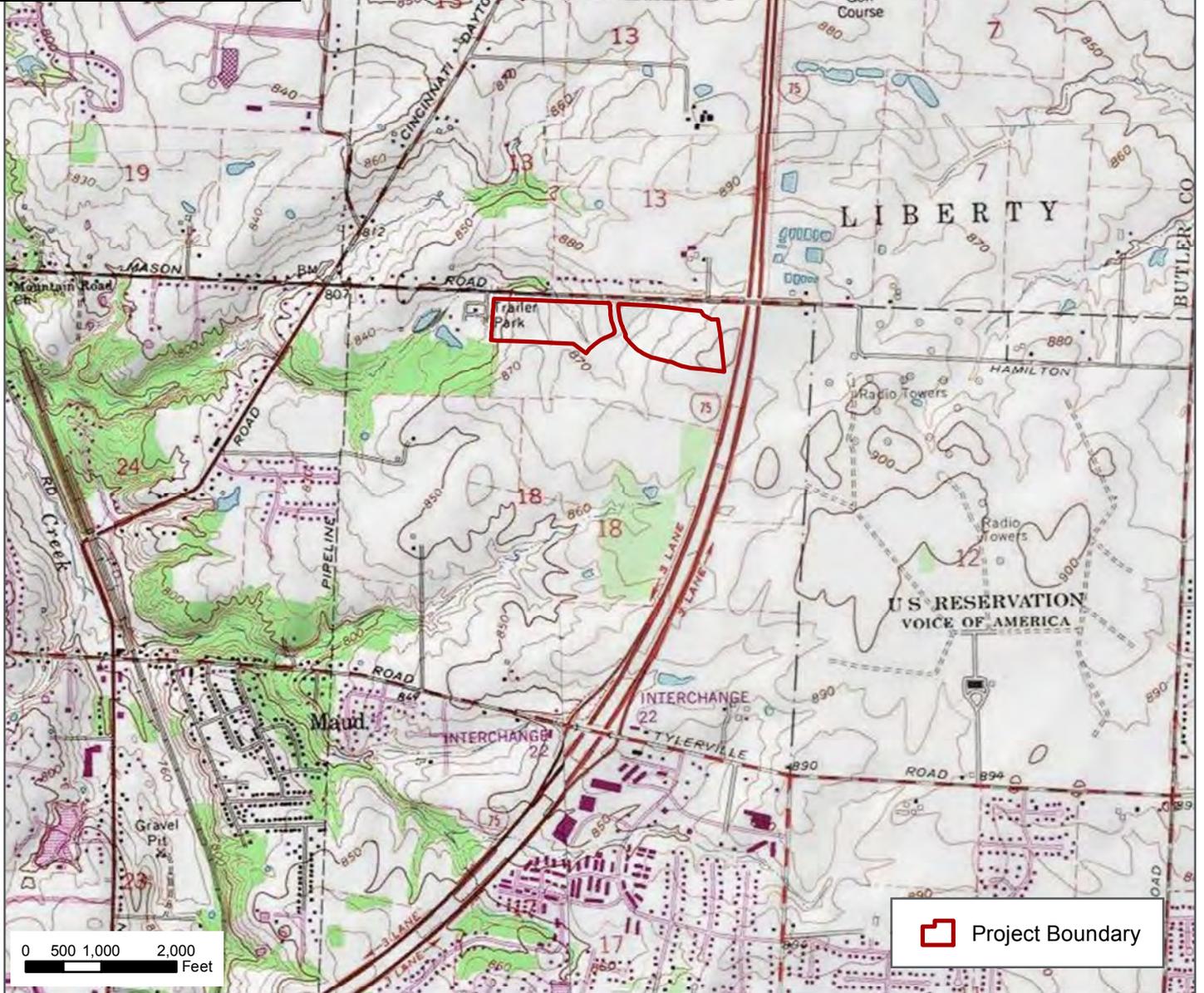
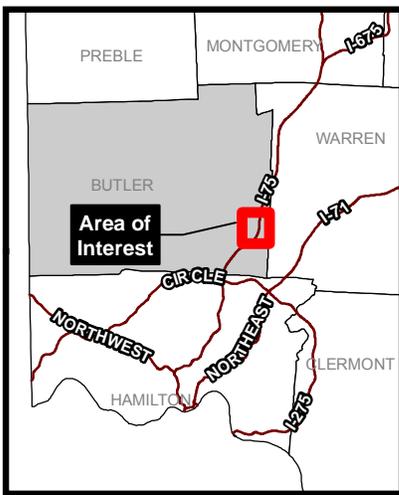
1 Introduction

Cardno JFNew conducted a Phase I archaeological reconnaissance for the proposed Liberty South Development project in the City of West Chester, Butler County, Ohio. The Liberty South Development site consists of two parcels totaling approximately 14.85 hectares (36.7 acres) along the south side of Liberty Way (formerly Hamilton-Mason Road) west of Interstate 75. The proposed project involves the construction of a mixed residential and commercial development that requires Section 404 Nationwide Permit for impacts to an NWI listed wetland in the project area (Figure 1).

A cultural resources literature review conducted prior to the field investigation focused on a 1.6-kilometer (1-mile) study area centered on the project. Research revealed multiple previous surveys and identified several archaeological sites in the area. It also indicated that the northern and eastern portions of the project area have been previously surveyed for cultural resources. In addition, the Swearingen/Van Swearingen Cemetery is mapped within the project area.

Cardno JFNew conducted the fieldwork on September 3, 2013. Key personnel committed to the project include Principal Investigator Amy C. Favret and Field Technicians Kaye Grob and Michael Adams. Ms. Favret served as Principal Investigator, report co-author, conducted the records search, and conducted the field work. Mr. Stephen LaFon contributed report graphics.

This report presents the research design and the environmental and cultural context of the project area in Section 2.0. Section 3.0 outlines the field methods used during the archaeological investigation. Section 4.0 discusses the results of the field investigation, followed by the conclusions and recommendations in Section 5.0. The references cited appear in Section 6.0. Appendix A provides historic maps, and Appendix B includes photographs documenting the fieldwork.



Township: 3 E
 Range: 2 N
 Section: 18
 Project No. 1308018

This map and all data contained within are supplied as is with no warranty. Cardno, Inc. expressly disclaims responsibility for damages or liability from any claims that may arise out of the use or misuse of this map. It is the sole responsibility of the user to determine if the data on this map meets the user's needs. This map was not created as survey data, nor should it be used as such. It is the user's responsibility to obtain proper survey data, prepared by a licensed surveyor, where required by law.

Figure 1-1: Project Location
 Liberty South Development
 Phase I Archaeological Reconnaissance
 Libertytown LLC
 West Chester Twp., Butler County, Ohio



11121 Canal Road, Cincinnati, OH 45241 USA
 Phone (+1) 513-489-2402 Fax (+1) 513-489-2404
 www.cardnojnew.com

2 Research Design

2.1 Background Research

The objective of the current study is to assess the effects of the proposed project on archaeological resources eligible for or listed in the National Register of Historic Places (NRHP). Section 106 of the National Historic Preservation Act of 1966 states that any federal undertaking must take into account the undertaking's effect on properties listed on or eligible for listing on the NRHP. As part of a Section 404 Individual Permitting project, the Huntington District of the U.S. Army Corps of Engineers (USACE) is the lead federal agency for the Section 106 review of the Liberty South Development project. The Phase I survey of the 14.85 hectare (36.7 acre) permit area was completed in anticipation of a request from the USACE for a cultural resources investigation.

For the purposes of this investigation, an archaeological resource is any site location that contains material remains of past human life or activities. Once identified through documentary research and/or fieldwork, these sites are evaluated for eligibility based on the following criteria.

“The quality of significance in American history, architecture, archaeology, engineering and culture is present in the districts, sites, buildings, structures and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- a. *That are associated with the events that have made a significant contribution to the broad patterns of our history; or*
- b. *That are associated with the lives of persons significant in our past; or*
- c. *That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or*
- d. *That have yielded or may be likely to yield, information important in prehistory or history” (36 CFR 60.4).*

The purpose of this section is to provide a basic context through which to evaluate the results of our investigations. This section will briefly outline the environmental and cultural background of the region in and around Butler County, Ohio.

Cardno JFNew conducted a cultural resources records check for the proposed 36.7 acre project area as well as the surrounding landscape, including a 1.6 kilometer (1 mile) study area around the project location. Research focused on identifying previously recorded archaeological resources and defining areas likely to contain archaeological deposits. The records check examined the following sources:

- National Historic Landmark (NHL) list;
- National Register of Historic Places (NRHP) and NRHP Determination of Eligibility (DOE) lists;
- Ohio Archaeological Inventory (OAI) forms;
- Ohio Historic Inventory (OHI) forms;
- Ohio Genealogical Society (OGS) Cemetery Registry;
- Mills (1914) Archaeological Atlas of Ohio;
- Cultural Resources Management (CRM) Reports;
- Historic topographic and atlas maps.

2.1.1 National Historic Landmarks List

There are no NHL listed sites within the study area.

2.1.2 National Register of Historic Places (NRHP) and Determination of Eligibility (DOE)

The Williamson Mound II Archaeological District is located approximately 1.12 kilometers (0.7 miles) southwest of the project area (Figure 2-1). This property is comprised of the Williamson Mound and adjacent area. The mound has not been excavated, so cultural/temporal affiliation is unknown; however it is thought to date from the Middle Woodland Period (NRHP Nomination Form). The DOE files do not include any cultural resources within the project area. No NRHP or DOE sites occur within the project area.

2.1.3 Ohio Archaeological Inventory (OAI)

The OAI lists a total of 13 archaeological sites within the study area (Figure 2-1). Eleven (11) of the known sites are prehistoric archaeological sites (33-Bu-0113 (the Williamson Mound Archaeological District); 33-Bu-0277; 33-Bu-0278; 33-Bu-0279; 33-Bu-0280; 33-Bu-0281; 33-Bu-0282, 33-Bu-0616, 33-Bu-0619, 33-Bu-1139, and 33-Bu-1140). One (1) site (33-Bu-0629) is a multiple component prehistoric and historic site, and one is an historic archaeological site (33-Bu-0999). None of these previously identified archaeological sites are within the current project boundaries. Of the archaeological sites within the study area, nine (33-Bu-0278 through 0282; 33-Bu-0616; 33-Bu-0619; the prehistoric portion of 33-Bu-629; 33-Bu-1139; and 33-Bu-1140) are unidentified prehistoric, one is identified as Early and Late Woodland, and the Williamson Mound Archaeological District (33-Bu-0113) is identified as unknown Woodland. While the temporal affiliation of this mound complex is unknown, it indicates the region was significant to populations in the past. Previously identified prehistoric sites vary from lithic isolates to large earthworks and mounds, and date to a wide range of cultural periods, including Archaic and Woodland.

Table 2-1 Previously Recorded Archaeological Sites within the Study Area

Site Number	Description	Cultural Affiliation
33-Bu-0113	Williamson Mound District	Unidentified Prehistoric/Woodland
33-Bu-0277	Lithic Scatter	Early Woodland
33-Bu-0278	Lithic Scatter	Unidentified Prehistoric
33-Bu-0279	Lithic Scatter	Unidentified Prehistoric
33-Bu-0280	Lithic Scatter	Unidentified Prehistoric
33-Bu-0281	Lithic Scatter	Unidentified Prehistoric
33-Bu-0282	Lithic Scatter	Unidentified Prehistoric
33-Bu-0999	Artifact Scatter	Historic
33-Bu-0616	Lithic Scatter	Unidentified Prehistoric
33-Bu-0619	Lithic Scatter	Unidentified Woodland
33-Bu-0629	Lithic and Historic Artifact Scatter	Unidentified Prehistoric and Historic
33-Bu-1139	Lithic Isolate	Unidentified Prehistoric
33-Bu-1140	Lithic Isolate	Unidentified Prehistoric

2.1.4 Ohio Historic Inventory (OHI)

The OHI lists 16 historic structures within the study area, including one (1) farm, a barn, a school, and 13 houses (Figure 2-1). All of the previously identified historic structures are located outside the project area and will not be affected by the proposed project (Figure 2-1).

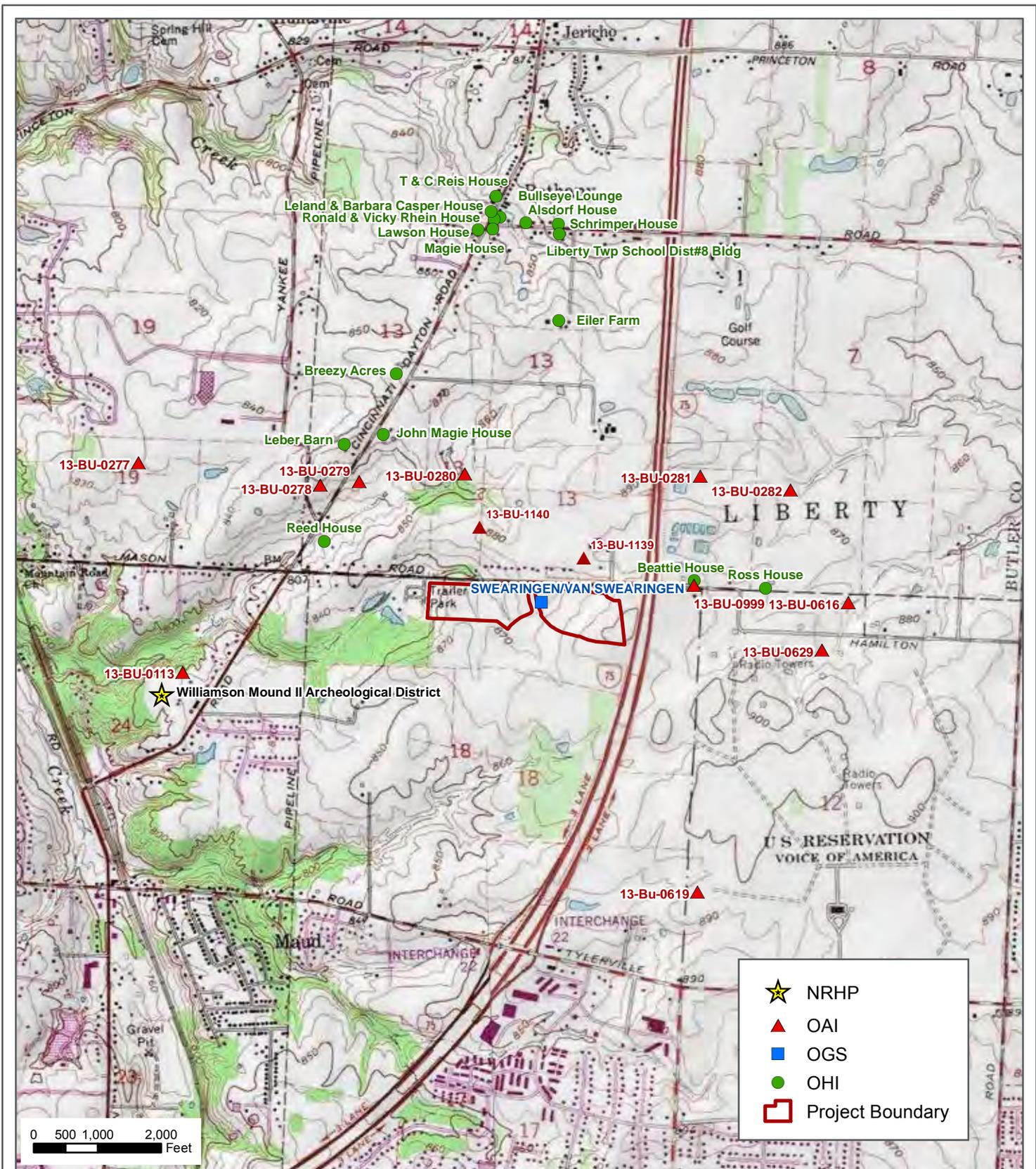


Figure 2-1:
 Previously Identified Cultural Resources
 Liberty South Development
 Phase I Archaeological Reconnaissance
 Libertytown LLC
 West ChesterTwp., Butler County, Ohio



11121 Canal Road, Cincinnati, OH 45241 USA
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Township: 3 E
 Range: 2 N
 Section: 18
 Project No. 1308018

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Table 2-2 Previously Recorded Historic Structures within the Study Area

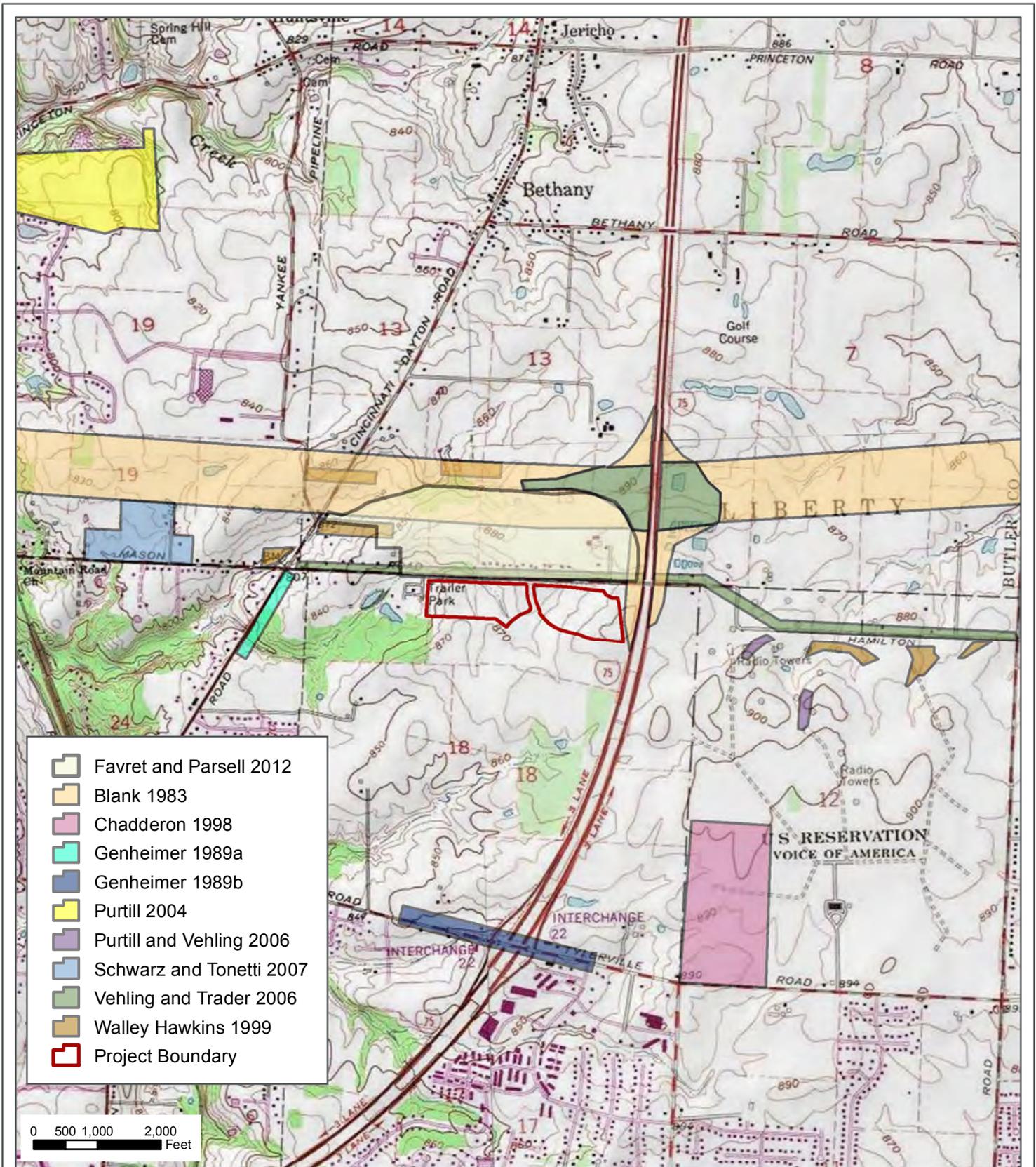
OHI Number	Description	Historic Use
BUT0109413	Eiler Farm	Single Dwelling
BUT0110113	Beattie House	Single Dwelling
BUT0110213	Ross House	Single Dwelling
BUT0115313	Breezy Acres	Single Dwelling
BUT0115413	John Magie House	Single Dwelling
BUT0115513	Leber Barn	Barn
BUT0115613	Reed House	Single Dwelling
BUT0115213	Lawson House	Single Dwelling
BUT0114913	Ronald & Vicky Rhein House	Single Dwelling
BUT115013	Leland & Barbara Casper House	Single Dwelling
BUT0114713	T & C Reis House	Single Dwelling
BUT0114813	Bullseye Lounge	Single Dwelling
BUT0109113	Alsdorf House	Single Dwelling
BUT0709213	Schrimper House	Single Dwelling
BUT0109313	Liberty Township School #8	School
BUT0115113	Magie House	Single Dwelling

2.1.5 Ohio Genealogical Society (OGS)

The OGS lists one (1) cemetery within the project area. According to the OGS, the Swearingen/Van Swearingen Cemetery is located in the east half of Section 18, Township 3 East, Range 2 North on the Mason, Ohio, 15' USGS quadrangle map. The Ohio Historic Preservation Office (OHPO) plotted the cemetery based on information provided by the OGS, placing this cemetery within the boundaries of the project area, located to the east of Tylers Place Road (Figure 2-1). OGS listed cemeteries are plotted based on information provided in *Ohio Cemeteries: 1803-2003* (Troutman 2003). For cemeteries that could not be located with a certainty, a point was created in the general area described by Troutman (2003) (Kyle Smith, Personal Communication). The Swearingen/Van Swearingen Cemetery was plotted with a "0" location confidence since the specific location was not certain (Kyle Smith, Personal Communication). According to the Butler County Genealogical Society, John Swearingen and the Reverend James Grimes were buried on the Swearingen Farm, thought to be located in Section 18, Township 3 East, Range 2 North (Pam White, Personal Communication). None of the historic maps and atlases examined show a cemetery located within the project area.

2.1.6 Mills' (1914) Archaeological Atlas of Ohio

In the *Archaeological Atlas of Ohio*, Mills (1914) lists a total of 251 prehistoric sites in Butler County including mounds, enclosures, villages, burials, and cemeteries. Mills states "Butler is one of the richest counties, archaeologically speaking, in Ohio, particularly the number of mounds" (1914:9). The most notable of these sites is the Williamson Mound District. While this large site lies well outside the project area, it indicates significant prehistoric activity in the local region. Further research indicates that several prehistoric sites are located in Butler County, including villages, mounds, effigies, burials and enclosures



-  Favret and Parsell 2012
-  Blank 1983
-  Chadderon 1998
-  Genheimer 1989a
-  Genheimer 1989b
-  Purtil 2004
-  Purtil and Vehling 2006
-  Schwarz and Tonetti 2007
-  Vehling and Trader 2006
-  Walley Hawkins 1999
-  Project Boundary

0 500 1,000 2,000
Feet


 Township: 3 E
 Range: 2 N
 Section: 18
 Project No. 1308018

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Figure 2-2:
Previous Cultural Resource Surveys
Liberty South Development
Phase I Archaeological Reconnaissance
Libertytown LLC
West Chester Twp., Butler County, Ohio



11121 Canal Road, Cincinnati, OH 45241 USA
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 www.cardnojfnew.com

or earthworks. There are no archaeological sites depicted within the proposed project area (Appendix A, Figure A1).

2.1.7 Cultural Resource Management (CRM) Reports

The literature review indicated that numerous cultural resources investigations have occurred in the 1.6 kilometer (1 mile) study area. Additionally one (1) previous cultural resources investigation has occurred within or adjacent to the project area (Figure 2-2).

Ten previous cultural resources investigations have occurred within the 1.6 kilometer (1 mile) study area.

In 1983, a Phase I archaeological investigation was completed for the proposed State Route 129 by the Cultural Resources Research Laboratory at Cleveland State University (CSU) (Blank 1983). CSU identified a total of 18 previously unknown archaeological sites, none of which are located within the current project boundaries. Of the 18 sites identified, the author recommended further investigations for eight and no further investigations for the remaining archaeological sites identified (Blank 1983).

In 1989, R.G. Archaeological Services, Inc. conducted an archaeological assessment of three bridge replacement projects and the Cincinnati-Dayton Road improvement project in Butler County, Ohio (Genheimer 1989a). No archaeological materials were recovered and no additional archaeological work was recommended (Genheimer 1989a).

Also in 1989, R.G. Archaeological Services, Inc. conducted an archaeological assessment of the Tylersville Road Bridge replacement project in Union Township, Butler County, Ohio (Genheimer 1989b). The majority of impacts were limited to previously disturbed areas (Genheimer 1989b). No archaeological materials were recovered and no additional archaeological work was recommended (Genheimer 1989b).

In 1998, Louis Berger and Associates conducted a Phase Ib archaeological survey of a 30 hectare (75 acre) parcel on the site of the Voice of America Bethany Relay Station in Butler County (Chadderdon 1998). The investigation identified three new archaeological sites: 33-Bu-617, 33-Bu-618, and 33-Bu-619 (Chadderdon 1998). Site 33-Bu-617 is a historic farmstead that was razed in 1958 (Chadderdon 1998). Site 33-Bu-618 is an unidentified prehistoric lithic isolate (Chadderdon 1998). Site 33-Bu-619 is a prehistoric camp site (Chadderdon 1998). None of the three sites are eligible for listing in the NRHP, and no further work was recommended (Chadderdon 1998).

In 1998, Algonquin Consultants conducted Phase I archaeological surveys in several project areas that were scheduled to be disturbed during construction of the Butler Regional Highway (SR 129) (Walley and Hawkins 1999). The authors identified a total of three (3) new archaeological sites, none of which occur in the current project boundaries (Walley and Hawkins 1999).

In 2004, Gray & Pape conducted a Phase I cultural resources survey for a proposed 54 acre recreational park situated off Wilhelmina Drive in Liberty Township, Butler County, Ohio (Purtill 2004). No new archaeological sites were identified during the investigation, and no further work was recommended (Purtill 2004).

In 2006, Gray & Pape conducted a Phase I cultural resources survey for the proposed Ronald Regan Voice of Freedom Park Access Road and Parking Facility (PID No. 81186) (Purtill and Vehling 2006). No new archaeological sites were identified during the investigation and no further work was recommended (Purtill and Vehling 2006).

In 2007, the ASC Group, Inc. (ASC) conducted a Phase I archaeological reconnaissance for the planned Liberty Office Park in Liberty Township, Butler County, Ohio (Schwarz and Tonetti 2007). ASC investigated approximately 7.39 hectares (18.27 acres), and only identified an historic field scatter (Schwarz and Tonetti 2007). No prehistoric artifacts or features were observed during this investigation (Schwarz and Tonetti 2007). No additional archaeological work was recommended (Schwarz and Tonetti 2007).

In 2012, Cardno JFNew conducted a Phase I archaeological reconnaissance for the proposed Liberty Town Square development project along the north side of Liberty Way in the City of West Chester, Butler County, Ohio (Favret and Parsell 2012). Two (2) prehistoric lithic isolate sites were identified during the investigation. Sites 33-Bu-1139 and 33-Bu-1140 do not meet eligibility criteria for listing in the NRHP and no further archaeological work was recommended (Favret and Parsell 2012).

Additionally one (1) cultural resources investigation has occurred within or adjacent to the project area. This investigation was related to improvements after the construction of State Route 129. In 2006, Gray & Pape conducted a Phase I archaeological reconnaissance for proposed I-75 SR 129 interchange improvements (Vehling and Trader 2006). Portions of the 2006 investigation overlap the northern and eastern boundaries of the current proposed project (Figure 2-2). According to the authors, much of the area investigated was located within existing right-of-way or in previously disturbed areas. Three (3) previously unknown sites were identified as a result of the survey: 33-Bu-997, 33-Bu-998 and 33-Bu-999. Site 33-Bu-997 is a multicomponent prehistoric lithic scatter and a historic artifact scatter. Sites 33-Bu-998 and 33-Bu-999 consist of the remains of historic homesteads. None of these sites meet the criteria for inclusion in the NRHP, and no further work was recommended (Vehling and Trader 2006). Additionally, none of these sites occur within the current project boundaries. Gray & Pape also tried to relocate archaeological site 33-Bu-629, but were unsuccessful (Vehling and Trader 2006).

2.1.8 Historic Maps and Atlases

Cardno JFNew also examined county atlases, plat maps and local histories during the literature review. These documents depict early patterns of land use for a given area, helping to shed light on previous geographical distributions of farmsteads, industries, cemeteries and other structural elements of human occupation. The 1836 Butler County, Union Township Atlas (McBride 1836) does not depict any structures within the project area (Appendix A, Figure A2). The 1875 Butler County, Union Township Atlas shows one (1) structure located in the southwestern portion of the project area as well as two (2) orchards located in the central portion of the project area (Everts 1875) (Appendix A, Figure A3). The 1875 Atlas of Butler County, Liberty Township atlas depicts the property of John Swearingen in Sections 9 and 15, Township 3 East, Range 3 North (Appendix A, Figure A4). The 1895 Butler County atlas does not depict structures (Rerick Brothers 1895) (Appendix A, Figure A5). The 1906 Mason OH 15' USGS Quadrangle map shows one (1) building located near the center of the project area as well as a structure in the location of the one depicted in 1875 (Appendix A, Figure A6). Both structures shown on the 1906 USGS quadrangle map are within or adjacent to the project area. The 1914 Butler County, Union Township atlas only depicts the structure located in the southwest portion of the project area also depicted in 1875 and 1906 (Republican 1914). Additionally, the orchards shown in 1875 within the project area are no longer depicted (Republican 1914) (Appendix A, Figure A7).

2.2 Environmental Context

Butler County lies in the Interior Low Plateau physiographic province. This province is characterized by structural and sedimentary basins, domes, and arches, including the Cincinnati Arch (USDA/SCS 1980). Butler County has been greatly influenced by glaciation and is at the southern edge of all the glaciers that have covered Ohio, including the Illinoian (1,000,000-300,000 B.P.) and Wisconsin (101,000-10,000 B.P.) glacial ages (USDA/SCS 1980). Illinoian glaciers smoothed and deepened existing valleys and advancing Wisconsin glacial till filled the valleys with gravel, sand, silt and clay (glacial till). Ordovician limestone and shale underlies the glacial till plain, and is exposed in some valley walls. This occurred when down cutting streams and erosion removed the overriding glacial layers. The Ordovician bedrock contains layers of calcareous shale and fossiliferous limestone (USDA/SCS 1980).

Butler County, the western half of Warren, and a small part of northern Hamilton counties are characterized by glacial till – high lime, late Wisconsin glacial till with well-developed drainage network and fertile soils (OKI 2011:2-19). Before settlement, the region flourished in beech forests and elm/ash

swamp forests. Oak/sugar maple forests were also present (OKI 2011:2-19). The forests have been replaced by corn, soybean, wheat, livestock and dairy farming on artificially drained clayey soils (OKI 2011:2-19).

Soils in Butler County mostly formed in the glacial materials that cover the bedrock shale and limestone (USDA/SCS 1980). Because the glacial materials were carried only short distances, the developed soils mostly reflect the underlying limestone bedrock (USDA/SCS 1980). Parent material for soils in Butler County include glacial drift, weathered shale and limestone bedrock, loess, lacustrine deposits and alluvium of all these materials (USDA/SCS 1980).

The project area is located in the Wynn-Eden soil association. This consists of “moderately deep, gently sloping to very steep, well drained soils that have a fine or moderately fine textured subsoil; formed in glacial till and residuum from shale and limestone” (USDA/SCS 1980). Several soil types are present within the project area (Table 2-3).

Table 2-3 Soils within the Project Area

Soil Abbreviation	Description	Hydric Rating
DaB	Dana silt loam, 2 to 6 percent slopes	Not Hydric
FdB	Fincastle silt loam, bedrock substratum, 2 to 6 percent slopes	Unknown
Gn	Genesee loam	Unknown
Ra	Ragsdale silty clay loam	Partially Hydric
RwB	Russell-Miamian silt loams, bedrock substratum, 2 to 6 percent slopes	Unknown
WyC2	Wynn silt loam, 6 to 12 percent slopes, moderately eroded	Not Hydric
XeB	Xenia silt loam, 2 to 6 percent slopes	Partially Hydric
XfB2	Xenia silt loam, bedrock substratum, 2 to 6 percent slopes, moderately eroded	Partially Hydric

2.2.1 Climate

The climate in Butler County is characterized by cold and cloudy winters (average temperature of 33 degrees Fahrenheit [0.55 degrees Celsius]) and hot and humid summers (average temperature of 74 degrees Fahrenheit [23 degrees Celsius]) (USDA/SCS 1980). Average annual precipitation (53.35 centimeters [21 inches]) peaks between April and September (USDA/SCS 1980).

2.3 Prehistoric Cultural Setting

The prehistoric occupation of Ohio is generally divided into three broad periods; Paleoindian, Archaic, and Woodland. The Paleoindian period encompasses the cultural remains of the earliest recorded occupations of the region, after about 13,000 years before present day (B.P.), shortly following the retreat of the last glaciers to cover the land. The Archaic is identified by archaeologists as the period when settlements organized around local environmental resources which replaced the broad seasonal migration patterns of the Paleoindian period. Wide exchange of materials, the innovation of ceramic technology, the emergence of domesticated crops and animals, and an increasing shift toward permanent

settlements generally identify the transition to the Woodland time period. This section will outline each of these broad time periods including smaller divisions within each.

2.3.1 Paleoindian Period (ca. 13,000 – 10,000 B.P.)

Paleoindians were nomadic groups comprised of small kin-based bands that primarily practiced a foraging subsistence strategy. Current research suggests that these Paleoindian bands moved within a circumscribed geographic range to intercept large herd animals during their migratory cycles (Gramly 1988; Stothers 1996). Over time, the focus likely shifted from large-scale hunting expeditions to a more regular procurement of game accompanied by a decrease in the overall size of territory exploited by these groups.

Paleoindian sites are most easily recognized in the archaeological record by the presence of lanceolate spear points. These points may be fluted (a large flake removed from each side of the base) or unfluted. Early Paleoindian projectile points are often made of high quality materials, usually from a widely dispersed area, which suggest a high level of mobility. Later Paleoindian points are more often made from local chert types, which may reflect a reduction in this mobility.

Documented archaeological sites dating to this time period are relatively rare in this part of state. The Ohio Archaeological Inventory lists only five sites dating to this period in Butler County.

2.3.2 The Archaic Period (10,000 – 2,500 B.P.)

2.3.2.1 *Early Archaic (10,000 – 8,000 B.P.)*

The Early Archaic time period is often identified in the archaeological record by the transition from large, lanceolate bifaces of Paleoindian assemblages, to smaller, notched and bifurcated bifaces. Groundstone tools and other lithic tools such as graters, scrapers, and notched knives are also observed in the Early Archaic. Local cherts appear in the archaeological record as a common resource. Early Archaic subsistence strategies continued the focus on large migrating Pleistocene herd animals, but Early Archaic groups also began to exploit more local environmental resources including smaller game animals. Early Archaic artifacts tend to display more diversity in style and function, which also may reflect diversity in resource exploitation.

2.3.2.2 *Middle Archaic Period (8,000 – 5,000 B.P.)*

Archaeologists observe little change between the Early and Middle Archaic periods. The Middle Archaic period is reflected by changes in projectile point and blade types, but these variations are more prominent in southern portions of the U.S., and are not evident in southern Ohio (Vickery and Litfin 1992). The Middle Archaic may be described simply as a transitional period between the Early and Late Archaic periods.

2.3.2.3 *Late Archaic Period (5,000 – 2,500 B.P.)*

Archaeologists characterize the Late Archaic as having an increased focus on regional mobility patterns, as well as an increase in resource diversity. Late Archaic groups incorporated plants into a larger part of their subsistence strategy. Late Archaic sites often represent repeated occupation over a long period of time, which suggests a regular, more localized pattern of movement across the landscape. Projectile points and other lithic tools also show an increase in variation. Small side-notched and corner-notched points and side and end scrapers appear frequently in Late Archaic assemblages. Groundstone tools are also increasingly evident. Pottery begins to appear in the transition between the Late Archaic and Early Woodland periods.

2.3.3 The Woodland Period (2,500 – 500 B.P.)

Populations in the Woodland period tended to be broad spectrum hunter-gatherers, living in semi-sedentary occupations made up of small groups, likely based on kinship. These occupations were typically located around riverine environments and organized around communal burials. Innovations such as a more intensive reliance on pottery, horticulture, and the bow and arrow also occur during the Woodland time period.

2.3.3.1 *Early Woodland Period (2,500 – 1,900 B.P.)*

The Early Woodland period marks the transition from the more nomadic Archaic subsistence strategy to a more localized, semi-sedentary subsistence strategy. The Adena culture is representative of the Early Woodland period in southern Ohio. Cultural material associated with the Adena are stemmed projectile points with weak shoulders, ceramic vessels with flat bottoms and lug handles, drills, scrapers, and a variety of ornamental and ceremonial materials (Tuck 1978). The earliest earthworks and burial mounds in southern Ohio are attributed to the Adena. These earthworks were often constructed over another structure, indicated by the presence of post-hole features. Burials are often associated with a variety of exotic materials, such as cut mica, copper, beads, gorgets, and shell. It is important to note, however, that “Adena”, like “Hopewell” in the Middle Woodland, refers more to a pattern of mortuary practices and exchange of goods, rather than to a discrete group of peoples.

2.3.3.2 *The Middle Woodland Period (1,900 – 1,400 B.P.)*

Archaeologists generally describe the Middle Woodland period in Ohio as the period associated with the development of the Hopewell culture. The subsistence strategy was organized around a seasonal pattern of resource procurement and an increasing reliance on horticulture. The Middle Woodland period saw a continued increase in population and social organization, reflected in the numerous earthworks constructed in this period. These earthworks, often constructed in geometric figures, may have represented ceremonial centers suggesting that populations may have been organized at some larger scale. The prehistoric trade of exotic materials also reached a high during the Middle Woodland as populations within the “Hopewell Interaction Sphere” traded materials from as far away as the Upper Peninsula of Michigan (copper), the Gulf Coast (shell and shark teeth), and the Carolinas (mica). It is likely that the Hopewell Interaction Sphere represents a broad but loosely organized pattern of exchange rather than a well-defined system of trade (Pacheco 1996). While pottery tends to be more utilitarian in nature, vessels with an engraved duck motif appear in funerary contexts. In general Middle Woodland vessels have thinner walls than earlier ceramics.

2.3.3.3 *The Late Woodland/Late Prehistoric Period (1,400 – 1,000 B.P.)*

A significant reduction in the extensive, extra-regional trade of exotic goods and materials marks the Late Woodland period. The construction of large ceremonial earthworks also ends in the Late Woodland, as there is a shift in mortuary practices to interring burials into existing, older mounds or small stone mounds. Isolated, individual burials are also observed. This period also is characterized by an increasingly sedentary residential pattern of large nucleated villages supported by a growing reliance on maize and other cultigens as a substantial part of the Late Woodland diet. Palisades or ditches were sometimes constructed around these villages. This need for defensive structures suggests an increasing instability at times. Resource diversity also continued to increase although reliance on aquatic resources was less pronounced in southern Ohio than in other areas of the Midwest. The deeply dissected drainages of southern Ohio do not produce the oxbow pond or lake features as seen in the Mississippi, Missouri, or Illinois River valleys (Seeman and Dancey 2000). The Late Woodland artifacts include small triangular points, scrapers, mortars and pestles, celts, and hoes. A distinct technological innovation of the period was the use of earthen ovens for steaming or baking food (Seeman and Dancey 2000). Pottery in the early portion of the Late Woodland exhibits thick angular shoulders (Newtown shoulder) and contrasts

with Middle Woodland containers (Seeman and Dancey 2000). The bow and arrow became prevalent, though likely in the later portion of the Late Woodland.

2.3.3.4 Fort Ancient (1,000 B.P. – contact)

In southwest Ohio, archaeologists have described a settlement system marked by sedentary villages located along floodplains, with smaller resource-specific occupations in the uplands and lowlands (Pollack and Henderson 2000). The Fort Ancient period has been described as an *in situ* development from Late Woodland groups in the Ohio valley, extending into in southeastern Indiana, northern Kentucky, southern Ohio, and eastern West Virginia (Drooker 1997). Fort Ancient is seen to be The Mississippian influence is evident in designs and forms in locally available materials such as spatula shaped celts, triangular projectile points, and the falcon motif. Fort Ancient villages are typically located along the Ohio River and its major tributaries. In the late pre-contact period, the majority of settlements were located within 20 kilometers (12.4 miles) of the Ohio River (Drooker 1997). Many of these villages are organized around a central plaza and some were surrounded by palisades. Structures varied in size from as small as 10 square meters (107 square feet) to as large as 180 square meters (1,930 square feet) (Drooker 1997). Semi-subterranean pit houses provided cooler temperatures in the summer and warmer temperatures in the winter. Storage pits also became more extensive, with some measuring 1 meter (3.4 feet) in diameter and 2 meters (6.5 feet) in depth, capable of storing over 45 bushels of shelled corn (Cowan 1987).

Use of burial mounds declines after approximately 700 B.P. as people began interring their deceased in the villages around plazas as well as in and around houses. Funerary items include pots and pipes, but more exotic materials such as marine shell also are seen. The presence of marine shell and other engraved Mississippian goods along with the location of Fort Ancient groups along the Ohio River suggest some level of regional interaction. The late pre-contact period, however, is characterized by more concentrated settlement locations and more intraregional similarities in goods such as ceramics.

By the later part of the Fort Ancient period (post 1400 A.D.) most settlements were located within 20 kilometers of the Ohio River and appear to represent a collection of formerly dispersed groups (Drooker and Cowan 2001). This period also includes increased intra and extra-regional interaction among eastern and western populations (Drooker and Cowan 2001). The mid-sixteenth century marks the beginning of the Protohistoric period, when European goods begin to arrive in the region, but before many European records are being kept.

One of the most prominent sites in the area dating to the Fort Ancient period is the Fort Ancient Enclosure site located in Warren County, to the east of the project area.

2.4 Historic Cultural Setting

The establishment of Detroit ca. 1701 as a major center for fur trade and as the seat of European political and military power in the region led to an increase of non-Native people and a resurgence of Native Americans in the Ohio area throughout the eighteenth century (Pratt 1977). During the late eighteenth century, the British supported Native Americans to resist further U.S. settlement in the area. In 1786, General George Rogers Clark, General Richard Butler, and Samuel Parsons signed a treaty with the Delawares, Wyandots, and Shawnees at the mouth of the Great Miami River (Beers 1882). This treaty ceded the area to the United States. However, ongoing conflicts greatly slowed Euro-American settlement of the area for several years.

In 1783, the State of Virginia ceded its holdings northwest of the Ohio River for the purpose of creating new states (Beers 1882). The 6,570 acre tract set aside for Virginian Revolutionary War soldiers was between the Scioto and Little Miami Rivers was called the Virginia Military Tract. Those people who were permitted to settle the Virginia Military Tract were allowed to choose any place and shape of parcel as long as they respected the boundaries of previous settlers (Beers 1882). The consequence of this rule was a series of oddly shaped parcels and the constant potential for litigation.

2.4.1 Butler County

Butler County was founded in 1803 and is named after revolutionary war hero Richard Butler, who died during St. Clair's defeat in 1791 (Western Biographical Publishing Company 1882). It was one of the first twelve counties formed in the new State of Ohio from a portion of what had been Hamilton County. Settlement in Butler County began in the 1790s, with the construction of Fort Hamilton on the Miami River (Bauer and McNutt 2006). Hamilton is the county seat, and is also the largest city in the county. West Chester Township was known as Union Township until 2000. West Chester (Union) Township was created in 1823 and was the last township created in the county. The name was changed by township voters in 2000 to distinguish it from other "Union Townships" within the state of Ohio. Currently, it is the only West Chester Township in Ohio. Today Butler County holds approximately 333,000 residents, and of those, 57,000 live in West Chester Township. Butler County has recently seen a population increase, and many residents commute to Cincinnati, though the county is also home to multiple manufacturing industries (Ohio History Central 2005).

2.5 Summary and Discussion

The project area is located in an area containing active and fallow agricultural fields, modern commercial and residential development, and woodlots. Recent light industrial/commercial development borders the project limits to the south, east and west.

3 Methods

This section describes the regulations and guidelines governing archaeological fieldwork as well as the research design, field methods, and laboratory methods employed during the Phase I survey. The objective of the Phase I was to identify cultural resources that may be affected by the proposed project.

3.1 Applicable Regulations and Guidelines

Section 106 of the National Historic Preservation Act (NHPA) requires that federal agencies assess the effect of their projects on cultural resources eligible for listing in the National Register of Historic Places (NRHP). While no specific federal agency is responsible for this review, Section 106 of the NHPA applies to any federal agency undertaking that has the potential to affect cultural resources eligible for listing in the NRHP, should they be present. This federal agency action may include permitting, funding, or other approval of project activities.

Section 106 of the NHPA requires that the federal agency assess effects of their undertakings in areas where the effects are likely to occur, known as the Area of Potential Effects (APE). The APE for direct effects is limited to the areas of likely ground disturbance in the planned area of improvements and in associated easements. Direct effects in these areas may affect archaeological or architectural resources, if present. The APE for indirect effects includes areas where visual, noise, or other effects caused by the project occur outside the footprint of the project area. Indirect effects may affect architectural resources, certain types of archaeological resources, or other cultural resources, if present.

3.2 Research Design

Cardno JFNew based the research design on the results of the records check, environmental data, and the prehistoric and historic cultural background information. Based on the prehistoric context of the area and the results of previous cultural resource investigations, we anticipated unidentified prehistoric sites may be located in or near the project area and may represent a variety of time periods ranging from prehistoric Paleoindian period sites through contact period Native American sites. These sites may represent a variety of site types including isolated artifacts to larger occupational sites. The proximity of the project area to the Miami River, along with the presence of several small tributaries within the project area, is a further indicator that unidentified archaeological deposits may be located in the project area.

Previously recorded archaeological sites in this part of Butler County represent two general site types, earthworks/mounds and small, low density sites. The earthworks/mounds include the Williamson Mound complex. These sites lie well outside the project limits and are unlikely to be affected by the proposed project. Nevertheless, they convey the significant level of prehistoric activity that has occurred in this part of Butler County.

Other previously recorded archaeological sites in the study area represent small archaeological sites with few artifacts, suggesting limited, short-term but repeated use of the landscape. Terrace remnants, hill and ridge features and glacial moraines, particularly in association with drainages or other water sources, are local landforms likely to contain archaeological deposits.

Unidentified historic archaeological resources are likely to relate to agricultural and/or rural domestic activities associated with the historic occupation of Butler County. Some common site types that may be represented include farmsteads or other residential sites, municipal buildings such as schools or churches, commercial elements such as mills, or historic dump and debris discard areas. Cemeteries are also common historic resources in rural areas.

Historic sites tend to occur in conjunction with transportation features such as drainages, railroads, and roads. In addition to the above historic site types, the OGS list indicates the Swearingen/Van Swearingen cemetery may be located within the project limits. Additional unidentified plots may persist in or near the project.

The OHI lists 16 historic structures within the study area. All of the previously identified historic structures are well outside the project area and will not be affected by the proposed project. The 1836 Butler County, Union Township Atlas (McBride 1836) does not depict any structures within the project area; however, the 1875 Butler County, Union Township, 1906 Mason OH 15' USGS Quadrangle map, and the 1914 Butler County, Union Township atlas (Republican 1914) show one structure in the southwestern portion of the project area (Appendix A, Figures 2 through 5). An additional structure is depicted on the 1906 Mason Oh 15' USGS quadrangle map near the center of the project area (Appendix A, Figure A3).

In summary, the records check revealed that while no archaeological sites have been identified in the Liberty South Development project area, numerous archaeological sites have been recorded near the project area in similar settings. This suggests a higher likelihood that cultural resources will be located within the Liberty South Development project area. The project is located near the Miami River in a mixed residential and rural area where moderate modern development has occurred adjacent to the project area, and the terrain is undulating with small streams, wetlands, and drainages located throughout. The presence of small natural topographic rises in proximity to water, as well as the semi-rural nature of the project area, suggests a moderate probability that unidentified cultural resources are located in the project area. In addition, this type of setting suggests that there is moderate likelihood that a newly identified site will contain elements that could make it eligible for listing in the National Register of Historic Places.

3.3 Field Methods

Cardno JFNew conducted the archaeological fieldwork using methods consistent with the OHPO guidelines. The project area consists of fallow agricultural fields, woodlots, and NWI listed wetlands.

In areas with less than 50 percent surface visibility, Cardno JFNew conducted systematic shovel probe excavation. Shovel probes were excavated in transects spaced at 15-meter (49.2-foot) intervals. Adherence to these intervals was maintained as closely as possible, although shovel test units were occasionally offset due to the presence of trees, roots, and thickets. Additionally, areas that were not testable due to water inundation were noted but not subjected to shovel test excavation. Pursuant to OHPO Guidelines, shovel tests were 50 centimeter (19.6 inches) square units and extended into undisturbed soils. Soils removed from the units were screened for cultural materials through ¼ inch hardware mesh and immediately backfilled. The crew documented and characterized soil stratigraphy according to the Munsell color guide (Munsell 1994). Shovel test units that exhibited disturbance such as mixed and mottled "A" and "B" horizons or subsoil present at the ground surface were noted, but not fully excavated. Shovel tests located in wet soils were treated in the same fashion.

Additional portions of the project area were sloped over 25 percent grade; therefore Cardno JFNew conducted visual inspection in these areas by walking adjacent to the project area and documenting the conditions.

At the time of survey the project area consisted of approximately 14.85 hectares (36.7 acres) of fallow agricultural fields, a woodlot measuring approximately 0.5 hectares (1.3 acres), an NWI listed wetland measuring approximately 0.53 hectares (1.31 acres), and a fill lot measuring approximately 0.68 hectare (1.69 acres). Cardno JFNew conducted the archaeological fieldwork using methods consistent with the OHPO guidelines.

Cardno JFNew documented areas of disturbed, hydric or eroded soils in portions of the woodlot and residential lots, but did not subject these soils to further examination.

Archaeologists took photographs and recorded the relevant landscape features with a GPS unit capable of sub-meter accuracy. Staff also documented conditions during the Phase I with field notes and took photographs depicting the general setting in and around the project location.

3.4 Laboratory Methods

No archaeological sites were identified and no artifacts were collected, thus no discussion of laboratory methods is necessary.

3.5 Summary

This section outlined the field and laboratory methods used during the Phase I investigation. With the discussion of these methods in place, this report will now present the results of the Phase I survey in Section 4.0.

4 Results

The current Phase I survey examined approximately 13.6 hectares (33.6 acres) within the Liberty South Development project area on September 3, 2013. The project area consisted of approximately 14.85 hectares (36.7 acres) of fallow agricultural fields, a woodlot measuring approximately 0.5 hectares (1.3 acres), an NWI listed wetland measuring approximately 0.37 hectare (0.91 acres), and a fill lot measuring approximately 0.68 hectare (1.69 acres) (Figure 4-1). Ground surface visibility was zero to 30 percent. Fieldwork consisted of shovel test excavations across the fallow agricultural fields and in the woodlot of the project area and visual inspection within the wetland and fill area. Photographs of the field investigation are included in Appendix C.

4.1 Fieldwork Results

The fallow agricultural fields and woodlots within the project area were subjected to shovel test excavations. No prehistoric or historic archaeological materials were recovered from the shovel test excavations. A modern debris discard area was noted in the north-central portion of the project area. Additionally, construction fill is located at the north-west corner of the intersection of Tylers Place Road and Liberty Way. Due to the large fill disposal at this location, there was no indication of the presence of any cultural resources, including the Swearingen/Van Swearingen Cemetery on the surface (Appendix B Photographs 8 through 10). None of the historic structures depicted within the project area were identified during the field reconnaissance.

The project area has undergone extensive disturbance likely associated with the construction of the Preserve at Wetherington subdivision immediately south of the western half of the project area, as well as the road improvement project on Liberty Way (formerly Hamilton-Mason Road), which borders the project area to the north. No evidence of archaeological sites was observed within the project area.

4.1.1 Swearingen/Van Swearingen Cemetery

According to the OGS, the Swearingen/Van Swearingen Cemetery is located in the east half of Section 18, Township 3, Range 2 North on the Mason, Ohio, 15' USGS quadrangle map. The OHPO plotted this cemetery based on information provided by the OGS, placing this cemetery within the project boundaries, east of Tylers Place Road (See Appendix A, Figure A6).

Genealogical and archival research indicates, however, that the cemetery known as Swearingen/Van Swearingen may not be plotted accurately. The book *A History and Biographical Cyclopedia of Butler County, Ohio* indicates that Isaac Swearingen, the first member of the Swearingen family to arrive in Ohio, "squatted in Union Township" (Western Biographical Publishing Co. [WBPC] 1882). His brother, John followed in 1803 and purchased the property on which Isaac squatted, which included "98 acres of land, where he settled and lived till the day of his death" (WBPC 1882). At the time of the writing of *A History and Biographical Cyclopedia of Butler County, Ohio*, John Swearingen owned 50 acres, lived in a house built in 1820, and the property included the grave of Reverend James Grimes, "a missionary to the Indians" (Western Publishing Company 1882). According to the 1836 Butler County Atlas, Isaac Swearingen is the land owner of approximately 32.37 hectares (80 acres) in the NE ¼ of Section 18, Township 3 East, Range 2 North on the Mason, Ohio, 15' USGS quadrangle map. It is possible that this is the property Isaac Swearingen "squatted" on upon his arrival to Butler County. However, by 1875, John Swearingen is noted as the owner of approximately 114.12 hectares (282 acres) north of the project area in Liberty Township. This property is located in the south half of Sections 9 and 15, Township 3 East Range 3 North. Further, the property located within the project area, in Section 18, Township 3 East Range 2 North is owned by W. Swearingen in 1875, and has been reduced to 20.03 hectares (49.5 acres). The John Swearingen property is approximately 3.5 kilometers (2.2 miles) north of the W. Swearingen property located within the project area (See Appendix A, Figure A4). In addition, according to the Butler County Genealogical Society (BCOGS), John Swearingen and the Reverend James Grimes

were buried on the Swearingen Farm, thought to be located in Section 18, Township 3 East, Range 2 North (Pam White, Personal Communication).

Additional archival research revealed that the Rev. Grimes is not buried on any Swearingen property. Rev. Grimes is buried in the Middletown Historic Pioneer Cemetery, in the City of Middletown, approximately 13 kilometers (8.17 miles) northwest of the John Swearingen property (Butler County Ohio Roots Web 2010) (Plate 1).



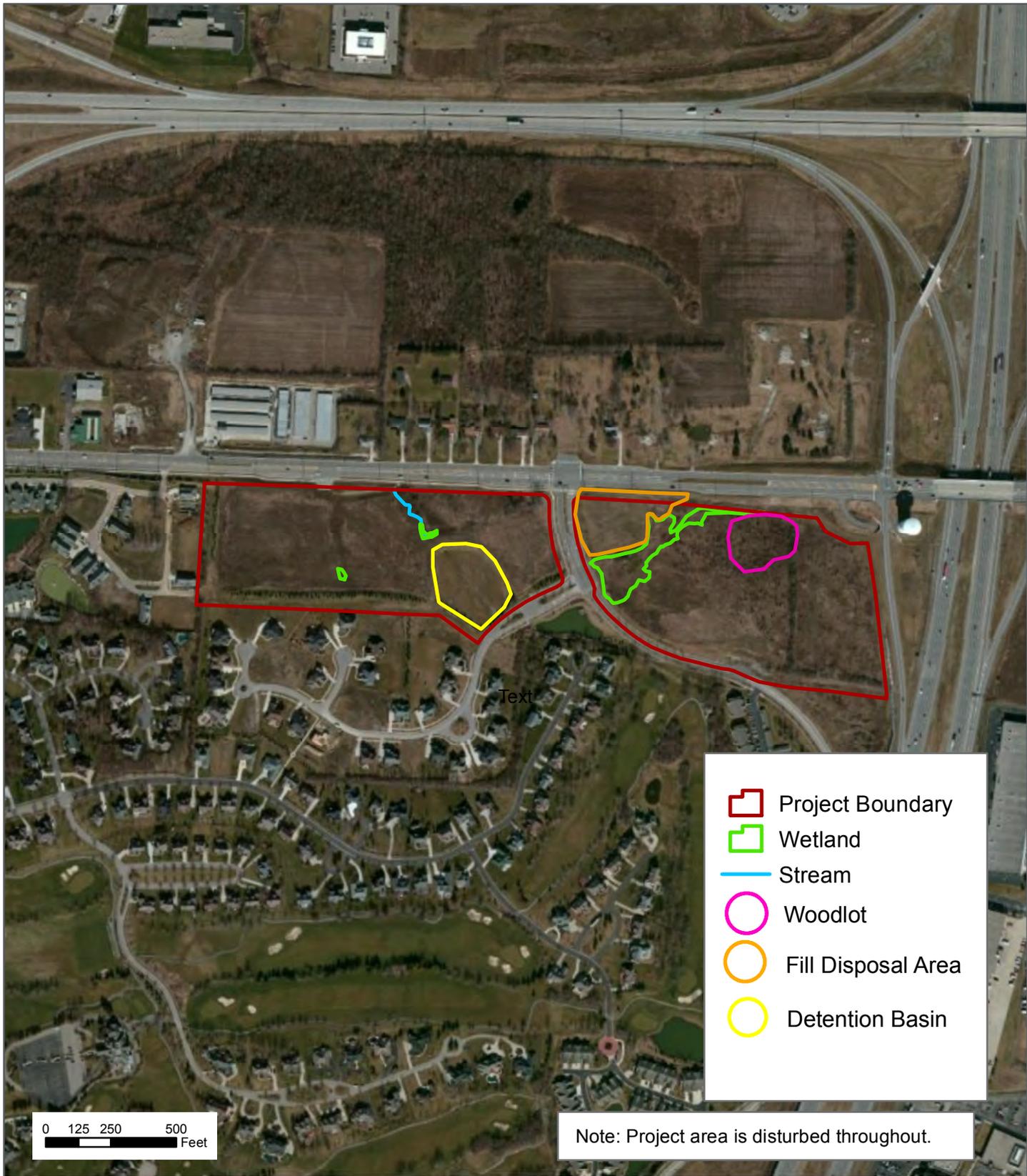
Plate 1. Grave Maker of Reverend James Grimes. Middletown Historic Pioneer Cemetery. Middletown, Ohio.

Unfortunately, no indication of the burial location of John Swearingen has been located at the time of this writing. Thus, it is possible he is still buried on his property; however, the John Swearingen property is located approximately 3.5 kilometers (2.2 miles) north of the project area. Isaac Swearingen, the owner of the property within the project area in 1836, eventually relocated to Indiana, where he died and was buried at the Conwell Cemetery in Laurel, Franklin County, Indiana (Creamer 2009) (Plate 2).



Plate 2. Graver Marker of Isaac Swearingen. Conwell Cemetery.
Laurel, Indiana.

Field reconnaissance revealed the portion of the project area previously owned by Isaac Swearingen is currently covered with approximately 2.4 to 3.6 meters (8 to 12 feet) of fill, likely associated with the road improvement project of Liberty Way (formerly Hamilton-Mason Road), which makes up the northern boundary of the project area. A shovel test in the approximate location of the OHPO coordinates for the Swearingen/Van Swearingen Cemetery confirmed construction fill is present to at least 50 centimeters (20 inches). Visual inspection along the eastern side of the fill deposit confirmed fill is present to approximately 2.4 to 3.6 meters (8 to 12 feet) above former ground surface (Appendix B Photograph 10). Because of the fill, it is unclear if any cultural resources, including the cemetery, are present within this portion of the project area.



-  Project Boundary
-  Wetland
-  Stream
-  Woodlot
-  Fill Disposal Area
-  Detention Basin


 Township: 3 E
 Range: 2 N
 Section: 18
 Project No. 1308018

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Figure 4-1:
Field Work Results
Liberty South Development
Phase I Archaeological Reconnaissance
Libertytown LLC
West Chester Twp., Butler County, Ohio



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 Phone (+1) 513-489-2402 Fax (+1) 513-489-2404
www.cardnojfnew.com

4.2 Summary

Cardno JFNew conducted a Phase I survey of approximately 36.7 acres (14.85 hectares) within the Liberty South development in the City of West Chester, Butler County, Ohio. Fieldwork included visual inspection and shovel test excavation in fallow agricultural fields and woodlot and visual inspection of NW1 listed wetland. Cardno JFNew did not identify any previously unidentified archaeological sites within the project area. Although the OGS and OHPO have plotted the Swearingen/Van Swearingen Cemetery within the proposed project area, archival research indicates the location information available conflicts with exiting information on file at the OHPO. The portion of the project area potentially containing the Swearingen/Van Swearingen Cemetery was covered by approximately 2.4 to 3.6 meters (8 to 12 feet), which is likely related to recent road construction activity. No cultural resources were identified during the field reconnaissance, and no evidence of the cemetery was observed during the field reconnaissance.

5 Summary and Recommendations

5.1 Project Overview

Cardno JFNew conducted a Phase I archaeological reconnaissance for the proposed Liberty South Development project in the City of West Chester, Butler County, Ohio. The Liberty South Development project consists of two parcels totaling approximately 36.7 acres (14.85 hectares) along the south side of Liberty Way (formerly Hamilton-Mason Road), west of Interstate 75. The project involved the construction of a mixed residential and commercial development, which requires Section 404 Nationwide Permit for impacts to an NWI wetland in the project area.

5.2 Summary of Results and Recommendations

The records review revealed that there are no NHL, NRHP, or DOE listed properties within the project area. However, the Williamson Mound II Archaeological District is located approximately 1.12 kilometers (0.7 miles) southwest of the project area. Additionally, there are 13 OAI listed archaeological sites within the study area, including unidentified prehistoric sites, Woodland period sites, and historic archaeological sites. A total of 16 OHI listed structures are located within the study area, including one (1) farm, a barn, a school, and 13 houses. None of the OHI structures in the study area are located within the project area.

The OGS lists one cemetery located “in the east half of Section 18.” The OHPO has plotted the Swearingen/Van Swearingen Cemetery within the project area, based on information provided by the OGS. The Phase I reconnaissance investigation revealed the reported location of the cemetery was covered with approximately 2.4 to 3.7 meters (8 to 12 feet) of construction fill. Due to the presence of the fill we were unable to confirm whether the cemetery is located in the project area. Archival research indicates the location information for the Swearingen/Van Swearingen cemetery presents conflicting information. According to the BCOGS, John Swearingen and Rev. James Grimes were buried on John Swearingen’s farm. However, the grave site of Rev. Grimes has been identified in the Middletown Historic Pioneer Cemetery. Additionally, archival research revealed the property owner for the project area was Isaac Swearingen, John Swearingen’s brother. Further, John Swearingen’s property was located north of the project area in Liberty Township. Unfortunately, no definitive information on the location of the grave of John Swearingen has been located at the time of this writing.

No prehistoric or historic archaeological sites were identified during the Phase I reconnaissance. Archival research provided conflicting information for the location of the Swearingen/Van Swearingen. Due to the presence of construction fill, field reconnaissance could not confirm whether the cemetery or other cultural resources are located within this portion of proposed project area. The fill pile is located in the north central portion of the project area. Cardno JFNew recommends no additional archaeological work is required in this portion of the project area the portion of the project area with confirmed disturbance.

However, due to the construction fill located in the north central portion of the project area, this portion of the project area could not be evaluated for the presence of cultural resources, including the Swearingen/Van Swearingen Cemetery, and additional archaeological work may be necessary in this portion of the project area if project activities extend below the construction fill. Options may include additional archaeological investigation, monitoring of construction activities, preparing a plan for unintended discoveries, or other steps developed in coordination with the Ohio Historic Preservation Office.

This recommendation is made with the condition that if archaeological artifacts or human remains are identified during construction, work within the area will stop and the Ohio Historic Preservation Office will be notified within two (2) business days.

6 References Cited

Bauer, Cheryl and Randy McNutt

2006 *Postcard History Series: Butler County*. Mount Pleasant: Arcadia Publishing.

Beers, W. H.

1882 *The History of Clinton County Ohio*. W. H. Beers & Co. Chicago.

Blank, John Edward

1983 *Results of Preliminary Reconnaissance Archaeological Survey of the Relocated S.R. 129 (Hamilton Connector) Corridor, Butler and Warren Counties, Ohio (Report BLA-R16-1982)*. Copy on file at the Ohio Historic Preservation Office, Columbus, Ohio.

Butler County, Ohio Rootsweb

2009 Lemon Township, Butler County, Ohio.

<http://www.rootsweb.ancestry.com/~ohbutcem/LemonTwpCem/MTCem/G.HTM>.

Electronic document. Accessed September 2013.

Chadderdon, Thomas J.

1998 *Phase Ib Archaeological Survey of a 75-acre Parcel, Voice of America Bethany Relay Station, Union Township, Butler County, Ohio*. Louis Berger and Associates. Copy on file at the Ohio Historic Preservation Office, Columbus, Ohio.

Cowan, C. Wesley

1987 *First Farmers of the Middle Ohio Valley*. Cincinnati Museum of Natural History, Cincinnati, Ohio.

Creamer, Karen

2009 Indiana GenWeb.

<http://www.findagrave.com/cgi-bin/fg.cgi?page=gr&GSln=SWE&GSpartial=1&GSbyrel=all&GSst=17&GSctry=4&GSsr=2561&GRid=36733400&>. Electronic document. Accessed September 2013.

Drooker, P.B.

1997 *The View from Madisonville: Protohistoric Western Fort Ancient Interaction Patterns*. Memoirs of the Museum of Anthropology No. 21. The University of Michigan, Ann Arbor.

Drooker, P.B. and C.W. Cowan

2001 Transformation of the Fort Ancient cultures of the central Ohio Valley. In *Societies in Eclipse: Archaeology of the Eastern Woodlands Indians, A.D. 1400-1700*, ed. D.S. Brose, C.W. Cowan, and R.C. Manifort, Jr. Smithsonian Institution Press, Washington, D.C., 83-106.

Everts, L.H.

1875 *Combination Atlas Map of Butler County, Ohio*. L.H. Everts & Co., Publisher.

Favret, Amy C. and Veronica Parsell

2012 *Phase I Archaeological Reconnaissance Liberty Town Square, West Chester, Butler County, Ohio*. Prepared for Libertytown, LLC. Copy on file at the Ohio Historic Preservation Office, Columbus.

Genheimer, Robert A.

1989a *An Archaeological Assessment of Three Bridge Replacement Sites (BUT-CR-2.99. BUT-CR180-7.45, and BUT-CR-180-7.96) and the Cincinnati-Dayton Road/Hamilton-Mason Road Improvement Area in Butler County, Ohio*. R.G. Archaeological Services, Inc. Copy on file at the Ohio Historic Preservation Office, Columbus.

1989b *An Archaeological Assessment of the Tylersville Road Bridge Replacement and Widening Project (BUT-75-5.35) in Union Township, Butler County, Ohio.* R.G. Archaeological Services, Inc. Copy on file at the Ohio Historic Preservation Office, Columbus.

Gramly, R. M.

1988 *Paleo-Indian Sites South of Lake Ontario, Western and Central New York State.* In *Late Pleistocene and Early Holocene Paleoecology and Archaeology of the Eastern Great Lakes Region*, edited by R.S. Laub, N. Miller and D. Steadman, pp. 265-280. Bulletin of the Buffalo Society of Natural Sciences 33.

Mills, William C.

1914 *Archaeological Atlas of Ohio.* Ohio State Archaeological and Historical Society, Columbus.

McBride, James

1836 *Reappraisal of Butler County.* Electronic Document.
<http://www.rootsweb.ancestry.com/~ohbutler/mcbrides1836.html>. Accessed August 2013.

Munsell

2000 *Munsell Soil Color Charts.* Munsell Color, Macbeth Division of Kollmorgen Instruments Corporation, Baltimore, Maryland.

Ohio GenWeb

2006 *McBride's 1836 Butler County Ohio Township Maps.*
<http://www.rootsweb.ancestry.com/~ohbutler/mcbrides1836.html>.
Electronic Document. Accessed July 2010.

Ohio History Central

2005 "Butler County". *Ohio History Central.* Electronic Document. Accessed March 2012.
<http://www.ohiohistorycentral.org/entry.php?rec=1903>

Ohio Kentucky Indiana (OKI) Regional Council of Governments

2011 *Water Quality Management Plan for Butler, Clermont, Hamilton, and Warren Counties in Ohio.* June 2011 Update.

Pacheco, P. J.

1996 *Ohio Hopewell Regional Settlement Patterns.* In *A View From the Core: A Synthesis of Ohio Hopewell Archaeology*, edited by P. J. Pacheco, pp. 18-35. Ohio Archaeological Council, Columbus.

Pollack, David and A. Gwyn Henderson

2000 "Insights Into Fort Ancient Cultural Change: A View from South of the River." In *Cultures Before Contact: the Late Prehistory of Ohio and Surrounding Regions*, ed. R.A. Genheimer. Columbus: Ohio Archaeological Council, 194-227.

Purtill, Matthew P.

2004 *Phase I Cultural Resources Survey of the Proposed 54 Acre Recreational Park Development Project, Liberty Township, Butler County, Ohio.* Gray & Pape, Inc. Copy on file at the Ohio Historic Preservation Office, Columbus, Ohio.

Purtill, Matthew P. and Marcia Vehling

2006 *Phase I Archaeological Survey for the Proposed Ronald Regan Voice of Freedom Park Access Road and Parking Facility (PID No. 81186), West Chester Township, Butler County, Ohio.* Gray & Pape Inc. Copy on file at the Ohio Historic Preservation Office, Columbus, Ohio.

Rerick Brothers

1895 *Atlas of Butler County, Ohio*. Rerick Brothers, Publishers. Richmond, VA.

Republican Publishing Co.

1914 *Atlas of Butler County, Ohio*. Republican Publishing Company. Hamilton, Ohio.

Seeman, M. F. and W. S. Dancy

2000 The Late Woodland Period in Southern Ohio: Basic Issues and Prospects. In *Late Woodland Societies: Tradition and Transformation Across the Midcontinent*, edited by T. E. Emerson, D. L. McElrath, and A. C. Fortier, pp. 583-611. University of Nebraska Press, Lincoln.

Smith, Kyle

2013 *OGS GIS Plotting*. Email correspondence dated 8/30/2013.

Stothers, D. M. 1996 Resource Procurement and Band Territories: A Model for Lower Great Lakes Paleolndian and Early Archaic Settlement Systems. *Archaeology of Eastern North America* 24:173-216.

Tuck, J. A.

1978 Regional Cultural Development, 3,000-300 B.C. *Handbook of North American Indians* (15). Smithsonian Institution Press, Washington, D.C.

Troutman, K. Roger

2013 *Ohio Cemeteries: 1803 – 2003*. Compiled by the Ohio Genealogical Society, K. Roger Troutman, ed. The Ohio Genealogical Society, Mansfield, Ohio. Copy on file at the Ohio Historic Preservation Office.

USGS

1906 Mason, Ohio 15' Quadrangle Map. U.S.G.S. Electronic Document.
<http://historical.mytopo.com/quad.cfm?quadname=Mason&state=OH&series=15>. Accessed August 2013.

USDA/SCS

1980 *Soil Survey of Butler County, Ohio*. United States Department of Agriculture/Natural Resources Conservation Service.

Vehling, Marcia and Patrick Trader

2006 Phase I Archaeological Investigations for the Proposed I-75 and SR 129 Interchange Improvements, Liberty Interchange Categorical Exclusion, Butler County, Ohio. Copy on file at the Ohio Historic Preservation Office, Columbus, Ohio.

Vickery, K. D. and J. Litfin

1992 *A Proposed Revision of the Classification of Midwestern Paleo-Indian, Early Archaic, and Middle Archaic Projectile Points*. Department of Anthropology, University of Cincinnati, Cincinnati.

Walley, Scott and Rebecca Hawkins

1999 *Phase I Survey of Four Borrow Pit and Fill Areas for the Butler Regional Highway, and Phase II Evaluation of Prehistoric Site 33 BU 631, in Union, Liberty, and Fairfield Townships, Butler County, Ohio*. Copy on file at the Ohio Historic Preservation Office, Columbus, Ohio.

Western Biographical Publishing Company

1882 *A History and Biographical Cyclopedia of Butler County, Ohio*. Western Biographical Publishing Company. Cincinnati.

White, Pam

2013 *Swearingen/Van Swearingen Cemetery, West Chester Twp., Butler County.* Email correspondence dated 09/06/2013. Butler County Chapter of the OGS.

Phase I Archaeological
Reconnaissance for the Liberty
South Development Project
(LCD01C01), West Chester, Union
Township, Butler County, Ohio

APPENDIX

A

HISTORIC MAPS AND ATLASES

Appendix A Historic Maps and Atlases

A.1 Mills, William C.

1914 *Archaeological Atlas of Ohio*. Ohio State Archaeological and Historical Society, Columbus.

A.2 McBride, James

1836 *Reappraisal of Butler County*. Electronic Document.
<http://www.rootsweb.ancestry.com/~ohbutler/mcbrides1836.html>. Accessed Aug. 2013.

A.3 Everts, L.H.

1875 *Combination Atlas Map of Butler County, Ohio*. L.H. Everts & Co., Publisher.

A.4 Rerick Brothers

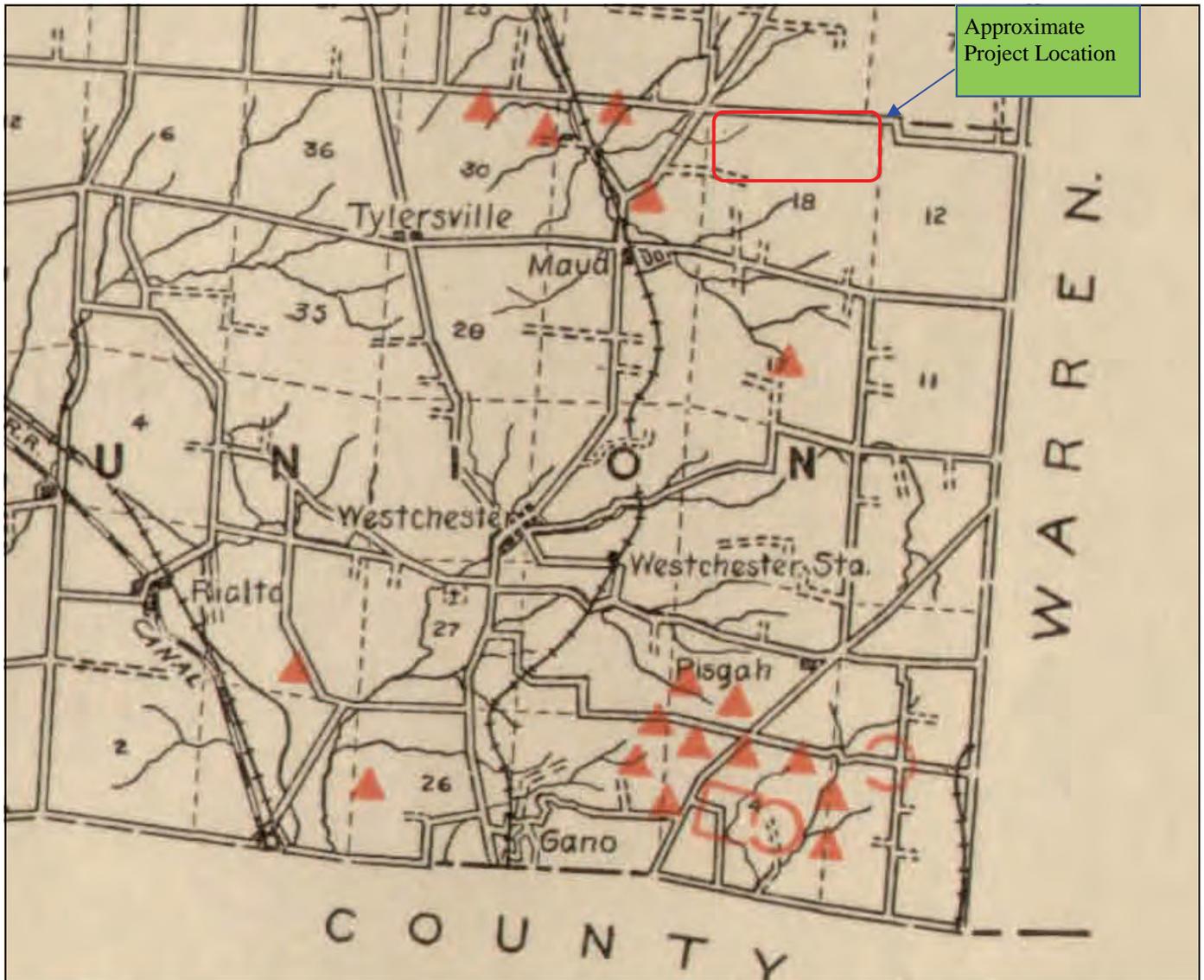
1895 *Atlas of Butler County, Ohio*. Rerick Brothers, Publishers. Richmond, Va.

A.5 USGS

1906 Mason, Ohio. 15' Quadrangle Map. USGS Electronic Document.
<http://historical.mytopo.com/quad.cfm?quadname=Mason&state=OH&series=15>.
Accessed Aug. 2013.

A.6 Republican Publishing Company

1914 *Atlas of Butler County, Ohio*. Republican Publishing Company. Hamilton, Ohio.



Source: Mills 1914

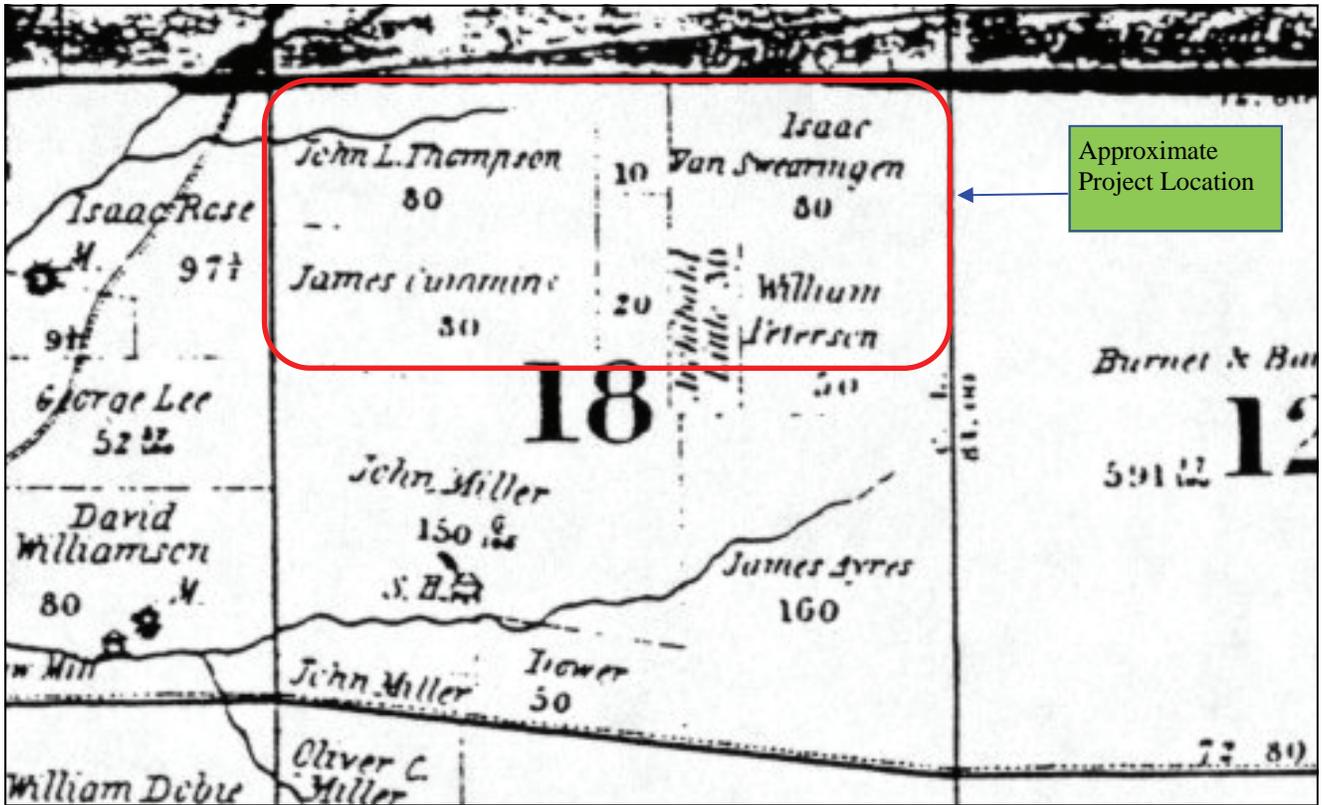
Figure A1
Archaeological
Atlas of Ohio

Liberty South Development

Libertytown, LLC.
Butler County, Ohio

Project Number:
1308018





Source: McBride 1836

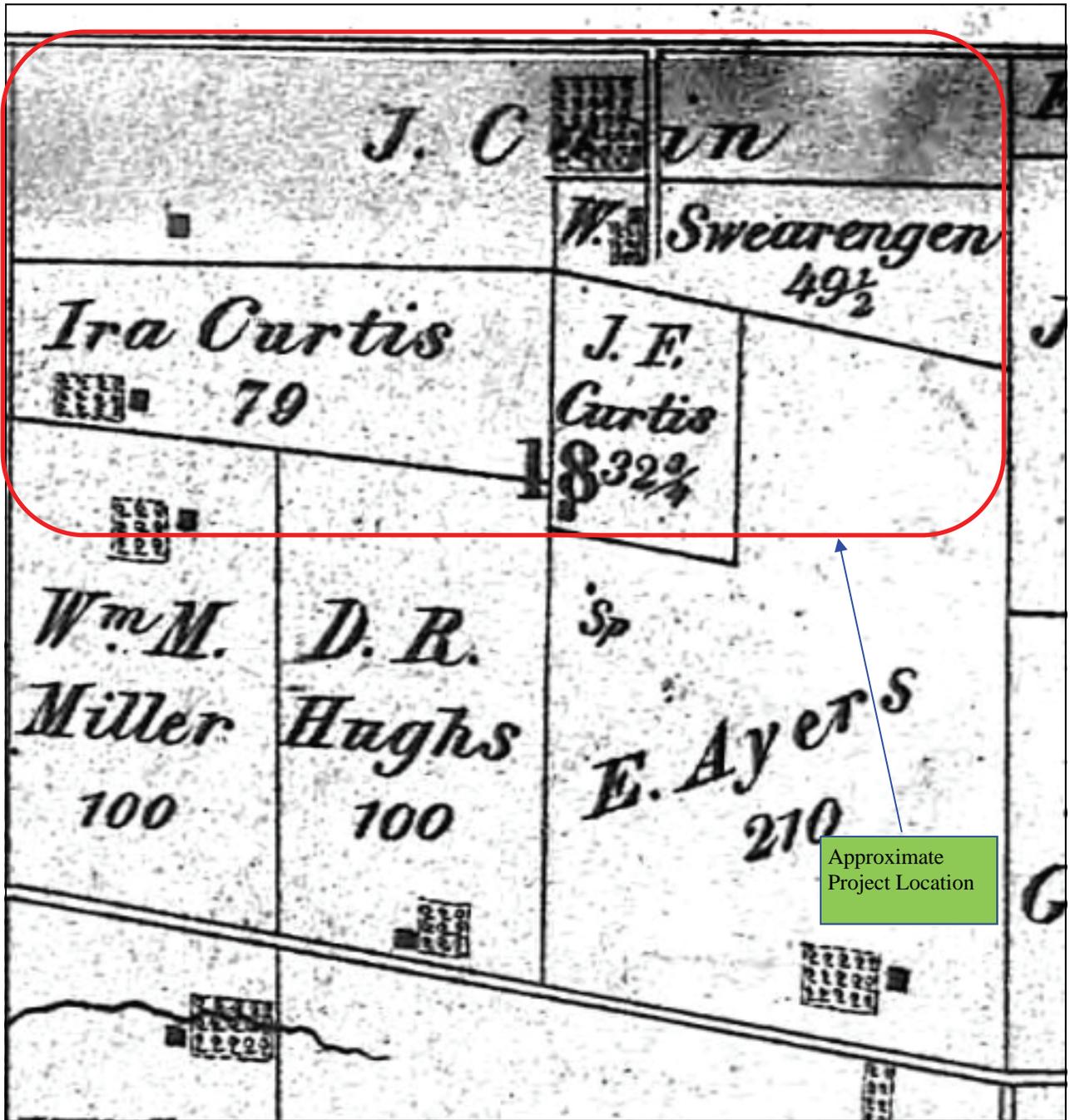
Figure A2
Butler County,
Union Township
Atlas Map

Liberty South Development

Libertytown, LLC.
Butler County, Ohio

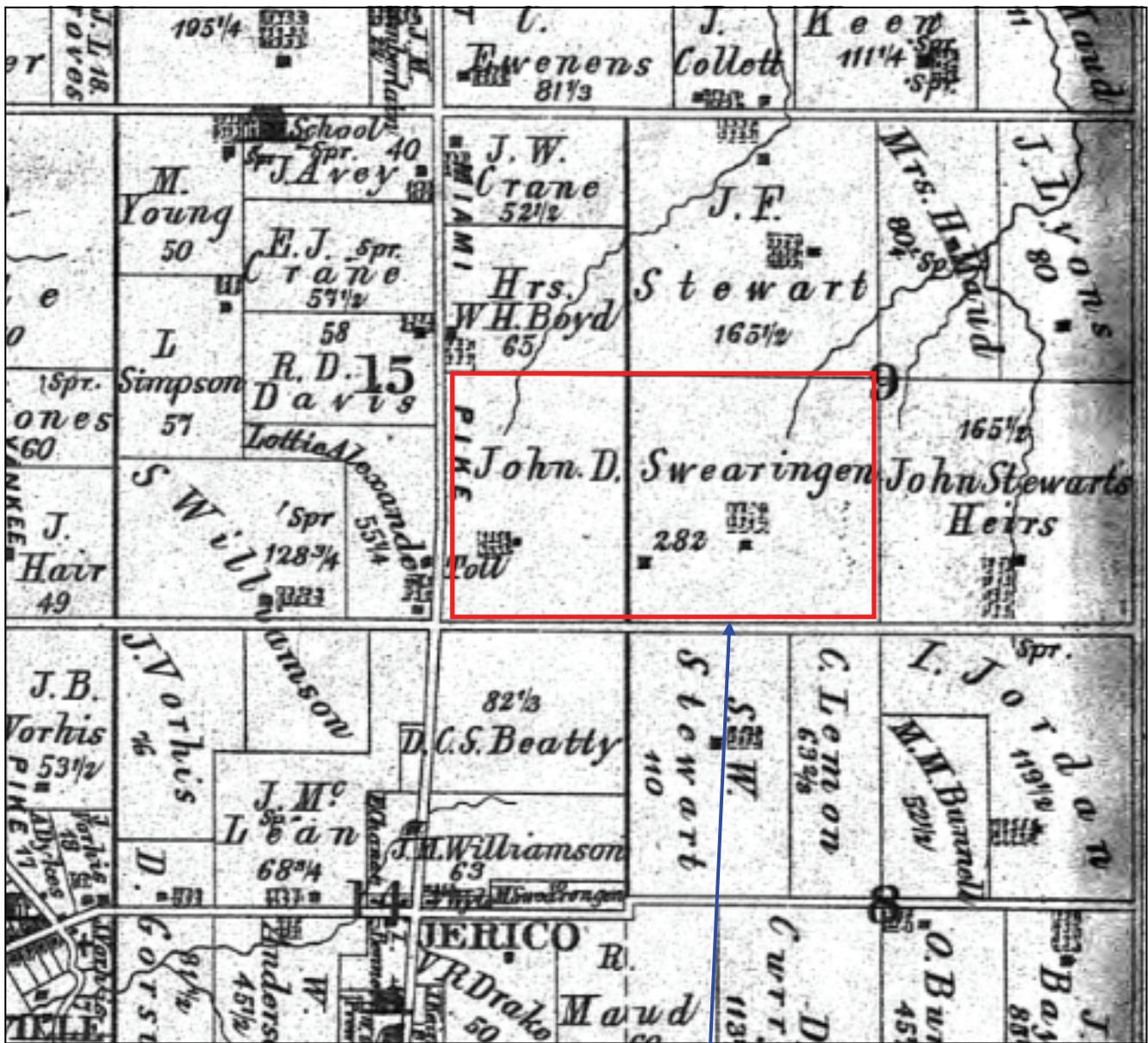
Project Number:
1308018





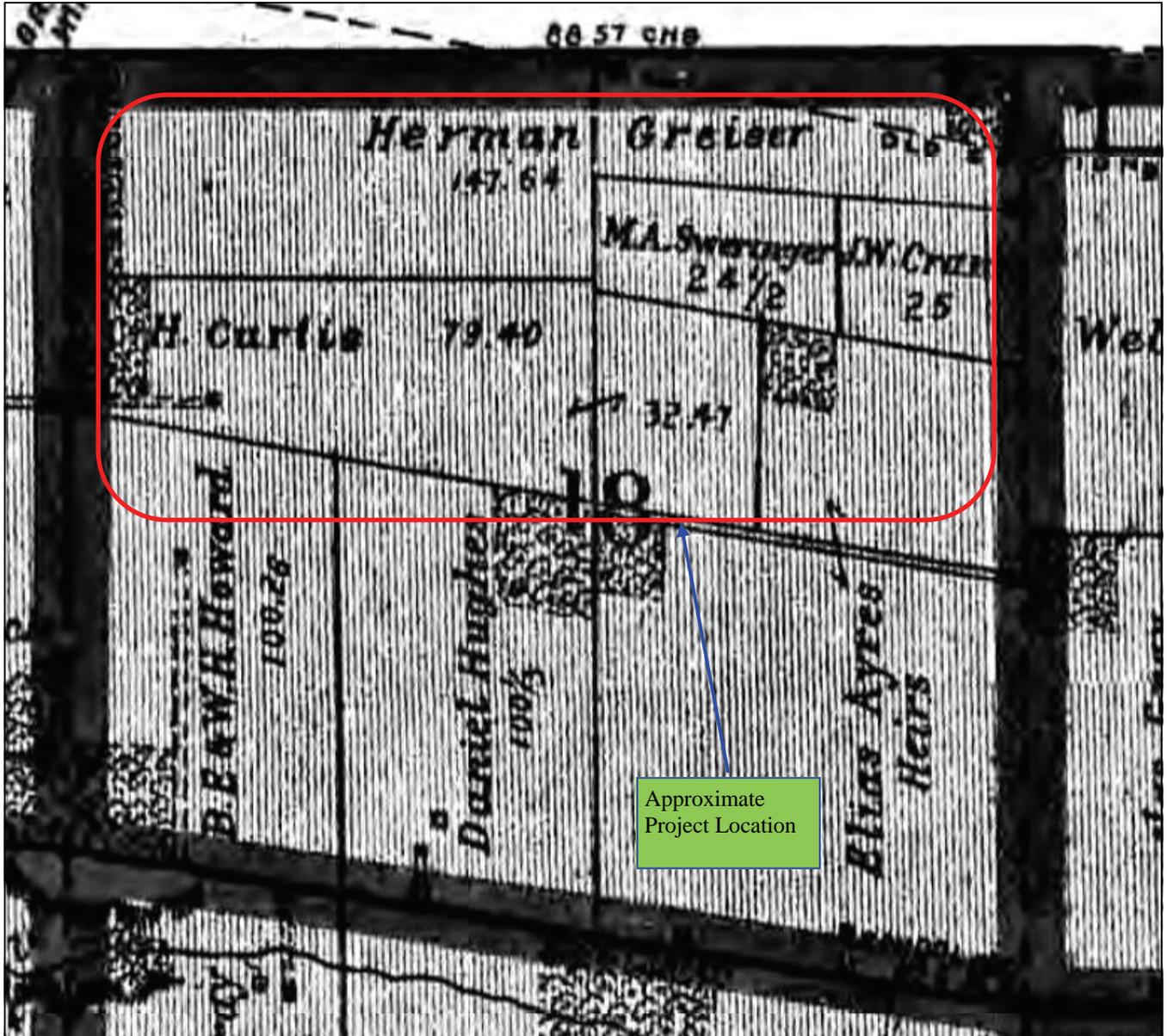
Source: Everts 1875

Approximate Project Location



Location of John D. Swearingen property, Liberty Township, Butler County, Ohio.

Source: Everts 1875



Source: Rerick Bros. 1895

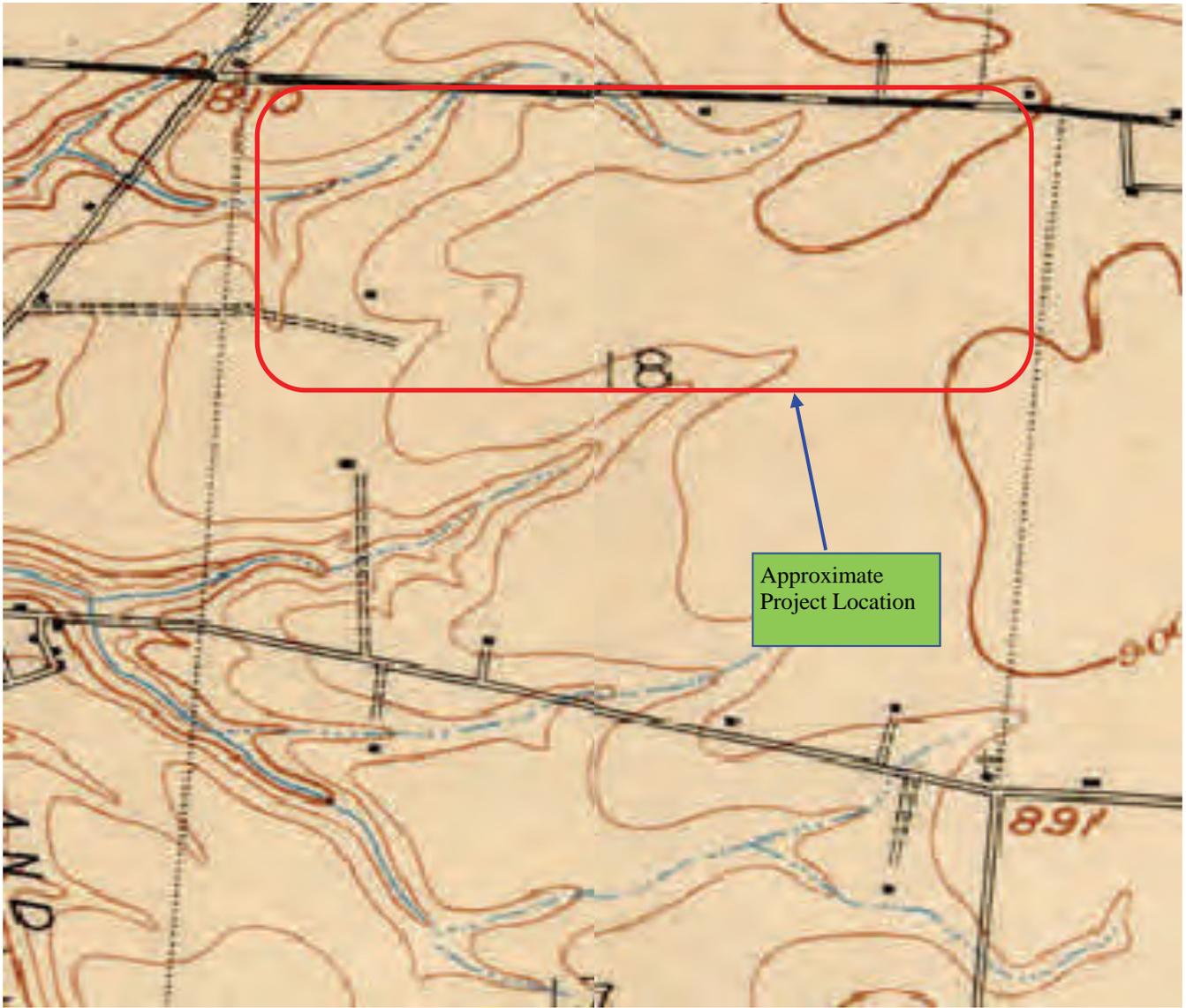
Project Number:
1308018

Figure A5
Butler County,
Union Township
Atlas Map

Liberty South Development

Libertytown, LLC.
Butler County, Ohio





Source: 1906 Mason, Ohio,
USGS Quadrangle Map

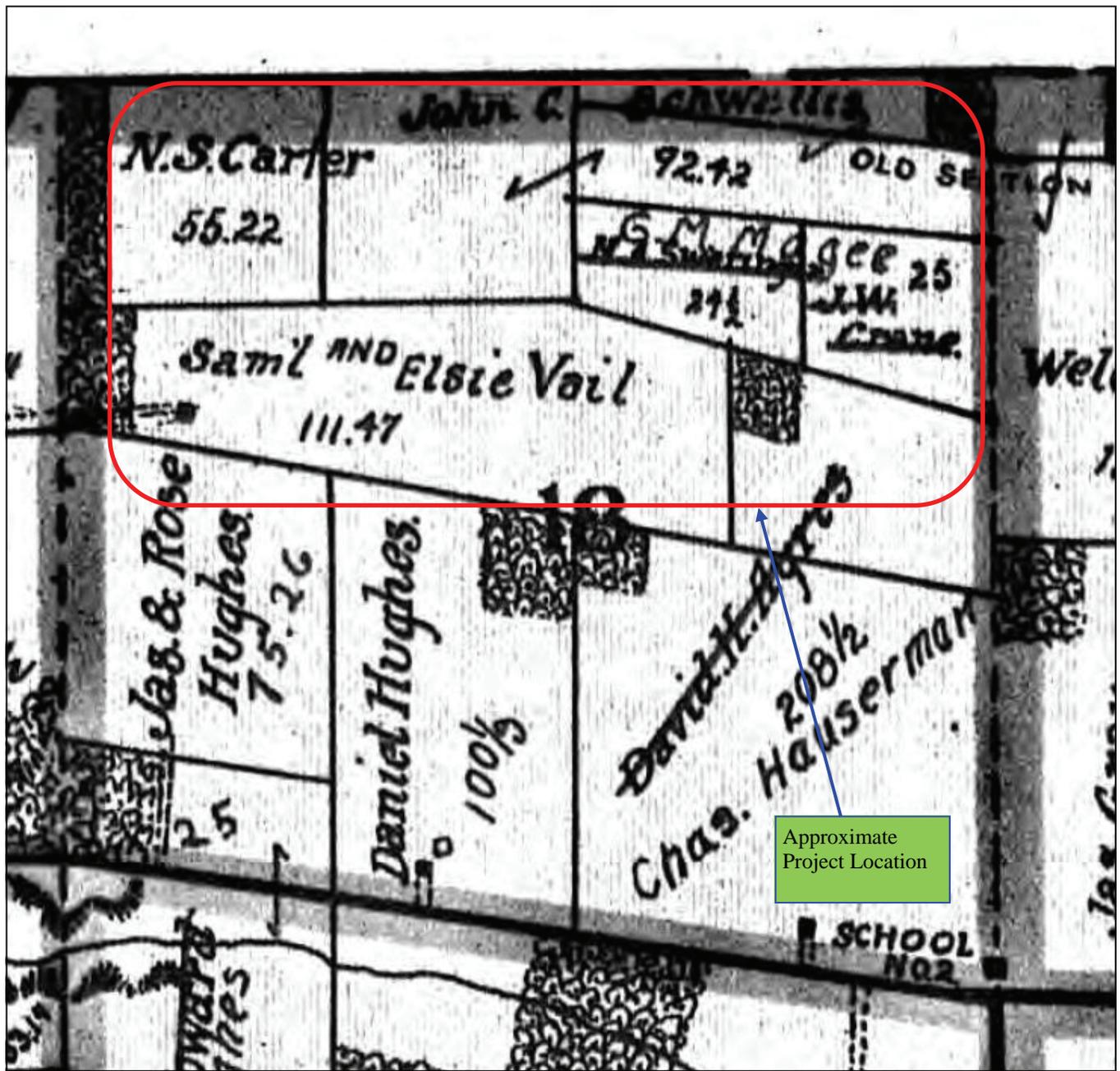
Project Number:
1308018

Figure A6
Mason, Ohio,
USGS 15' Quad-
rangle Map

Liberty South Development

Libertytown, LLC.
Butler County, Ohio





Approximate
Project Location

Source: Republican 1914

Project Number:
1308018

Figure A7
Butler County,
Union Township
Atlas Map

Liberty South Development

Libertytown, LLC.
Butler County, Ohio



Phase I Archaeological
Reconnaissance for the Liberty
South Development Project
(LCD01C01), West Chester, Union
Township, Butler County, Ohio

APPENDIX

B

PHOTOGRAPHS

Appendix B Photographs



Photo 1: Project area overview (from detention basin). Facing East.



Photo 2: Overview of detention basin. Facing South.



Photo 3: Overview of disturbed borrow area. Facing North.



Photo 4: Overview of project area disturbance. Facing South.



Photo 5: Overview of detention basin. Facing West-Southwest.



Photo 6: Overview, eastern portion of the project area overview. Facing East.



Photo 7: Overview eastern portion of the project area overview. Facing South.



Photo 6: Reported Swearingen/Van Swearingen Cemetery location. Facing East.



Photo 9: Overview reported location of Swearingen/Van Swearingen Cemetery.



Photo 10: View of east side of fill disposal. Facing North.



Photo 11: Soil core bore hole.



Photo 12: Representative shovel test excavation, showing fill deposit reported Swearingen/Van Swearingen Cemetery location. Facing East.

APPENDIX

V

MITIGATION PROPOSAL AND PERPETUAL
PROTECTION MEASURES

The following **mitigation proposal** has been developed for the proposed Liberty South Development project.

In order to compensate for the unavoidable impacts to the functions and services provided by 267 LF of Modified Class II intermittent stream, 1.37 acres of emergent wetland, and 1.07 acres of stormwater detention basin; the applicant proposes the following conceptual mitigation techniques with linear feet (LF) and acreage (AC) as the credit assessment methodologies:

STREAMS

1. Offsite stream restoration in the form of a purchase of stream mitigation bank credits at a 1.5:1 compensation-to-impact ratio for natural channel impacts.

To mitigate for the unavoidable stream impacts proposed in the Preferred Degradation Alternative, the Applicant proposes to purchase 400 LF of stream mitigation credits from the Great Miami Mitigation Bank (GMMB) at a 1.5:1 ratio as compensation for 267 LF of stream impacts. Opportunities to reserve these stream mitigation credits at GMMB have been coordinated with Five Rivers Metro Parks and will be finalized upon approval of the 401/404 permit applications.

WETLANDS

2. Off-site wetland restoration (reestablishment) in the form of purchase of wetland mitigation bank credits at a 1.5:1 compensation-to- impact ratio.

To mitigate for the unavoidable wetland impacts proposed in the Preferred Degradation Alternative, the Applicant proposes to purchase 2.1 ac of wetland mitigation credits from the Red Stone Farm Wetland Mitigation Bank (RSFMB), at a 1.5:1 ratio, representing 1.37 acres of non-forested Category 1 wetland impacts. Opportunities to reserve these wetland restoration credits at RSFMB have been coordinated with Red Stone Farm, LLC. and will be finalized upon approval of the 401/404 permit applications.

STORMWATER DETENTION BASIN

3. Off-site restoration in the form of purchase of upland buffer mitigation bank credits at a 2:1 compensation-to- impact ratio for impacts to the non-jurisdictional stormwater detention basin.

To mitigate for the unavoidable impacts to the existing stormwater detention basin proposed in the Preferred Degradation Alternative, the Applicant proposes to purchase 2.0 acres (0.2 bank credits) of upland buffer mitigation credits from the Great Miami Mitigation Bank (GMMB), at a

2:1 ratio as compensation for 1.07 ac of non-jurisdictional stormwater detention that will be converted to a new land use, as a part of the proposed development.

The existing stormwater detention basin is a non-jurisdictional feature that was constructed in-stream pursuant to stormwater management criteria for Section 402 of the Clean Water Act, prior to the Applicant’s involvement in this project. For the purposes of this Application, the Applicant is conceding the jurisdictional status of this basin with a change in land use. Thus, the Applicant is proposing to compensate for this low-quality feature / impact using upland buffer credits. The existing basin supports only seasonal flow and lacks sufficient substrate / habitat to support a biologic community whereas the proposed upland buffer mitigation will be able to process nutrients from runoff, dissipate energy, provide habitat, prevent sediment loss, and maintain and protect downstream beneficial uses.

Opportunities to reserve these upland buffer credits at GMMB have been coordinated with Five Rivers Metro Parks and will be finalized upon approval of the 401/404 permit applications.

SUMMARY OF PROPOSED MITIGATION

The proposed mitigation techniques will result in the reestablishment of 400 LF of headwater streams at the GMMB and 2.10 acres of wetlands at the RSFMB. The proposal also includes 2.0 acres of upland buffer restoration as compensation for non-jurisdictional stormwater detention basin impacts. The mitigation package provides a net increase in aquatic functions and services within the watershed. The following table summarizes the Applicant’s proposal.

Table 1. Summary of Mitigation Proposal

Impact Type	Designation Class/Category	Impact Total	Compensation-to-Impact Ratio	Mitigation Total
Headwater Streams	Mod. Class II	267 L.F.	1.5 : 1	400 L.F. ¹
Emergent Wetlands	Category 1 (Non-Forested)	1.37 Acre	1.5 : 1	2.10 Acre ²
Non-JD Stormwater Basin	Upland Buffer	1.07 Acre	2.0 : 1	2.00 Acre ¹

Note ¹ – Mitigation to be provided at the Great Miami Mitigation Bank. Credits to be reserved with Five Rivers Metroparks

Note ² – Mitigation to be provided at the Red Stone Farm Mitigation Bank. Credits to be reserved with Red Stone Farm, LLC.

APPENDIX

VI

LIST OF ADJACENT PROPERTY OWNERS

Tylers Place Building Co LLC & Shelbyville Land Co LLC
8073 Tylersville Rd
West Chester, OH 45069-2506

Preserve at Wetherington Community Association Inc
40000 Executive Park Drive
Suite 250
Cincinnati, OH 45241-2002

Narsing R and Jhansi Mamindla
6718 English Garden Way
Mason, OH 45040

Jason and Stephanie Watkins
John Henry Homes Inc.
10925 Reed Hartman Mwy
Suite 312
Cincinnati, OH 45242

Brad and Michelle Evans
7275 Weatherby Ct
West Chester, OH 45069

John Ross and Patricia Ann Cacaro
7285 Weatherby Ct
West Chester, OH 45069-5610

Marianne Colleary
7324 Preserve Pl
West Chester, OH 45069-6580

SAPP Builders LLC
7150 Willoughby Ct
West Chester, OH 45069-4665

Mohamed Mohmoud and Sophia Mousa
7323 Preserve Pl
West Chester, OH 45069-6579

Harbour Town Association LTD
10123 Alliance Rd
Suite 100
Cincinnati, OH 45242-4714

Carol Ann Nail
6953 Harbour Town Dr
West Chester, OH 45069

Great Traditions Homes LTD
4000 Executive Park Dr
Suite 250
Cincinnati, OH 45241-2002

Joan R Deluse TR
7033 Harbour Town Dr
West Chester, OH 45056-6404

Harbour Town Village Community Association Inc.
Ace Community Management Inc
PO BOX 121031
Covington, KY 41012-1031

Butler County Transportation Improvement District
1921 Fairgrove Ave
Hamilton, OH 45011-1965

APPENDIX

VII

OHIO EPA ANTIDEGRADATION SOCIAL
ECONOMIC JUSTIFICATION (SEJ) MATRIX

**LIBERTY SOUTH DEVELOPMENT TABLE
SOCIAL AND ECONOMIC JUSTIFICATION**

	PREFERRED DESIGN	MINIMAL DEGRADATION DESIGN	NON- DEGRADATION DESIGN
No of Residential Lots	80	80	80
New Permanent Jobs	2,188	1,862	1,271
Est. Payroll \$\$/yr	\$78,910,754	\$62,941,112	\$42,766,452
Est. Payroll Taxes/yr	\$1,511,042	\$1,084,460	\$736,848
New Temporary Jobs	682	630	520
Est. Temporary Payroll	\$27,702,090	\$25,999,220	\$21,309,840
Est. Temporary Taxes	\$569,686	\$534,677	\$438,228
Other Tax \$\$	\$19,221,891	\$15,481,414	\$10,621,728
Revenue Generated	\$21,302,619	\$17,100,538	\$11,796,804
Local Taxes Generated	\$4,360,720	\$3,661,918	\$2,595,438
State Taxes Generated	\$16,941,899	\$13,438,620	\$9,201,384
Land Donated to Community (acres)	N/A	N/A	N/A
Royalties to ODNR for oil and coal projects	N/A	N/A	N/A
County Unemployment Rate	6.6%	6.6%	6.6%
County Poverty Rate	13.6%	13.6%	13.6%
Environmental Benefit	N/A	N/A	N/A
Social Benefit	N/A	N/A	N/A
Recreational Benefit	N/A	N/A	N/A
OTHER	N/A	N/A	N/A